



IBM Cloud Professional Certification Program

Study Guide Series

Exam C1000-100: IBM Cloud Solution Architect v4

Table of Contents

Purpose of Exam Objectives.....	3
High-level Exam Objectives.....	4
Detailed Exam Objectives.....	5
Section 1 – IBM Cloud Compute Options.....	5
Section 2 – Design solutions based on Application Platform capabilities	10
Section 3 – Data Analytics, Management, and Reporting Capabilities	13
Section 4 – IBM Cloud Storage Options.....	15
Section 5 – IBM Cloud Networking Options.....	17
Section 6 – IBM Cloud Security Options	19
Section 7 – Describe DevOps Capabilities	20
Section 8 – IBM Cloud Resiliency Options	22
Section 9 – Service Management Principles	23
Section 10 – IBM Cloud Paks	25
Next Steps.....	26

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 successfully perform this job role. This creates the foundation for the objectives and measurement criteria, which form the basis of the certification exam.

The Cloud Software Certification item writers use these objectives to develop the exam questions.

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 reviewing the objectives in this guide and completing your own research, take the assessment exam. While the assessment exam does not indicate which specific questions were answered incorrectly, it does indicate overall performance by section. This is a good indicator of preparedness or if further preparation is warranted.

High-level Exam Objectives

Section 1 - IBM Cloud Compute Options	
1.1	Describe and differentiate the various compute options available on IBM Cloud
1.2	Describe IBM Cloud for VMware Solutions offerings and their key options
1.3	Understand IBM Cloud Container Platforms
1.4	Describe the capabilities of the IBM Container Registry Service
1.5	Describe the capabilities of IBM Cloud Functions (Serverless)
1.6	Describe the capabilities of IBM Virtual Private Cloud
Section 2 - Design solutions based on Application Platform capabilities	
2.1	Identify the core architecture of IoT solutions using IBM Internet of Things Platform
2.2	Utilize Watson AI services to add AI capabilities to IBM Cloud solutions
2.3	Design solutions using IBM Blockchain platform
2.4	Architect Cloud and Hybrid Cloud solutions using IBM Cloud Integrations
Section 3 - Data Analytics, Management, and Reporting Capabilities	
3.1	Understand the options and capabilities of analytics services on IBM Cloud
3.2	Understand the options and capabilities of Database services on IBM Cloud
Section 4 - IBM Cloud Storage Options	
4.1	Describe the options and capabilities of storage on IBM Cloud
Section 5 - IBM Cloud Networking Options	
5.1	Describe Hybrid Cloud Networking Capabilities
5.2	Apply appropriate Cloud Native Connectivity
5.3	Utilize Cloud Internet Services appropriately
Section 6 - IBM Cloud Security Options	
6.1	Explain IBM Cloud Security Options
Section 7 - Describe DevOps Capabilities	
7.1	Explain DevOps Build and Test
7.2	Explain Delivery Pipelines
Section 8 - IBM Cloud Resiliency Options	
8.1	Design for Disaster Recovery
8.2	Design for Resiliency
Section 9 - Service Management Principles	
9.1	Demonstrate knowledge of monitoring and alerting capabilities
9.2	Demonstrate knowledge of logging capabilities
Section 10 - IBM Cloud Paks	
10.1	Describe the Cloud Paks available on IBM Cloud

Note: This is the high-level list of objectives; click for more details on how to perform each task.

Detailed Exam Objectives

Section 1 – IBM Cloud Compute Options

1.1. Describe and differentiate the various compute options available on IBM Cloud

SUBTASKS

1.1.1. Describe the IBM Cloud Classic Infrastructure Offerings for Compute

1.1.1.1. Bare Metal Servers

1.1.1.2. Configurations

1.1.1.3. Supported Operating Systems

1.1.2. Describe Virtual Servers

1.1.2.1. Tenancy (public, dedicated, transient, reserved)

1.1.2.2. Configurations

1.1.3. Describe Hyper Protect Virtual Servers

1.1.3.1. Regions

1.1.3.2. Plans

1.1.3.2.1. Free

1.1.3.2.2. Entry

1.1.3.2.3. Small

1.1.3.2.4. Medium

1.1.3.3. SSH Public Key (client provided; IBM secured)

1.1.4. Describe Power Virtual Servers

1.1.4.1. Configuration

REFERENCES

<https://cloud.ibm.com/docs/bare-metal?topic=bare-metal-about-bm>

<https://cloud.ibm.com/docs/vpc?topic=vpc-about-advanced-virtual-servers>

<https://cloud.ibm.com/docs/power-iaas?topic=power-iaas-about-virtual-server>

<https://cloud.ibm.com/docs/vsi?topic=virtual-servers-about-vs-transient>

<https://cloud.ibm.com/docs/vsi?topic=virtual-servers-about-reserved-virtual-servers>

<https://cloud.ibm.com/docs/vsi?topic=virtual-servers-dedicated-virtual-servers>

<https://cloud.ibm.com/docs/vsi?topic=virtual-servers-about-public-virtual-servers>

<https://cloud.ibm.com/docs/vsi?topic=virtual-servers-about-public-virtual-servers>

1.2. Describe IBM Cloud for VMware Solutions offerings and their key options

SUBTASKS

1.2.1. Distinguish between VMware Solutions Shared and Dedicated

1.2.2. Describe VMware vSphere

1.2.2.1. CPU/Memory

1.2.2.2. Data Center

1.2.2.3. Licensing

1.2.2.3.1. VMware vCenter Server

1.2.2.3.2. VMware NSX

1.2.2.3.3. VMware vSAN

1.2.2.3.4. VMware Site Recovery Manager

1.2.2.3.5. VMware vRealize Automation Enterprise

1.2.2.3.6. VMware vRealize Operation Enterprise

1.2.2.3.7. VMware vRealize Log Insights

1.2.2.4. Bare Metal Server

1.2.2.4.1. Data Center

1.2.2.4.2. CPU Generation

1.2.2.4.3. Skylake

1.2.2.4.4. Cascade Lake

1.2.2.4.5. SAP-Certified

1.2.2.4.6. Broadwell

1.2.2.5. CPU Model

1.2.2.6. Network Interface – Public/Private/Both

1.2.2.7. Services

1.2.2.7.1. Veeam Availability Suite

1.2.2.7.2. Veeam Cloud Connect Replication

1.2.3. Describe VMware vCenter

1.2.3.1. Single Zone/Multi-Zone Stretched Cluster

1.2.3.2. vSphere Version

1.2.3.3. VMware Network Solution

1.2.3.3.1. NSX-V/NSX-T

1.2.3.4. Licensing (Buy New/Bring Your Own License)

1.2.3.4.1. vCenter Server License

1.2.3.4.1.1. vSphere License – Enterprise Plus

1.2.3.4.1.2. NSX License

1.2.3.5. Bare Metal Server

1.2.3.5.1. Data Center Location

1.2.3.5.2. CPU Generation

1.2.3.5.2.1. Skylake

1.2.3.5.2.2. Cascade Lake

1.2.3.5.2.3. SAP-Certified

1.2.3.5.2.4. Broadwell

1.2.3.5.3. CPU Model (Cores/Memory)

- 1.2.3.6. Storage
 - 1.2.3.6.1. vSAN
 - 1.2.3.6.2. NFS
 - 1.2.3.6.2.1. Number of shares (size and performance)
- 1.2.3.7. Network Interface (Public/Private/Both)
- 1.2.3.8. DNS Configuration
- 1.2.3.9. Services
 - 1.2.3.9.1. Business Continuity and Migration
 - 1.2.3.9.2. Security and Compliance
 - 1.2.3.9.3. Transformation and Modernization of VMware Applications
 - 1.2.3.9.3.1. Red Hat OpenShift 4.x
 - 1.2.3.9.4. Management Tools

REFERENCES

- <https://cloud.ibm.com/docs/vmwaresolutions?topic=vmware-solutions-getting-started>
- https://cloud.ibm.com/docs/services/vmwaresolutions?topic=vmware-solutions-hcx_considerations
- https://cloud.ibm.com/docs/services/vmwaresolutions?topic=vmware-solutions-shared_overview
- https://cloud.ibm.com/docs/services/vmwaresolutions?topic=vmware-solutions-shared_planning
- https://cloud.ibm.com/docs/services/vmwaresolutions?topic=vmware-solutions-vc_vcenterserveroverview
- https://cloud.ibm.com/docs/services/vmwaresolutions?topic=vmware-solutions-vs_vsphereclusteroverview
- https://cloud.ibm.com/docs/services/vmwaresolutions?topic=vmware-solutions-under_the_hood
- https://cloud.ibm.com/docs/services/vmwaresolutions?topic=vmware-solutions-shared_veeam
- https://cloud.ibm.com/docs/services/vmwaresolutions?topic=vmware-solutions-shared_veeam

1.3. Understand IBM Cloud Container Platforms

SUBTASKS

- 1.3.1. Describe the deployment configuration for IBM Kubernetes Service (IKS)
 - 1.3.1.1. Worker nodes only. Master nodes are hidden
 - 1.3.1.2. Multi-zone availability for worker nodes
 - 1.3.1.3. VPC deployment
- 1.3.2. Describe the CLIs supported for IBM Kubernetes service
 - 1.3.2.1. ibmcloud cs/ks cli
 - 1.3.2.2. kubectl cli
 - 1.3.2.3. helm cli
 - 1.3.2.4. calicoctl cli
- 1.3.3. Describe worker node restrictions
 - 1.3.3.1. No remote access such as ssh or telnet to nodes
- 1.3.4. Describe the capabilities of the Helm Catalog
- 1.3.5. Describe the deployment configuration for IBM Red Hat OpenShift (ROKS)
 - 1.3.5.1. Worker Nodes only. Master nodes are hidden
 - 1.3.5.2. Multizone availability for worker nodes

- 1.3.6. Describe the purpose and capabilities of worker node groups
- 1.3.7. Describe the CLIs supported for IBM Red Hat OpenShift (ROKS)
 - 1.3.7.1. Ibmcloud cli
 - 1.3.7.2. oc cli
 - 1.3.7.3. kubectl cli
 - 1.3.7.4. helm cli
- 1.3.8. Describe worker node restrictions
 - 1.3.8.1. No remote access such as ssh or telnet to nodes

REFERENCES

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

1.4. Describe the capabilities of the IBM Container Registry Service

SUBTASKS

- 1.4.1. Access the CRS through the ibmcloud cli
 - 1.4.1.1. Ibmapikey access
- 1.4.2. Pull, tag and push images to the CRS
- 1.4.3. Create namespaces to segregate images

REFERENCES

<https://cloud.ibm.com/docs/Registry?topic=registry-getting-started>
https://cloud.ibm.com/docs/Registry?topic=registry-registry_overview#registry_plan_billing
<https://cloud.ibm.com/docs/Registry?topic=registry-ha-dr>

1.5. Describe the capabilities of IBM Cloud Functions (Serverless)

SUBTASKS

- 1.5.1. Describe FaaS
- 1.5.2. Describe Cloud Functions CLI
- 1.5.3. Describe Namespaces
- 1.5.4. Describe Access Policies
- 1.5.5. Describe Annotations
- 1.5.6. Describe Supported Runtimes
- 1.5.7. Describe Multizone Support

REFERENCES

<https://cloud.ibm.com/docs/openwhisk?topic=cloud-functions-getting-started>
<https://www.ibm.com/cloud/functions>
<https://www.ibm.com/cloud/learn/faas>
<https://cloud.ibm.com/docs/openwhisk?topic=cloud-functions-about>
https://cloud.ibm.com/docs/openwhisk?topic=cloud-functions-use_cases

1.6. Describe the capabilities of IBM Virtual Private Cloud

SUBTASKS

- 1.6.1. Describe compute options for VPC
- 1.6.2. Describe storage options for VPC
 - 1.6.2.1. Block storage options
- 1.6.3. Describe network Options for VPC
 - 1.6.3.1. Subnets
 - 1.6.3.2. Gateways
 - 1.6.3.3. VPN access
 - 1.6.3.4. Load Balancers
 - 1.6.3.5. IP Ranges
 - 1.6.3.6. Advanced Routing
- 1.6.4. Describe Security Groups and Access Control Lists

REFERENCES

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

<https://cloud.ibm.com/docs/vpc?topic=vpc-about-networking-for-vpc>

Section 2 – Design solutions based on Application Platform capabilities

2.1. Identify the core architecture of IoT solutions using IBM Internet of Things Platform

SUBTASKS

2.1.1. Apply Mobile and IoT reference architecture in IBM Cloud solutions

REFERENCES

<https://www.ibm.com/cloud/architecture/architectures/mobileArchitecture/reference-architecture>

<https://www.ibm.com/cloud/architecture/architectures/iotArchitecture/reference-architecture>

2.1.2. Describe the key features and functionalities of the services provided by Watson IoT platform

REFERENCES

<https://www.ibm.com/support/knowledgecenter/SSQP8H/iot/overview/architecture.html>

2.1.3. Demonstrate knowledge of Watson IoT platform architecture

REFERENCES

<https://www.ibm.com/support/knowledgecenter/SSQP8H/iot/overview/architecture.html>

2.1.4. Illustrate the features of Mobile Foundation for designing backend solution for Mobile Applications

REFERENCES

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

2.1.5. Articulate the use of IBM Cloud Application Starter Kits to design applications with a proven architecture

REFERENCES

<https://cloud.ibm.com/docs/apps/tutorials?topic=creating-apps-patterns>

<https://cloud.ibm.com/docs/apps?topic=creating-apps-starter-kits>

<https://quickstart.internetofthings.ibmcloud.com>

2.2. Utilize Watson AI services to add AI capabilities to IBM Cloud solutions

SUBTASKS

2.2.1. Apply Data and AI reference architecture in IBM Cloud solutions

REFERENCES

<https://www.ibm.com/cloud/architecture/architectures/dataAIArchitecture/reference-architecture>

2.2.2. Describe the capabilities and use case scenarios of Watson AI services

2.2.2.1. Watson Assistant

2.2.2.2. Language Translator

2.2.2.3. Speech to Text

2.2.2.4. Text to Speech

2.2.2.5. Tone Analyzer

REFERENCES

Redbooks – Chapters 2 and 3.2

<https://www.redbooks.ibm.com/Redbooks.nsf/RedpieceAbstracts/sg248419.html?Open>

2.2.3. Explain the architecture of integration between Watson Assistant and the other Watson services

REFERENCES

<https://cloud.ibm.com/docs/services/assistant?topic=assistant-index>

2.3. Design solutions using IBM Blockchain platform

SUBTASKS

2.3.1. Apply Blockchain reference architecture in IBM Cloud solutions

REFERENCES

<https://www.ibm.com/cloud/architecture/architectures/blockchainArchitecture/reference-architecture>

2.3.2. Identify the different use cases of using IBM Blockchain Platform

REFERENCES

<https://www.ibm.com/blockchain/use-cases/>

2.3.3. Decide on which offering to use for IBM Blockchain Platform

2.3.3.1. IBM Blockchain Platform for Mutlicloud

2.3.3.2. IBM Blockchain Platform for IBM Cloud

REFERENCES

<https://cloud.ibm.com/docs/blockchain?topic=blockchain-get-started-ibp>

<https://cloud.ibm.com/docs/blockchain?topic=blockchain-console-icp-about>

<https://cloud.ibm.com/docs/blockchain?topic=blockchain-ibp-console-overview>

2.3.4. Explain the different components and structure of IBM Blockchain Platform

REFERENCES

<https://cloud.ibm.com/docs/blockchain?topic=blockchain-blockchain-component-overview>

2.3.5. Design a highly available Blockchain solution

REFERENCES

<https://cloud.ibm.com/docs/blockchain?topic=blockchain-ibp-console-ha>

<https://cloud.ibm.com/docs/blockchain?topic=blockchain-blockchain-component-overview>

<https://cloud.ibm.com/docs/blockchain?topic=blockchain-ibp-hsm-gemalto>

<https://cloud.ibm.com/docs/blockchain?topic=blockchain-ibp-security>

<https://www.ibm.com/blockchain>

2.4. Architect Cloud and Hybrid Cloud solutions using IBM Cloud Integrations

SUBTASKS

2.4.1. Apply modern integration reference architecture in IBM Cloud solutions

REFERENCES

<https://www.ibm.com/cloud/architecture/architectures/modern-integration/reference-architecture>

2.4.2. Apply Event-driven reference architecture in IBM Cloud solutions

REFERENCES

<https://www.ibm.com/cloud/architecture/architectures/eventDrivenArchitecture/reference-architecture>

2.4.3. Describe when to use different API integration and management capabilities in IBM Cloud

2.4.3.1. API Connect

2.4.3.2. API Gateway

REFERENCES

https://cloud.ibm.com/docs/api-gateway?topic=api-gateway-what-is_apigw

https://cloud.ibm.com/docs/services/apiconnect?topic=apiconnect-about_apic_overview

2.4.4. List the features of IBM App Connect and MQ in integrations and messaging

REFERENCES

<https://cloud.ibm.com/docs/services/AppConnect?topic=AppConnect-concepts#appconnect>

https://cloud.ibm.com/docs/services/mqcloud?topic=mqcloud-mqoc_new_to_mq

2.4.5. Explain the features of IBM Event Streams in Event-driven architecture

REFERENCES

<https://cloud.ibm.com/docs/EventStreams?topic=eventstreams-about>

https://cloud.ibm.com/docs/EventStreams?topic=eventstreams-apache_kafka

2.4.6. List the use cases of Lift CLI to migrate data

REFERENCES

<https://www.lift-cli.cloud.ibm.com/#docs> (Use Cases section only)

2.4.7. Define the use of Information Server for Data Integration and Governance

REFERENCES

https://cloud.ibm.com/docs/services/ISOnCloud?topic=ISOnCloud-iisoc_getting_started

<https://cloud.ibm.com/docs/services/AppConnect?topic=AppConnect-concepts>

https://cloud.ibm.com/docs/services/mqcloud?topic=mqcloud-mqoc_connect_onprem

Section 3 – Data Analytics, Management, and Reporting Capabilities

3.1. Understand the options and capabilities of analytics services on IBM Cloud

SUBTASKS

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

3.1.1.1. 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>

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

3.1.2.1. Analytics Engine

REFERENCES

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

3.1.2.2. 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)

3.1.2.3. Streaming Analytics

REFERENCES

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

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

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

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

<https://cloud.ibm.com/catalog/services/sql-query>

<https://cloud.ibm.com/docs/services/sql-query?topic=sql-query-notebooks>

<https://cloud.ibm.com/docs/services/sql-query?topic=sql-query-datalayout>

https://cloud.ibm.com/docs/services/Db2whc?topic=Db2whc-connect_options

3.2. Understand the options and capabilities of Database services on IBM Cloud

SUBTASKS

3.2.1. Describe the functionality provided by different types of database technologies

3.2.1.1. 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>

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

3.2.2.1. When/why use the different database options

3.2.2.1.1. Document

3.2.2.1.2. Relational

3.2.2.1.3. 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>

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

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>

<https://www.ibm.com/cloud/learn/postgresql>

Section 4 – IBM Cloud Storage Options

4.1. Describe the options and capabilities of storage on IBM Cloud

SUBTASKS

4.1.1. Describe the capabilities and options of Block Storage

- 4.1.1.1. Size
- 4.1.1.2. Assignment to a compute resource
- 4.1.1.3. Replication and Disaster Recovery
- 4.1.1.4. Securing Data

REFERENCES

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

4.1.2. Describe the capabilities and options of File Storage (NFS)

- 4.1.2.1. Provisioning
 - 4.1.2.1.1. Size
 - 4.1.2.1.2. Performance (IOPS)
 - 4.1.2.1.3. Endurance (IOPS)
 - 4.1.2.1.4. Provisioning for VMware resource
- 4.1.2.2. Configuration
 - 4.1.2.2.1. Backup Options with cPanel and Plesk
 - 4.1.2.2.2. Enabling Jumbo Frames
- 4.1.2.3. Managing
 - 4.1.2.3.1. File Storage
 - 4.1.2.3.2. Capacity
 - 4.1.2.3.3. IOPS
 - 4.1.2.3.4. Snapshots
- 4.1.2.4. Replication and Disaster Recovery
- 4.1.2.5. Securing Data

REFERENCES

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

4.1.3. Describe the capabilities and options of Cloud Object Storage

- 4.1.3.1. Storage Classes
 - 4.1.3.1.1. Smart Tier
 - 4.1.3.1.2. Standard
 - 4.1.3.1.3. Vault
 - 4.1.3.1.4. Cold Vault
 - 4.1.3.1.5. Flex
- 4.1.3.2. Regions
 - 4.1.3.2.1. Secret Key Access
 - 4.1.3.2.2. Aspera High Speed Data Transfer
 - 4.1.3.2.3. Immutable Object Storage

RESOURCES

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

<https://cloud.ibm.com/docs/cloud-object-storage?topic=cloud-object-storage-encryption>

<https://cloud.ibm.com/docs/services/cloud-object-storage?topic=cloud-object-storage-large-objects>

Section 5 – IBM Cloud Networking Options

5.1. Describe Hybrid Cloud Networking Capabilities

SUBTASKS

- 5.1.1. Identify requirements of the solution (security, throughput, resiliency, cost)
- 5.1.2. Describe Secure Connectivity options to and from IBM Cloud
 - 5.1.2.1. DirectLink offerings
 - 5.1.2.2. VPN options
- 5.1.3. Secure Gateway

REFERENCES

- <https://cloud.ibm.com/docs/dl?topic=dl-get-started-with-ibm-cloud-dl>
- <https://cloud.ibm.com/docs/iaas-vpn?topic=iaas-vpn-getting-started>
- <https://cloud.ibm.com/docs/services/SecureGateway?topic=securegateway-about-sg>
- <https://cloud.ibm.com/docs/gateway-appliance?topic=gateway-appliance-getting-started>
- <https://cloud.ibm.com/docs/direct-link?topic=direct-link-get-started-with-ibm-cloud-direct-link>
- <https://www.ibm.com/cloud/architecture/architectures/public-cloud/reference-architecture>
- <https://cloud.ibm.com/docs/services/SecureGateway?topic=securegateway-sg-faq&locale=en>
- <https://cloud.ibm.com/docs/dl?topic=dl-known-limitations>
- <https://www.ibm.com/cloud/learn/content-delivery-networks>
- <https://cloud.ibm.com/docs/iaas-vpn?topic=iaas-vpn-vpn-ssl-faq>
- <https://cloud.ibm.com/docs/loadbalancer-service?topic=loadbalancer-service-about-ibm-cloud-load-balancer>
- <https://cloud.ibm.com/docs/services/SecureGateway?topic=securegateway-getting-started-with-sg>
- <https://cloud.ibm.com/docs/citrix-netscaler-vpx?topic=citrix-netscaler-vpx-about-citrix-netscaler-vpx>
- <https://cloud.ibm.com/docs/hardware-firewall-dedicated?topic=fortigate-10g-exploring-firewalls>
- <https://cloud.ibm.com/docs/loadbalancer-service?topic=loadbalancer-service-explore>
- <https://cloud.ibm.com/docs/vpc?topic=vpc-about-networking-for-vpc>
- <https://cloud.ibm.com/docs/vpc?topic=vpc-security-in-your-vpc>

5.2. Apply appropriate Cloud Native Connectivity

SUBTASKS

- 5.2.1. Explain how the IBM Cloud Private Network in your application design
- 5.2.2. Explain cloud native application network requirements

REFERENCES

- <https://cloud.ibm.com/docs/cloud-native?topic=cloud-native-platform>

5.3. Utilize Cloud Internet Services appropriately

SUBTASKS

- 5.3.1. List different features available within Cloud Internet Services
 - 5.3.1.1. Global load balancing
 - 5.3.1.2. WAF
 - 5.3.1.3. Caching/CDN
 - 5.3.1.4. DDoS protection
 - 5.3.1.5. Authoritative DNS
- 5.3.2. Identify appropriate usage scenarios for each service
- 5.3.3. Map a business need to each service

REFERENCES

- <https://cloud.ibm.com/docs/cis?topic=cis-getting-started>
- <https://www.ibm.com/cloud/learn/load-balancing>
- <https://www.ibm.com/cloud/architecture/architectures/securityArchitecture/security-for-application>
- <https://www.ibm.com/cloud/learn/content-delivery-networks>
- <https://cloud.ibm.com/docs/cis?topic=cis-waf-q-and-a>
- https://cloud.ibm.com/catalog/infrastructure/CITRIX_NETSCALER_VPX
- <https://cloud.ibm.com/catalog/services/internet-services#about>
- <https://cloud.ibm.com/docs/cis?topic=cis-how-cis-keeps-your-work-reliable>
- <https://cloud.ibm.com/docs/cis?topic=cis-how-cis-optimizes-performance>
- <https://cloud.ibm.com/docs/cis?topic=cis-how-cis-keeps-your-work-secure>
- <https://cloud.ibm.com/docs/cis?topic=cis-caching-concepts>
- <https://cloud.ibm.com/docs/cis?topic=cis-distributed-denial-of-service-ddos-attack-concepts>

Section 6 – IBM Cloud Security Options

6.1. Explain IBM Cloud Security Options

SUBTASKS

6.1.1. Identify and describe IBM Secure Platform offerings

REFERENCES

<https://www.ibm.com/cloud/architecture/architectures/securityArchitecture>

6.1.2. Identify and describe the IBM Data Security Offerings

REFERENCES

<https://www.ibm.com/cloud/architecture/architectures/securityArchitecture/security-for-data>

6.1.3. Identify and describe IBM Application Security offerings

REFERENCES

<https://www.ibm.com/cloud/architecture/architectures/securityArchitecture/implement-secure-devops>

6.1.4. Identify and describe IBM Security Visibility offerings

REFERENCES

<https://cloud.ibm.com/security-advisor#/gettingstarted>

<https://cloud.ibm.com/docs/services/appid?topic=appid-key-concepts>

<https://cloud.ibm.com/docs/services/appid?topic=appid-enterprise>

https://cloud.ibm.com/docs/services/va?topic=va-va_index#app_configurations

<https://cloud.ibm.com/docs/services/security-advisor?topic=security-advisor-network#network-suspicious-inbound>

<https://cloud.ibm.com/docs/overview?topic=overview-shared-responsibilities>

<https://cloud.ibm.com/catalog/services/certificate-manager#about>

<https://cloud.ibm.com/docs/certificate-manager?topic=certificate-manager-managing-certificates-from-the-dashboard#certificate-formats>

<https://cloud.ibm.com/docs/certificate-manager?topic=certificate-manager-available-integrations>

<https://cloud.ibm.com/docs/infrastructure/ssl-certificates?topic=ssl-certificates-getting-started-tutorial>

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

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

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

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

<https://cloud.ibm.com/docs/vmwaresolutions?topic=vmware-solutions-caveonix-arch>

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

<https://developer.ibm.com/recipes/tutorials/building-pci-compliant-application-infrastructure-on-ibm-cloud/>

<https://cloud.ibm.com/catalog/infrastructure/hardware-security-module>

Section 7 – Describe DevOps Capabilities

7.1. Explain DevOps Build and Test

SUBTASKS

7.1.1. Define DevOps and describe the business value

REFERENCES

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

<https://www.ibm.com/cloud/architecture/architectures/devOpsArchitecture/reference-architecture>

7.1.2. Distinguish Continuous Integration, Continuous Delivery and Continuous Deployment

REFERENCES

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

7.1.3. Demonstrate an understanding of different application testing scenarios and how

7.1.3.1. Blue/Green deployments

7.1.3.2. Canary testing

7.1.3.3. A/B testing

REFERENCES

<http://testenvironmentmanagement.com/deployment-styles-bluegreen-canary-and-ab/>

<https://developer.ibm.com/technologies/containers/blogs/extending-kubernetes-for-a-new-developer-experience/>

<http://testenvironmentmanagement.com/deployment-styles-bluegreen-canary-and-ab/>

[https://www.ibm.com/cloud/architecture/content/course/explore-](https://www.ibm.com/cloud/architecture/content/course/explore-csmo/practice_circuit_breaker_pattern_course)

[csmo/practice circuit breaker pattern course](https://www.ibm.com/cloud/architecture/content/course/explore-csmo/practice_circuit_breaker_pattern_course)

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

<https://insights.sei.cmu.edu/devops/2015/01/continuous-integration-in-devops-1.html>

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

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

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

<https://cloud.ibm.com/catalog/services/continuous-delivery#about>

7.2. Explain Delivery Pipelines

SUBTASKS

7.2.1. Summarize the capabilities of a toolchain

REFERENCES

https://cloud.ibm.com/docs/ContinuousDelivery?topic=ContinuousDelivery-toolchains_getting_started

7.2.2. Describe the capabilities of different build tools, including Security Advisor

REFERENCES

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

https://cloud.ibm.com/docs/ContinuousDelivery?topic=ContinuousDelivery-toolchains_getting_started

https://cloud.ibm.com/docs/ContinuousDelivery?topic=ContinuousDelivery-cd_about

<https://cloud.ibm.com/docs/ContinuousDelivery?topic=ContinuousDelivery-tekton-pipelines>

<https://cloud.ibm.com/docs/ContinuousDelivery?topic=ContinuousDelivery-viewing-data-overview>

<https://raygun.com/blog/best-devops-tools/>

Section 8 – IBM Cloud Resiliency Options

8.1. Design for Disaster Recovery

SUBTASKS

8.1.1. Describe Disaster Recovery concepts

REFERENCES

<https://www.ibm.com/cloud/learn/disaster-recovery-introduction>

<https://www.ibm.com/cloud/architecture/architectures/resilience>

8.1.2. Select appropriate measures to ensure recoverability of the workload

REFERENCES

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

https://cloud.ibm.com/docs/vmwaresolutions?topic=vmware-solutions-veeam_considerations

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

https://cloud.ibm.com/docs/vmwaresolutions?topic=vmware-solutions-spp_considerations

8.2. Design for Resiliency

SUBTASKS

8.2.1. Describe resiliency models

8.2.2. Determine best resiliency method based on the workload

8.2.3. Make use of appropriate services on IBM Cloud to ensure required availability is met

8.2.3.1. Availability zones

8.2.4. Cross region

REFERENCES

<https://www.ibm.com/cloud/architecture/architectures/resilience>

<https://www.ibm.com/garage/method/practices/manage/hadr-on-premises-app/>

<https://cloud.ibm.com/docs/services/databases-for-postgresql?topic=databases-for-postgresql-high-availability>

https://cloud.ibm.com/docs/openshift?topic=openshift-cs_ov

<https://cloud.ibm.com/docs/cloud-object-storage?topic=cloud-object-storage-about-cloud-object-storage>

<https://cloud.ibm.com/docs/dl?topic=dl-more-about-ecmp>

https://cloud.ibm.com/docs/vmwaresolutions?topic=vmware-solutions-hcx_considerations

https://cloud.ibm.com/docs/vmwaresolutions?topic=vmware-solutions-mcv_overview

<https://www.ibm.com/garage/method/practices/manage/hadr-on-premises-app/>

Section 9 – Service Management Principles

9.1. Demonstrate knowledge of monitoring and alerting capabilities

SUBTASKS

- 9.1.1. Describe where Monitoring fits into the Service Management Reference Architecture
- 9.1.2. Describe Monitoring solutions available on IBM Cloud
- 9.1.3. Describe the capabilities of IBM Cloud Monitoring with Sysdig
- 9.1.4. Architect a solution involving forwarding monitoring data to a centralized Service
- 9.1.5. Describe alerts based on log events
- 9.1.6. Describe alerts based on monitoring data

REFERENCES

- <https://www.ibm.com/cloud/architecture/architectures/serviceManagementArchitecture/referenceArchitecture>
- https://cloud.ibm.com/docs/services/cloud-monitoring?topic=cloud-monitoring-monitoring_ov
- https://www.ibm.com/garage/method/practices/manage/tool_bluemix_availability_monitoring
- <https://www.ibm.com/cloud/sysdig>
- <https://cloud.ibm.com/docs/Monitoring-with-Sysdig?topic=Sysdig-getting-started>
- <https://docs.sysdig.com/en/alerts.html>
- https://cloud.ibm.com/docs/services/cloud-monitoring?topic=cloud-monitoring-monitoring_ov
- https://cloud.ibm.com/docs/services/cloud-monitoring/send-metrics?topic=cloud-monitoring-monitoring_ov&locale=en#plan
- https://cloud.ibm.com/docs/services/cloud-monitoring/send-metrics?topic=cloud-monitoring-analyze_metrics_ov&locale=en
- https://cloud.ibm.com/docs/services/cloud-monitoring/send-metrics?topic=cloud-monitoring-security_ov&locale=en
- https://cloud.ibm.com/docs/services/cloud-monitoring/send-metrics?topic=cloud-monitoring-monitoring_mh_ov&locale=en

9.2. Demonstrate knowledge of logging capabilities

SUBTASKS

- 9.2.1. Describe where Log Monitoring fits into the Service Management Reference Architecture
- 9.2.2. Describe the capabilities of IBM Log Analysis with Log DNA
- 9.2.3. Architect a solution involving forwarding log data to a centralized logging infrastructure

REFERENCES

<https://www.ibm.com/cloud/architecture/architectures/serviceManagementArchitecture/referenceArchitecture>

<https://cloud.ibm.com/docs/services/Log-Analysis-with-LogDNA?topic=LogDNA-getting-started#getting-started>

<https://cloud.ibm.com/docs/Log-Analysis-with-LogDNA?topic=LogDNA-getting-started>

<https://cloud.ibm.com/docs/Log-Analysis-with-LogDNA?topic=LogDNA-data>

https://cloud.ibm.com/docs/Log-Analysis-with-LogDNA?topic=LogDNA-data#data_encryption

Section 10 – IBM Cloud Paks

10.1. Describe the Cloud Paks available on IBM Cloud

SUBTASKS

10.1.1. Describe the capabilities of the IBM Cloud Paks

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/it-it/events/think-summit/milano/assets/pdf/IBM%20Cloud%20a%20misura%20del%20tuo%20cloud.pdf)
<https://www.ibm.com/blogs/cloud-computing/2019/06/10/what-are-ibm-cloud-paks>
<https://www.ibm.com/cloud/blog/codewind-appsody-tektion-means-easier-cloud-native-development>
<https://www.ibm.com/garage/method/practices/learn/ibm-transformation-advisor>
<https://www.ibm.com/cloud/cloud-pak-for-integration/data-integration>
<https://www.ibm.com/cloud/cloud-pak-for-integration/real-time-alerts>
<https://www.ibm.com/cloud/cloud-pak-for-integration/fast-file-transfer>
<https://www.ibm.com/cloud/cloud-pak-for-automation>
<https://www.ibm.com/demos/collection/Cloud-Pak-for-Multicloud-Management>
<https://www.ibm.com/products/cloud-pak-for-data>

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.