



IBM Cloud Professional Certification Program

Study Guide Series

Exam C1000-083: Foundations of IBM Cloud V2

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Purpose of Exam Objectives

When an exam is being developed, the Subject Matter Experts work together to define the role the certified individual will fill. They define all the tasks and knowledge that an individual would need to have in order to successfully implement the product. This creates the foundation for the objectives and measurement criteria, which are the basis for the certification exam.

The Cloud Software Certification item writers used these objectives to develop the questions they wrote, and which will appear on the exam.

It is recommended that you review these objectives. Do you know how to complete the task in the objective? Do you know why that task needs to be done? Do you know what will happen if you do it incorrectly? If you are not familiar with a task, then go through the objective and perform that task in your own environment. Read more information on the task. If there is an objective on a task there is about a 95% chance that you WILL see a question about it on the actual exam.

After you have reviewed the objectives and completed your own research, then take the assessment exam. While the assessment exam will not indicate which question you answered incorrectly, it will tell you how you did by section. This will give you a good indication as to whether you are ready to take the actual exam or if you need to further review the materials.

Note: This is the high-level list of objectives. As you review these objectives, click for a more detailed level of how to perform the task.

High-level Exam Objectives

Section 1 - IBM Cloud Overview	
1.1	Understand the types of Cloud deployment options
1.2	Explain the difference between SaaS, PaaS and IaaS
1.3	Understand the different IBM Cloud Account Types
1.4	Understand how to use the cost estimator tool
1.5	Understand the benefits of the IBM Multicloud strategy
1.6	Understand IBM Cloud Support Plans
1.7	Explain the benefits of Availability Zones
1.8	Understand the international compliance standards that are used by IBM Cloud
1.9	Explain the features and benefits of Identity and Access Management (IAM)
Section 2 - Compute Options	
2.1	Understand the benefits and options of Classic Infrastructure
2.2	Understand the benefits and options for IBM Kubernetes Service
2.3	Understand the benefits and options for IBM Red Hat OpenShift
2.4	Understand the benefits and options for IBM Virtual Private Cloud (Gen 1 & Gen 2)
2.5	Understand the benefits and options for IBM VMware Solutions
2.6	Understand the benefits and options for IBM Cloud Foundry
Section 3 - Storage and Networking	
3.1	Understand the benefits and options of IBM File Storage
3.2	Understand the benefits and options of IBM Block Storage
3.3	Understand the benefits and options of IBM Cloud Object Storage
3.4	Understand the benefits and options of IBM Backup, Recovery and Replication Solutions
3.5	Understand the benefits and options of IBM Cloud Networking
Section 4 - Services	
4.1	Understand the different Application Integration options on IBM Cloud
4.2	Explain how Internet of Things (IoT) can be leveraged within IBM Cloud
4.3	Describe the value of Blockchain
4.4	Explain how DevOps is implemented in IBM Cloud and OpenShift
4.5	Understand the benefits and capabilities of adding AI into applications
4.6	Understand the different analytics options
4.7	Understand the different Database options
4.8	Understand the benefits and options of IBM Hyper Protect Crypto services
4.9	Understand the benefits and options of IBM Hyper Protect DB as a Service (DBaaS)

Section 5 - Software (IBM Cloud Paks)	
5.1	<u>Understand the benefits and capabilities of IBM Cloud Paks</u>
5.2	<u>Understand the benefits and capabilities of IBM Cloud Pak Solutions</u>
Section 6 - Cloud Native Design	
6.1	<u>Describe the different elements of the IBM Cloud Garage Method</u>
6.2	<u>Describe the benefits of Cloud Native design</u>

Detailed Exam Objectives

Section 1 - IBM Cloud Overview

1.1. Understand the types of Cloud deployment options.

SUBTASKS:

1.1.1. Describe a Public Cloud.

REFERENCES:

<https://www.ibm.com/cloud/public/>

1.1.2. Describe a Private Cloud.

REFERENCES:

<https://www.ibm.com/cloud/private/architecture>

https://www.ibm.com/support/knowledgecenter/SSBS6K_3.2.1/accessibility.html

[https://www.ibm.com/support/knowledgecenter/SSBS6K_2.1.0/getting_started/introducti
on.html](https://www.ibm.com/support/knowledgecenter/SSBS6K_2.1.0/getting_started/introducti
on.html)

1.1.3. Describe a Hybrid Cloud.

1.1.3.1. Multicloud

REFERENCES:

<https://www.ibm.com/cloud/hybrid>

1.2. Explain the difference between SaaS, PaaS and IaaS.

SUBTASKS:

1.2.1. Explain the benefits of using IaaS.

1.2.2. Describe the usage of IaaS.

1.2.2.1. Server

1.2.2.2. Storage

1.2.2.3. Networking

1.2.3. Explain the benefits of using SaaS.

1.2.4. Describe the usage of SaaS.

1.2.4.1. Subscription model

1.2.5. Explain the benefits of using PaaS.

1.2.6. Describe the usage of PaaS.

REFERENCES:

<https://www.ibm.com/cloud/learn/iaas-paas-saas>

1.3. Understand the different IBM Cloud Account Types.

SUBTASKS:

- 1.3.1. Identify the different IBM Cloud account types.
 - 1.3.1.1. Lite
 - 1.3.1.2. Pay-As-You-Go
 - 1.3.1.3. Subscription
- 1.3.2. Explain how accounts are charged.
- 1.3.3. Apply promo codes.
- 1.3.4. Setting spending notifications.

REFERENCES:

<https://cloud.ibm.com/docs/account?topic=account-accounts>

1.4. Understand how to use the cost estimator tool.

SUBTASKS:

- 1.4.1. Understand the features of the cost estimator tool.
- 1.4.2. Understand the export options of the cost estimator tool.

REFERENCES:

<https://cloud.ibm.com/estimator/review>

<https://cloud.ibm.com/docs/billing-usage?topic=billing-usage-cost>

<https://www.ibm.com/blogs/cloud-archive/2018/11/manage-all-your-cloud-resources-on-the-enhanced-ibm-cloud-platform/>

1.5. Understand the benefits of the IBM Multicloud strategy.

SUBTASKS:

- 1.5.1. Explain a Single Cloud Environment.
- 1.5.2. Explain a Multicloud Environment.
- 1.5.3. Discuss benefits of Single or Multicloud.

REFERENCES:

<https://www.stratoscale.com/blog/it-leadership/cloud-clouds-choose-single-multi-cloud-approach/>

<https://www.ibm.com/cloud/multi-cloud>

1.6. Understand IBM Cloud Support Plans.

SUBTASKS:

- 1.6.1. Opening a support ticket.
- 1.6.2. Discuss different type of Support plans.
- 1.6.3. Discuss other Free support resources and communities.
 - 1.6.3.1. IBM Cloud docs
 - 1.6.3.2. IBM Developer community
 - 1.6.3.3. Github community
 - 1.6.3.4. Stack overflow

REFERENCES:

<https://www.ibm.com/cloud/support>

<https://cloud.ibm.com/docs/get-support?topic=get-support-support-plans>

1.7. Explain the benefits of Availability Zones.

SUBTASKS:

- 1.7.1. Understand the IBM Availability Zones.
- 1.7.2. Understand Single Zone Regions (SZR).
- 1.7.3. Understand Multi-Zone Regions (MZR).
- 1.7.4. Describe the benefits of deploying applications on IBM Cloud Availability Zones.

REFERENCES:

<https://www.ibm.com/cloud/blog/why-deploy-applications-on-ibm-cloud-availability-zones>

<https://www.ibm.com/cloud/blog/what-services-can-you-expect-in-ibm-cloud-availability-zones>

1.8. Understand the international compliance standards that are used by IBM Cloud.

SUBTASKS:

- 1.8.1. Explain Global standards.
 - 1.8.1.1. CSA
 - 1.8.1.2. ISO
 - 1.8.1.3. SOC
- 1.8.2. Explain US Federal Governments standards.
 - 1.8.2.1. FedRAMP
 - 1.8.2.2. ITAR
- 1.8.3. Explain Industry standards.
 - 1.8.3.1. HIPAA
 - 1.8.3.2. PCI
- 1.8.4. Explain Regional Standards.
 - 1.8.4.1. GDPR/DSGVO

REFERENCES:

<https://www.ibm.com/cloud/compliance/global>

<https://www.ibm.com/cloud/compliance>

1.9. Explain the features and benefits of Identity and Access Management (IAM).

SUBTASKS:

1.9.1. Identify the purpose for Cloud Identity and Access Management).

REFERENCES:

<https://cloud.ibm.com/docs/iam?topic=iam-iamoverview>

1.9.2. Understand IAM concepts.

1.9.2.1. Subjects

1.9.2.2. Access groups

1.9.2.3. Targets

1.9.2.4. Resource groups

1.9.2.5. Roles

1.9.2.6. Actions

1.9.2.7. Policies

REFERENCES:

<https://cloud.ibm.com/docs/iam?topic=iam-cloudaccess>

<https://cloud.ibm.com/docs/iam?topic=iam-iamoverview>

1.9.3. Demonstrate an understanding of best practices for assigning access to cloud resources.

REFERENCES:

https://cloud.ibm.com/docs/iam?topic=iam-account_setup

1.9.4. Identify cloud resources that are not secured by IAM.

REFERENCES:

<https://cloud.ibm.com/docs/iam?topic=iam-cloudaccess>

Section 2 – Compute Options

2.1. Understand the benefits and options of Classic Infrastructure.

SUBTASKS:

2.1.1. Describe the different virtual server offerings.

2.1.1.1. IBM Virtual Servers

2.1.1.2. Virtual Servers on Power

2.1.1.3. HyperProtect Virtual Servers

2.1.2. Describe the benefits of each offering.

2.1.2.1. Cost

2.1.2.2. Performance

2.1.2.3. Security

2.1.3. Describe the different types of Virtual Servers.

2.1.3.1. Public

2.1.3.2. Dedicated

- 2.1.3.3. Transient
- 2.1.3.4. Reserved
- 2.1.4. Identify the key Operating Systems supported for each Virtual Server Type.
- 2.1.5. Identify the key billing options.
 - 2.1.5.1. Hourly
 - 2.1.5.2. Monthly
- 2.1.6. Describe the different configuration options for Bare Metal Servers.
 - 2.1.6.1. CPU-Type, Memory, and GPU
- 2.1.7. Describe the key benefits of bare metal servers.
 - 2.1.7.1. Performance
 - 2.1.7.2. Security
- 2.1.8. Identify the Operating System choices for Bare Metal Server.
- 2.1.9. Identify the different billing options.
 - 2.1.9.1. Hourly, Monthly, etc...

REFERENCES:

<https://cloud.ibm.com/docs/infrastructure/power-iaas?topic=power-iaas-getting-started>
<https://cloud.ibm.com/docs/vsi?topic=virtual-servers-getting-started-tutorial>
<https://cloud.ibm.com/docs/services/hp-virtual-servers?topic=hp-virtual-servers-getting-started>
<https://cloud.ibm.com/docs/bare-metal?topic=bare-metal-about-bm>
<https://www.ibm.com/cloud/bare-metal-servers>

2.2. Understand the benefits and options for IBM Kubernetes Service.

SUBTASKS:

- 2.2.1. Describe the three main components of the IBM Kubernetes Service (IKS).
 - 2.2.1.1. IBM Kubernetes Service cluster
 - 2.2.1.2. IBM Kubernetes Service registry
 - 2.2.1.3. Helm Catalog
- 2.2.2. Describe the advantages of using IKS.
 - 2.2.2.1. Rapid Deployment
 - 2.2.2.2. Managed Environment
 - 2.2.2.3. Secured Environment
- 2.2.3. Identify the node types that are provisioned and accessible by the users.
 - 2.2.3.1. Worker Nodes only
- 2.2.4. Identify the different plan types for IKS.
 - 2.2.4.1. Free and Standard/Hourly
- 2.2.5. Identify the three types provided by IKS.
 - 2.2.5.1. Virtual Shared
 - 2.2.5.2. Virtual Dedicated
 - 2.2.5.3. Bare Metal
- 2.2.6. Describe the Availability Zone options for IKS.
 - 2.2.6.1. Multi-zone cluster
 - 2.2.6.2. Single zone cluster

REFERENCES:

<https://cloud.ibm.com/docs/containers?topic=containers-getting-started>

<https://www.ibm.com/cloud/blog/announcements/improving-app-availability-multizone-clusters>

2.3. Understand the benefits and options for IBM Red Hat OpenShift.**SUBTASKS:**

- 2.3.1. Describe the key benefits of IBM Red Hat OpenShift (ROKS).
 - 2.3.1.1. Ease of Deployment
 - 2.3.1.2. Managed Environment
- 2.3.2. What key options are available for ROKS.
 - 2.3.2.1. Memory
 - 2.3.2.2. CPU
 - 2.3.2.3. Storage
 - 2.3.2.4. Number of worker nodes
- 2.3.3. Identify the node types that are provisioned and accessible by the users.
 - 2.3.3.1. Worker Nodes only
- 2.3.4. Identify the different plan types for ROKS.
 - 2.3.4.1. Free and Standard/Hourly
- 2.3.5. Identify the three types provided by ROKS.
 - 2.3.5.1. Virtual Shared
 - 2.3.5.2. Virtual Dedicated
 - 2.3.5.3. Bare Metal
- 2.3.6. Describe the Availability Zone options for ROKS.
 - 2.3.6.1. Multi-zone cluster
 - 2.3.6.2. Single zone cluster

REFERENCES:

<https://cloud.ibm.com/docs/openshift?topic=openshift-getting-started>

2.4. Understand the benefits and options for IBM Virtual Private Cloud (Gen 1 & Gen 2).**SUBTASKS:**

- 2.4.1. Describe the key features of IBM Virtual Private Cloud (VPC).
- 2.4.2. Describe the key differences between Gen 1 and Gen 2.
 - 2.4.2.1. Improved network performance up to 80Gbps (Gen 2)
 - 2.4.2.2. Faster provisioning times (Gen 2)
- 2.4.3. Identify the key components of VPC.
 - 2.4.3.1. VPC instance
 - 2.4.3.2. Multiple subnets
 - 2.4.3.3. User controlled security and security groups
 - 2.4.3.4. Virtual Server Instances
 - 2.4.3.5. Gateway service
 - 2.4.3.6. VPN Service to connect as an extension to client's data center
 - 2.4.3.7. Block Storage Volumes

REFERENCES:

<https://cloud.ibm.com/docs/vpc-on-classic?topic=vpc-on-classic-getting-started>
<https://cloud.ibm.com/docs/vpc?topic=vpc-about-vpc>

2.5. Understand the benefits and options for IBM VMware Solutions.**SUBTASKS:**

- 2.5.1. Describe the different VMware Solution Options on IBM Cloud.
 - 2.5.1.1. VCenter
 - 2.5.1.2. vSphere
- 2.5.2. Describe the key differences between the VMware vCenter and vSphere offerings.
- 2.5.3. Describe the two VMware vCenter offerings and how they differ.
 - 2.5.3.1. VMware vCenter
 - 2.5.3.2. VMware vCenter with NSX-T
- 2.5.4. Describe the different Optional Services Categories.
 - 2.5.4.1. Security and Compliance
 - 2.5.4.2. Business Continuity and Migration
 - 2.5.4.3. Transformation and Modernization of VMware Applications
 - 2.5.4.4. Management Tools

REFERENCES:

<https://cloud.ibm.com/docs/services/vmwaresolutions?topic=vmware-solutions-getting-started>

2.6. Understand the benefits and options for IBM Cloud Foundry.**SUBTASKS:**

- 2.6.1. Describe the main advantage of the IBM Cloud Foundry offering.
 - 2.6.1.1. Managed environment
- 2.6.2. Describe the two main IBM Cloud Foundry offerings.
 - 2.6.2.1. Public Applications
 - 2.6.2.2. Enterprise Environment
- 2.6.3. Describe the key differences between the two Cloud Foundry offerings.
 - 2.6.3.1. Public Applications is a multi-tenant environment
 - 2.6.3.2. Enterprise environment is an isolated single tenant (dedicated) environment

REFERENCES:

<https://cloud.ibm.com/cloudfoundry/overview>

Section 3 – Storage and Networking**3.1. Understand the benefits and options of IBM File Storage.****SUBTASK(S):**

- 3.1.1. Distinguish features and functionality provided by IBM File Storage.
- 3.1.2. Distinguish integration possibilities of IBM File Storage.

- 3.1.2.1. Evaluate and reconcile between various product offerings to construct an appropriate solution that will satisfy customer requirements
 - 3.1.2.2. Determine characteristics of IBM File Storage
- 3.1.3. Utilize accepted tools and methodologies to determine appropriate architecture.
 - 3.1.3.1. Remote access

REFERENCES:

<https://cloud.ibm.com/catalog/infrastructure/file-storage>
<https://www.ibm.com/de-de/cloud/file-storage>

3.2. Understand the benefits and options of IBM Block Storage.

SUBTASK(S):

- 3.2.1. Distinguish features and functionality provided by IBM Block Storage.
- 3.2.2. Distinguish integration possibilities of IBM Block Storage.
 - 3.2.2.1. Evaluate and reconcile between various product offerings to construct an appropriate solution that will satisfy customer requirements
 - 3.2.2.2. Determine characteristics of IBM Block Storage
- 3.2.3. Utilize accepted tools and methodologies to determine appropriate architecture.
 - 3.2.3.1. Remote access

REFERENCES:

<https://www.ibm.com/de-de/cloud/block-storage>
<https://cloud.ibm.com/catalog/infrastructure/block-storage>

3.3. Understand the benefits and options of IBM Cloud Object Storage.

SUBTASK(S):

- 3.3.1. Distinguish features and functionality provided by IBM Cloud Object Storage.
- 3.3.2. Distinguish integration possibilities of IBM Cloud Object Storage.
 - 3.3.2.1. Evaluate and reconcile between various product offerings to construct an appropriate solution that will satisfy customer requirements
 - 3.3.2.2. Determine characteristics of IBM Cloud Object Storage
- 3.3.3. Utilize accepted tools and methodologies to determine appropriate architecture.
 - 3.3.3.1. Remote access

REFERENCES:

<https://cloud.ibm.com/catalog/infrastructure/object-storage>
<https://www.ibm.com/de-de/cloud/object-storage>

3.4. Understand the benefits and options of IBM Backup, Recovery and Replication Solutions.

SUBTASK(S):

- 3.4.1. Distinguish features and functionality provided in IBM Cloud Environments.
- 3.4.2. Distinguish integration possibilities of IBM Backup, Recovery & Replication Solutions.
- 3.4.3. Utilize accepted tools and methodologies to determine appropriate architecture.
 - 3.4.3.1. Remote access

REFERENCES:

<https://www.ibm.com/cloud/backup>
<https://www.ibm.com/cloud/disaster-recovery>
<https://www.ibm.com/cloud/learn/backup-and-restore>
<https://cloud.ibm.com/docs/infrastructure/Backup?topic=Backup-getting-started>
<https://cloud.ibm.com/docs/services/vmware-solutions?topic=vmware-solutions-addingzertodr>
https://cloud.ibm.com/docs/services/vmware-solutions?topic=vmware-solutions-veeam_considerations

3.5. Understand the benefits and options of IBM Cloud Networking.

SUBTASK(S):

- 3.5.1. Understand network components.
 - 3.5.1.1. load balancers, firewalls, dns services, etc
- 3.5.2. Distinguish features and functionality provided by IBM.
- 3.5.3. Distinguish integration possibilities of IPSEC VPN Solutions.
- 3.5.4. Distinguish integration possibilities of Networking Options.
- 3.5.5. Articulate the value proposition of Loadbalancer solutions.
- 3.5.6. Utilize accepted tools and methodologies to determine appropriate architecture.
- 3.5.7. Understand how to integrate with on-premise resources from the Cloud.
- 3.5.8. Understand how to integrate from the Cloud to on-premise.
 - 3.5.8.1. CIS
 - 3.5.8.2. Direct Link
 - 3.5.8.3. Secure Gateway

REFERENCES:

<https://cloud.ibm.com/catalog/infrastructure/ibm-cloud-load-balancer>
<https://cloud.ibm.com/catalog/infrastructure/ipsec-vpn>
<https://www.ibm.com/cloud/secure-gateway>
<https://www.ibm.com/cloud/direct-link>

Section 4 – Services

4.1. Understand the different Application Integration options on IBM Cloud.

SUBTASK(S):

- 4.1.1. Distinguish functionality provided by API Connect and API Gateway.
 - 4.1.1.1. When/why would one use API Connect
 - 4.1.1.2. when/why would one use API Gateway

REFERENCES:

<https://cloud.ibm.com/apis/overview>
<https://cloud.ibm.com/docs/api-gateway?topic=api-gateway-getting-started>
<https://cloud.ibm.com/docs/services/apiconnect?topic=apiconnect-getting-started>

- 4.1.2. Distinguish functionality provided by App Connect, Event Streams and MQ.
 - 4.1.2.1. When/why would one use App Connect
 - 4.1.2.2. When/why would one use Event Streams
 - 4.1.2.3. When/why would one use MQ

REFERENCES:

<https://cloud.ibm.com/docs/services/AppConnect?topic=AppConnect-concepts#appconnect>
<https://cloud.ibm.com/docs/services/EventStreams?topic=eventstreams-about>
https://cloud.ibm.com/docs/services/mqcloud?topic=mqcloud-mqoc_new_to_mq
<https://cloud.ibm.com/catalog>

4.2. Explain how Internet of Things (IoT) can be leveraged within IBM Cloud.

SUBTASK(S):

- 4.2.1. List and describe the features/capabilities provided by the Watson IoT Platform.
 - 4.2.1.1. Connect
 - 4.2.1.2. Information Management
 - 4.2.1.3. Analyze in real time
 - 4.2.1.4. Risk and Security Management

REFERENCES:

<https://cloud.ibm.com/catalog/services/internet-of-things-platform#about>
<https://www.ibm.com/support/knowledgecenter/SSQP8H/iot/overview/architecture.html>

- 4.2.2. Identify the general scenario/use case where the IoT Platform should be leveraged.

REFERENCES:

https://de.internetofthings.ibmcloud.com/static/assets/screenshots/how_it_works.png
<https://www.ibm.com/support/knowledgecenter/SSQP8H/iot/overview/architecture.html>

4.2.3. List and describe the features/capabilities provided by Mobile Foundation.

REFERENCES:

<https://cloud.ibm.com/catalog/services/mobile-foundation#about>

https://cloud.ibm.com/docs/services/mobilefoundation?topic=mobilefoundation-overview_mobilefoundation

4.2.4. Distinguish the features/capabilities of Push Notifications vs. Mobile Foundation.

4.2.4.1. When/why would one use Push Notifications

4.2.4.2. When/why would one use Mobile Foundation

REFERENCES:

<https://cloud.ibm.com/catalog/services/push-notifications#about>

https://cloud.ibm.com/docs/services/mobilefoundation?topic=mobilefoundation-overview_mobilefoundation

4.2.5. Describe the use of AppID for mobile development.

REFERENCES:

<https://cloud.ibm.com/catalog/services/app-id#about>

4.3. Describe the value of Blockchain.

SUBTASK(S):

4.3.1. List/Identify Blockchain functionality.

REFERENCES:

<https://www.ibm.com/blockchain/what-is-blockchain>

4.3.2. Describe the purpose for smart contracts.

REFERENCES:

<https://www.ibm.com/blockchain/what-is-blockchain>

4.3.3. Explain the business value of blockchain.

REFERENCES:

<https://www.ibm.com/thought-leadership/institute-business-value/report/blockchainbizmodel>

4.4. Explain how DevOps is implemented in IBM Cloud and OpenShift.

SUBTASK(S):

4.4.1. Define DevOps.

REFERENCES:

<https://www.ibm.com/cloud/learn/devops-a-complete-guide>

4.4.2. Describe the business value of DevOps.

REFERENCES:

<https://www.ibm.com/cloud/learn/devops-a-complete-guide>

<https://www.ibm.com/cloud/devops>

4.4.3. Distinguish continuous integration, continuous delivery and continuous deployment.

REFERENCES:

<https://www.ibm.com/cloud/learn/devops-a-complete-guide>

4.4.4. Summarize the capabilities of a toolchain.

REFERENCES:

<https://www.ibm.com/cloud/garage/toolchains/>

4.4.5. Demonstrate how to apply different toolchains to support the DevOps needs of different application scenarios.

4.4.5.1. Canary testing

4.4.5.2. Different Kubernetes applications

4.4.5.3. Kubernetes vs. Cloud Foundry

4.4.5.4. IBM Cloud Continuous Delivery

REFERENCES:

https://cloud.ibm.com/devops/create?bss_account=290f8f438c15a26b2b129419c1720013&ims_account=1583375

https://www.ibm.com/garage/method/practices/deliver/tool_continuous_delivery/

4.4.6. Identify/List stages supported by Red Hat OpenShift DevOps.

REFERENCES:

<https://www.redhat.com/cms/managed-files/cl-faster-innovation-with-devops-and-openshift-datasheet-f8713kc-201708-en.pdf>

4.5. Understand the benefits and capabilities of adding AI into applications.

SUBTASK(S):

4.5.1. Define Data Science and Machine Learning.

REFERENCES:

<https://www.ibm.com/analytics/data-science>

4.5.2. Explain the value of Data Science to businesses.

REFERENCES:

<https://www.ibm.com/analytics/data-science>

4.5.3. Define Machine Learning.

REFERENCES:

<https://www.ibm.com/analytics/machine-learning>

4.5.4. Describe the functionality provided by different types of Machine Learning/Knowledge Management services

4.5.4.1. Watson Studio, Discovery, Knowledge Catalog, Knowledge Studio, Machine Learning, Natural Language Classifier, Watson OpenScale

REFERENCES:

<https://dataplatform.cloud.ibm.com/docs/content/wsj/getting-started/overview-ws.html>

<https://cloud.ibm.com/docs/services/discovery?topic=discovery-about>

<https://dataplatform.cloud.ibm.com/docs/content/wsj/catalog/overview-wkc.html>

<https://www.ibm.com/cloud/watson-knowledge-studio>

<https://dataplatform.cloud.ibm.com/docs/content/wsj/analyze-data/ml-overview.html?linkInPage=true>

<https://cloud.ibm.com/docs/services/natural-language-classifier?topic=natural-language-classifier-about>

<https://cloud.ibm.com/catalog/services/watson-openscale#about>

<https://cloud.ibm.com/docs/services/ai-openscale?topic=ai-openscale-gettingstarted>

(Overview and Use Case)

4.5.5. Choose speech, text, and/or language translation services to implement different business use cases.

REFERENCES:

<https://cloud.ibm.com/catalog/services/speech-to-text#about>

<https://cloud.ibm.com/catalog/services/text-to-speech#about>

<https://cloud.ibm.com/catalog/services/language-translator#about>

<https://cloud.ibm.com/docs/services/personality-insights?topic=personality-insights-about>

[https://personality-insights-](https://personality-insights-demo.ng.bluemix.net/?_ga=2.122549128.2076280670.1579137014-)

[demo.ng.bluemix.net/?_ga=2.122549128.2076280670.1579137014-](https://personality-insights-demo.ng.bluemix.net/?_ga=2.122549128.2076280670.1579137014-)

[564644246.1579137014](https://cloud.ibm.com/docs/services/tone-analyzer?topic=tone-analyzer-about)

<https://cloud.ibm.com/docs/services/tone-analyzer?topic=tone-analyzer-about>

[https://tone-analyzer-](https://tone-analyzer-demo.ng.bluemix.net/?_ga=2.52886443.2076280670.1579137014-564644246.1579137014&cm_mc_uid=82399224567615635626501&cm_mc_sid_5020000=33177821579137005417)

[demo.ng.bluemix.net/?_ga=2.52886443.2076280670.1579137014-](https://tone-analyzer-demo.ng.bluemix.net/?_ga=2.52886443.2076280670.1579137014-564644246.1579137014&cm_mc_uid=82399224567615635626501&cm_mc_sid_5020000=33177821579137005417)

[564644246.1579137014&cm_mc_uid=82399224567615635626501&cm_mc_sid_5020](https://tone-analyzer-demo.ng.bluemix.net/?_ga=2.52886443.2076280670.1579137014-564644246.1579137014&cm_mc_uid=82399224567615635626501&cm_mc_sid_5020000=33177821579137005417)

[0000=33177821579137005417](https://tone-analyzer-demo.ng.bluemix.net/?_ga=2.52886443.2076280670.1579137014-564644246.1579137014&cm_mc_uid=82399224567615635626501&cm_mc_sid_5020000=33177821579137005417)

4.6. Understand the different analytics options.

SUBTASK(S):

4.6.1. List the functionality provided by different types of analytics technologies.

4.6.1.1. Spark, Hadoop, Streaming

REFERENCES:

<https://www.scnsoft.com/blog/spark-vs-hadoop-mapreduce>

<https://www.ibm.com/cloud/spark>

<https://developer.ibm.com/recipes/tutorials/big-data-and-hadoop-on-ibm-cloud/>

<https://www.ibm.com/cloud/streaming-analytics>

4.6.2. Distinguish the functionality provided by different analytic services available on IBM Cloud.

4.6.2.1. Analytics Engine

REFERENCES:

<https://cloud.ibm.com/docs/services/AnalyticsEngine?topic=AnalyticsEngine-IAE-overview>

4.6.2.2. Db2 Warehouse

REFERENCES:

https://www.ibm.com/support/knowledgecenter/SS6NHC/com.ibm.swg.im.dashdb.analytics.doc/doc/analyzing_data.html

<https://cloud.ibm.com/docs/services/Db2whc?topic=Db2whc-about> (See machine learning)

4.6.2.3. IBM Cognos Dashboard Embedded

REFERENCES:

https://cloud.ibm.com/docs/services/cognos-dashboard-embedded?topic=cognos-dashboard-embedded-overview_of_cde

4.6.2.4. Streaming Analytics

REFERENCES:

<https://cloud.ibm.com/docs/services/StreamingAnalytics?topic=StreamingAnalytics-about>

4.7. Understand the different Database options.

SUBTASK(S):

- 4.7.1. Describe the functionality provided by different types of database technologies.
 - 4.7.1.1. Relational/SQL, document stores, key-value, graph, data warehouses, etc.

REFERENCES:

<https://www.ibm.com/cloud/blog/new-builders/brief-overview-database-landscape>
<https://www.ibm.com/cloud/learn/relational-databases>
<https://www.ibm.com/cloud/learn/nosql-databases>

- 4.7.2. Distinguish the functionality provided by different databases available on IBM Cloud.

- 4.7.2.1. When/why use the different database options
 - 4.7.2.1.1. Document
 - 4.7.2.1.2. Relational
 - 4.7.2.1.3. Key-Value

REFERENCES:

<https://www.ibm.com/cloud/databases?focusArea=WCP%20-%20Pooled%20CSM&contactmodule>
<https://event.on24.com/wcc/r/2023396/E9A98A8C4F90C97F34994802457F05C5?partnerref=cloudnews>
<https://on24static.akamaized.net/event/20/23/39/6/rt/1/documents/resourceList1561573217537/choosingdbwebinarv51561645403881.pdf>
(*Getting Started* or *About* pages for the individual databases)

- 4.7.3. Articulate entry point use cases for migrating Customer DBs to IBM Cloud

REFERENCES:

<https://cloud.ibm.com/catalog?category=databases>

4.8. Understand the benefits and options of IBM Hyper Protect Crypto services.

SUBTASK(S):

- 4.8.1. Explain IBM HyperProtect Crypto Services.
- 4.8.2. Understand how customers can bring their own keys for a managed encryption solution.

REFERENCES:

<https://cloud.ibm.com/docs/services/hs-crypto?topic=hs-crypto-get-started>

4.9. Understand the benefits and options of IBM Hyper Protect DB as a Service (DBaaS).

SUBTASK(S):

- 4.9.1. Explain IBM HyperProtect DBaaS.
- 4.9.2. Identify which databases are supported.

REFERENCES:

<https://cloud.ibm.com/catalog/services/hyper-protect-dbaas-for-mongodb#about>
<https://cloud.ibm.com/catalog/services/hyper-protect-dbaas-for-postgresql#about>

Section 5 – Software (IBM Cloud Paks)

5.1. Understand the benefits and capabilities of IBM Cloud Paks.

SUBTASK(S):

- 5.1.1. Describe the role of Cloud Paks to accelerate journey to Cloud.
 - 5.1.1.1. What's preventing 80% of the workload from moving to the Cloud?
 - 5.1.1.2. Journey to Cloud (Migrate, Modernize, Build and Manage)
 - 5.1.1.3. Partnership between IBM and Red Hat on the Cloud Paks
- 5.1.2. Identify the value of using IBM Cloud Paks.
 - 5.1.2.1. Complete, yet simple
 - 5.1.2.2. IBM Certified
 - 5.1.2.3. Run anywhere
- 5.1.3. Identify the deployment options of the Cloud Paks.
- 5.1.4. Identify the Container Platform that Cloud Paks are based on.
- 5.1.5. Describe IBM Cloud Pak System and its value proposition.
- 5.1.6. Identify the value of running IBM Cloud Paks on IBM Cloud. .

REFERENCES:

https://www.ibm.com/it-it/events/think-summit/milano/assets/pdf/IBM_Cloud_a_misura_del_tuo_cloud.pdf
<https://www.ibm.com/blogs/cloud-computing/2019/06/10/what-are-ibm-cloud-paks/>
<https://www.ibm.com/downloads/cas/JZKGV2BO>
<https://www.youtube.com/watch?v=78wvDIK5Hys>
<https://www.ibm.com/cloud/paks/>
<https://www.ibm.com/cloud/cloudpaksystem>
<https://www.ibm.com/products/cloud-pak-for-data/deployment-model-options>

5.2. Understand the benefits and capabilities of the IBM Cloud Pak Solutions.

SUBTASKS:

- 5.2.1. Understand the benefits of IBM Cloud Pak for Apps.

REFERENCES:

<https://www.ibm.com/cloud/cloud-pak-for-applications>

5.2.2. Understand the benefits of IBM Cloud Pak for Integration.

REFERENCES:

<https://www.ibm.com/cloud/cloud-pak-for-integration>

5.2.3. Understand the benefits of IBM Cloud Pak for Automation.

REFERENCES:

<https://www.ibm.com/cloud/cloud-pak-for-automation>

5.2.4. Understand the benefits of IBM Cloud Pak for Multicloud Management.

REFERENCES:

<https://www.ibm.com/cloud/cloud-pak-for-management>

5.2.5. Understand the benefits of IBM Cloud Pak for Data.

REFERENCES:

<https://www.ibm.com/products/cloud-pak-for-data>

5.2.6. Understand the benefits of IBM Cloud Pak for Security.

REFERENCES:

<https://www.ibm.com/products/cloud-pak-for-security>

Section 6 – Cloud Native Design

6.1. Describe the different elements of the IBM Cloud Garage Method.

SUBTASKS:

6.1.1. Give a high-level overview of IBM Cloud Garage Method.

6.1.2. Know about the various practices in IBM Cloud Garage Method.

6.1.3. Know about how to arrange a Garage Visit.

REFERENCES:

<https://www.ibm.com/garage/method/>

6.2. Describe the benefits of Cloud Native design.

SUBTASKS:

6.2.1. Explain what is meant by Cloud Native

6.2.2. Articulate the benefits of Cloud Native Design

6.2.3. Know about Microservices principles

REFERENCES:

<https://www.ibm.com/cloud/learn/cloud-native>

Next Steps

1. Take the assessment test for this exam.
2. If you pass the assessment exam, visit pearsonvue.com/ibm to schedule your testing sessions.
3. If you failed the assessment exam, review how you did by section. Focus attention on the sections where you need improvement. Keep in mind that you can take the assessment exam as many times as you would like (\$30 per exam); however, you will still receive the same questions only in a different order.