# Model Curriculum

**QP Name: Cloud Architect**

**QP Code: SSC/Q8302**

**QP Version: 2.0**

**NSQF Level: 7**

**Model Curriculum Version:  1.0**

IT-ITeS Sector Skill Council || IT-ITeS Sector Skill Council, NASSCOM, Plot No - 7, 8, 9 & 10, 3rd Floor, Sector 126, Noida
Uttar Pradesh – 201303

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# Training Parameters

| | |
|---|---|
| Sector | IT-ITeS |
| Sub-Sector | Future Skills |
| Occupation | Cloud Computing |
| Country | India |
| NSQF Level | 7 |
| Aligned to NCO/ISCO/ISIC Code | NCO-2015/NIL |
| Minimum Educational Qualification and Experience | Graduate (Engineering/Technology/Statistics/Mathematics/Computer Science/Physical Sciences) with 3 years of relevant full-time work experience in Cloud Computing. The full-time experience would include work, internship and apprenticeship undertaken post completion of regular graduation. |
| Pre-Requisite License or Training | NA |
| Minimum Job Entry Age | 23 years |
| Last Reviewed On | April 21, 2021 |
| Next Review Date | April 21, 2026 |
| NSQC Approval Date | TBD |
| QP Version | 2.0 |
| Model Curriculum Creation Date | April 08, 2021 |
| Model Curriculum Valid Up to Date | April 08, 2026 |
| Model Curriculum Version | 1.0 |
| Minimum Duration of the Course | 511 hours |
| Maximum Duration of the Course | 511 hours |

# Program Overview

This section summarizes the end objectives of the program along with its duration.

## Training Outcomes

At the end of the program, the learner should have acquired the listed knowledge and skills:

**Compulsory:**

- Describe cloud computing and its basic concepts.
- Describe the concepts of business strategy.
- Discuss the fundamentals of solution architecture.
- Define business requirements of the organization by identifying IT assets and understanding how they work together.
- Define enterprise guidelines for operating on cloud platforms in compliance with security, regulatory and compliance standards.
- Define technical requirements using business requirements and specifications obtained from the client.
- Design and maintain a cloud-native and cloud-first solution architecture and analyze the impact of architectural changes.
- Secure solution architecture and ensure timely recovery in case of system disasters by implementing disaster recovery and security risk mitigation measures.
- Design and develop security architecture for cloud solutions.
- Implement appropriate measures to ensure scalability, resilience, and fault-tolerance of cloud solution architecture.
- Develop KPIs (Key Performance Indices) and processes to monitor and manage cloud services using monitoring tools and scripts
- Evaluate project plans in terms of SLAs (Service Level Agreements), project costs, project schedules and associated risks.
- Support development of project proposals and cost models for cloud projects.
- Evaluate and select cloud vendors and third-party cloud service providers through effective assessment frameworks and criteria.
- Apply the principles of persuasive communication for negotiations and discussions.
- Apply different approaches to build rapport and collaborate with stakeholders.
- Identify best practices to maintain an inclusive and environmentally sustainable workplace.

## Compulsory Modules

The table lists the modules and their duration corresponding to the Compulsory NOS of the QP.

| NOS and Module Details | Theory Duration | Practical Duration | On-the-Job Training Duration (Mandatory) | On-the-Job Training Duration (Recommended) | Total Duration |
|---|---|---|---|---|---|
| *Module 1 (Bridge Module): Basics of cloud computing and regulatory standards* | 10:00 | 04:00 | 00:00 | 00:00 | 14:00 |
| *Module 2 (Bridge Module): Principles of Strategy* | 04:00 | 08:00 | 00:00 | 00:00 | 12:00 |

| | | | | | |
|---|---|---|---|---|---|
| *Module 3 (Bridge Module): Basics of Architecture* | 03:00 | 01:00 | 00:00 | 00:00 | 04:00 |
| **SSC/N8305 – Define enterprise cloud guidelines and implement regulatory compliances**<br>**NOS Version No. 2**<br>**NSQF Level 7** | **25:00** | **40:00** | **00:00** | **00:00** | **65:00** |
| Module 4: Business requirement analysis | 10:00 | 15:00 | 00:00 | 00:00 | 25:00 |
| Module 5: Enterprise guidelines | 15:00 | 25:00 | 00:00 | 00:00 | 40:00 |
| **SSC/N8306 – Translate business-level use cases into technical requirements and specifications**<br>**NOS Version No. 2**<br>**NSQF Level 7** | **10:00** | **15:00** | **00:00** | **00:00** | **25:00** |
| Module 6: Technical requirements | 10:00 | 15:00 | 00:00 | 00:00 | 25:00 |
| **SSC/N8307 – Analyze, design, and maintain cloud architecture that meets business requirements**<br>**NOS Version No. 2**<br>**NSQF Level 7** | **35:00** | **75:00** | **00:00** | **00:00** | **110:00** |
| Module 7: Cloud architecture design | 20:00 | 40:00 | 00:00 | 00:00 | 60:00 |
| Module 8: Security risk mitigation | 15:00 | 35:00 | 00:00 | 00:00 | 50:00 |
| **SSC/N8308 – Design and maintain strong security architecture**<br>**NOS Version No. 2**<br>**NSQF Level 7** | **20:00** | **40:00** | **00:00** | **00:00** | **60:00** |
| Module 9: Security Architecture | 20:00 | 40:00 | 00:00 | 00:00 | 60:00 |
| **SSC/N8309 – Ensure cloud platforms and services are scalable, resilient, and fault-tolerant**<br>**NOS Version No. 2**<br>**NSQF Level 7** | **15:00** | **35:00** | **00:00** | **00:00** | **50:00** |
| Module 10: Scalability, Resilience and Fault-Tolerance | 15:00 | 35:00 | 00:00 | 00:00 | 50:00 |
| **SSC/N8310 – Define parameters and tools to monitor and manage cloud services**<br>**NOS Version No. 2**<br>**NSQF Level 7** | **15:00** | **33:00** | **00:00** | **00:00** | **48:00** |
| Module 11: Cloud monitoring | 15:00 | 33:00 | 00:00 | 00:00 | 48:00 |
| **SSC/N8311 – Validate project plans, costs, and resources required for** | **10:00** | **15:00** | **00:00** | **00:00** | **25:00** |

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|---|---|---|---|---|---|
| **implementing cloud solutions**<br>**NOS Version No. 2**<br>**NSQF Level 7** | | | | | |
| Module 12: Validation of project plan | 10:00 | 15:00 | 00:00 | 00:00 | 25:00 |
| **SSC/N8312 – Assist in creating proposals and cost models for implementing cloud solutions**<br>**NOS Version No. 2**<br>**NSQF Level 7** | **10:00** | **15:00** | **00:00** | **00:00** | **25:00** |
| Module 13: Cost models and customer proposals | 10:00 | 15:00 | 00:00 | 00:00 | 25:00 |
| **SSC/N8304 – Assess and screen cloud vendors and third-party service providers**<br>**NOS Version No. 2**<br>**NSQF Level 7** | **10:00** | **15:00** | **00:00** | **00:00** | **25:00** |
| Module 14: Vendor assessment | 10:00 | 15:00 | 00:00 | 00:00 | 25:00 |
| **SSC/N9010 – Convince others to take appropriate action in different situations**<br>**NOS Version No. 2**<br>**NSQF Level 6** | **04:00** | **08:00** | **00:00** | **00:00** | **12:00** |
| Module 15: Stakeholder Management | 04:00 | 08:00 | 00:00 | 00:00 | 12:00 |
| **SSC/N9011 – Manage team performance to achieve project goals**<br>**NOS Version No. 2**<br>**NSQF Level 8** | **04:00** | **08:00** | **00:00** | **00:00** | **12:00** |
| Module 16: Project Management | 04:00 | 08:00 | 00:00 | 00:00 | 12:00 |
| **SSC/N9012 - Manage and collaborate with stakeholders for project success**<br>**NOS Version No. 2**<br>**NSQF Level 6** | **04:00** | **08:00** | **00:00** | **00:00** | **12:00** |
| Module 17: Relationship management at the workplace | 04:00 | 08:00 | 00:00 | 00:00 | 12:00 |
| **SSC/N9014 Maintain an inclusive, environmentally sustainable workplace**<br>**NOS Version No. 1**<br>**NSQF Level 5** | **04:00** | **08:00** | **00:00** | **00:00** | **12:00** |
| Module 18: Inclusive and environmentally sustainable workplaces | 04:00 | 08:00 | 00:00 | 00:00 | 12:00 |
| **Total Duration** | **183:00** | **328:00** | **00:00** | **00:00** | **511:00** |

# Module Details

## Module 1: Basics of cloud computing and regulatory standards
### *Bridge Module*

**Terminal Outcomes:**

- Explain cloud computing and its basic concepts.
- Describe various use cases of cloud computing.
- Describe the regulations, standards and compliance mechanisms associated with cloud computing.

| Duration: *10:00* | Duration: *04:00* |
|---|---|
| **Theory – Key Learning Outcomes** | **Practical – Key Learning Outcomes** |
| <ul><li>Explain the term "cloud computing" and provide an overview of its essential characteristics.</li><li>Discuss the evolution of cloud computing and the significance of cloud computing in the IT landscape.</li><li>Examine the key business drivers for the adoption of cloud technologies.</li><li>List the use cases and applications of cloud technologies across various industry verticals.</li><li>Explain the types of cloud deployment models (such as private cloud, public cloud, hybrid cloud, multi-cloud, etc.).</li><li>Explain the types of cloud service models (such as SaaS, PaaS, IaaS, etc.).</li><li>Explain basic concepts of cloud computing such as virtualization, scalability, data separation, cloud security controls, etc.</li><li>Outline popular cloud computing tools/platforms.</li><li>Study the regulations, standards, and laws governing the cloud computing environment in an organization.</li><li>Outline the general principles and basic concepts of data management standards across the globe.</li><li>Evaluate various compliance mechanisms associated with cloud computing.</li></ul> | <ul><li>Create a cloud account to work hands-on with various cloud services.</li><li>Demonstrate the differences among various cloud deployment models as well as cloud service models using appropriate platforms.</li></ul> |
| **Classroom Aids:** | |
| <ul><li>Whiteboard and Markers</li></ul> | |

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| • LCD Projector and Laptop for presentations |

**Tools, Equipment and Other Requirements**

Labs equipped with the following:

- PCs/Laptops
- Chart paper and sketch pens
- Internet with Wi-Fi (Min 2 Mbps dedicated)

Tools and Programming Languages:
- Cloud computing platforms such as Microsoft Azure, Amazon (AWS, Virtual private cloud, etc.), Rackspace, IBM (Public cloud, Bluemix, Relay, etc.)

# Module 2: Principles of Strategy
## *Bridge Module*

**Terminal Outcomes:**

- Describe the concepts of business strategy.
- Analyze the competitive environment of an organization and recommend a suitable firm positioning strategy.

| Duration: *04:00* | Duration: *08:00* |
|---|---|
| **Theory – Key Learning Outcomes** | **Practical – Key Learning Outcomes** |
| <ul><li>Describe the concepts of industry structure and competitive advantage.</li><li>Explain the methods to achieve a competitive advantage for an organization.</li><li>Describe the term 'positioning strategy' and discuss its key elements.</li><li>Study positioning strategies of sample organizations.</li><li>Explain popular frameworks/models in strategic analysis such as SWOT analysis, Five forces analysis, strategy maps, capabilities analysis, etc.</li><li>Discuss the principles of ethical decision-making and critical thinking.</li></ul> | <ul><li>Perform strategic analysis of sample organizations using popular models such as SWOT analysis, Five forces analysis, strategy maps, capabilities analysis, etc.</li><li>Apply the methods of competitive advantage to sample organizations.</li><li>Develop a positioning strategy for a sample organization.</li></ul> |

**Classroom Aids:**

- Whiteboard and Markers
- LCD Projector and Laptop for presentations

**Tools, Equipment and Other Requirements**

Labs equipped with the following:

- PCs/Laptops
- Chart paper and sketch pens
- Internet with Wi-Fi (Min 2 Mbps dedicated)

# Module 3: Basics of Architecture
## *Bridge Module*

**Terminal Outcomes:**

- Outline principles, methods, and approaches of enterprise architecture.
- Describe success factors for various enterprise architect approaches.

| Duration: *03:00* | Duration: *01:00* |
|---|---|
| **Theory – Key Learning Outcomes** | **Practical – Key Learning Outcomes** |
| <ul><li>Explain the principles, methods, and popular frameworks related to enterprise architecture.</li><li>Identify critical success factors for common enterprise architect approaches.</li><li>Recognize the standards and regulations applicable to enterprise architecture.</li><li>Evaluate alternative systems architectures based on organizational strategy and enterprise requirements.</li></ul> | <ul><li>Create and analyze enterprise architecture models using suitable tools.</li><li>Measure the KPIs defined for the sample architecture.</li></ul> |
| **Classroom Aids:** | |
| <ul><li>Whiteboard and Markers</li><li>LCD Projector and Laptop for presentations</li></ul> | |
| **Tools, Equipment and Other Requirements** | |
| Labs equipped with the following:<ul><li>PCs/Laptops</li><li>Chart paper and sketch pens</li><li>Internet with Wi-Fi (Min 2 Mbps dedicated)</li></ul>Tools and Programming Languages:<ul><li>Enterprise architecture tools such as Orbus iServer, Bizzdesign, Adoit, Hopex, etc.</li><li>Architecture design tools such as Cloudkraft, Gliffy, Microsoft Visio, SmartDraw, etc.</li></ul> | |

## Module 4: Business requirement analysis
### Mapped to SSC/N8305  (Version No. 2)

**Terminal Outcomes:**

- Analyze an organization's profile and business requirements for cloud implementation.
- Determine the business requirements of an organization for cloud implementation.
- Identify critical and essential IT assets in an organization.

| Duration: *10:00* | Duration: *15:00* |
|---|---|
| **Theory – Key Learning Outcomes** | **Practical – Key Learning Outcomes** |
| <ul><li>Outline the importance of identifying a client's profile in determining cloud adoption feasibility.</li><li>Discuss the fundamental elements of business requirements analysis.</li><li>Define business requirements and explain how to identify them.</li><li>Explain the key elements in a Business Requirements Document (BRD).</li><li>Describe the methodology to classify IT assets into critical and essential assets.</li><li>Outline the best practices and the importance of various stakeholders in business requirement analysis.</li></ul> | <ul><li>Conduct profile analysis of sample clients/organizations.</li><li>Demonstrate how to evaluate the processes across a sample organization's business units to define business requirements.</li><li>Develop a plan for gathering business requirements effectively.</li><li>Demonstrate how to prioritize business requirements based on factors such as time, budget, resources, etc.</li><li>Classify the IT and cloud assets of a sample organization into various levels such as critical, confidential, restricted, and public.</li></ul> |
| **Classroom Aids:** | |
| <ul><li>Whiteboard and Markers</li><li>LCD Projector and Laptop for presentations</li></ul> | |
| **Tools, Equipment and Other Requirements** | |
| Labs equipped with the following:<ul><li>PCs/Laptops</li><li>Chart paper and sketch pens</li><li>Internet with Wi-Fi (Min 2 Mbps dedicated)</li></ul>Tools and Programming Languages:<ul><li>Workflow management software such as Evernote, Jira, VersionOne, Workzone, Scrum Mate, Trello, etc.</li><li>Documentation tools such as Adobe, MS-Word, etc.</li></ul> | |

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## Module 5: Enterprise guidelines
### Mapped to SSC/N8305 (Version No. 2)

**Terminal Outcomes:**

- Develop guidelines, standards, and controls for various aspects of cloud implementation such as development, deployment, monitoring, security, etc.

| Duration: *15:00* | Duration: *25:00* |
|---|---|
| **Theory – Key Learning Outcomes** | **Practical – Key Learning Outcomes** |
| <ul><li>Describe the methodologies to map the flow of data and information across the deployed IT assets.</li><li>Discuss general principles and basic concepts of data management standards across the globe.</li><li>Describe common security threats associated with different types of cloud deployment models.</li><li>Outline the security standards applicable to secure data, applications, and other systems deployed in the cloud.</li><li>Explain various regulatory and compliance standards essential to secure cloud resources.</li><li>Examine best practices for coding and design that ensure more secure and maintainable applications and products.</li><li>Explain how resource allocation is done under different cloud deployment models.</li><li>Outline best practices and general organizational policies for operating on cloud systems.</li><li>Examine different types of controls commonly implemented to ensure compliance with organizational policies and standards.</li><li>Outline the best practices that contribute to open-source projects.</li></ul> | <ul><li>Develop standards for programming, cloud solution development, and cloud resource utilization in sample cloud projects.</li><li>Create access control and user management policies for sample cloud projects.</li><li>Apply controls in sample cloud systems to ensure compliance with prescribed regulatory and compliance standards.</li></ul> |
| **Classroom Aids:** | |
| <ul><li>Whiteboard and Markers</li><li>LCD Projector and Laptop for presentations</li></ul> | |
| **Tools, Equipment and Other Requirements** | |
| | |

Labs equipped with the following:

- PCs/Laptops
- Chart paper and sketch pens
- Internet with Wi-Fi (Min 2 Mbps dedicated)

Tools and Programming Languages:

- Workflow management software such as Evernote, Jira, VersionOne, Workzone, Scrum Mate, Trello, etc.
- Documentation tools such as Adobe, MS-Word, etc.

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## Module 6: Technical Requirements
### Mapped to SSC/N8306 (Version No. 2)

**Terminal Outcomes:**

- Analyze business requirements and prepare technical requirements.
- Create Technical Requirement Documents for cloud projects.

| Duration: 10:00 | Duration: 15:00 |
|---|---|
| **Theory – Key Learning Outcomes** | **Practical – Key Learning Outcomes** |
| <ul><li>Describe the methodologies to capture business requirements from relevant stakeholders.</li><li>Explain the difference between functional and non-functional requirements.</li><li>Discuss how stakeholders and corresponding dependencies are mapped.</li><li>Explain how to translate business requirements into technical requirements.</li><li>Explain how to identify interface and processing requirements.</li><li>Describe the methodologies to identify functional constraints associated with the project.</li><li>Describe the term 'Technical Requirement Document' and list the key sections of the document.</li><li>Study sample Technical Requirement Documents.</li></ul> | <ul><li>Demonstrate how to map business requirements to technical requirements using sample cloud projects.</li><li>Determine interface and processing requirements and functional constraints in sample cloud projects.</li><li>Develop Technical Requirement Documents for sample cloud projects.</li></ul> |
| **Classroom Aids:** ||
| <ul><li>Whiteboard and Markers</li><li>LCD Projector and Laptop for presentations</li></ul> ||
| **Tools, Equipment and Other Requirements** ||
| Labs equipped with the following:<ul><li>PCs/Laptops</li><li>Chart paper and sketch pens</li><li>Internet with Wi-Fi (Min 2 Mbps dedicated)</li></ul>Tools and Programming Languages:<ul><li>Workflow management software such as Evernote, Jira, VersionOne, Workzone, Scrum Mate, Trello, etc.</li><li>Documentation tools such as Adobe, MS-Word, etc.</li></ul> ||

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## Module 7: Cloud architecture design
### *Mapped to SSC/N8307 (Version No. 2)*

**Terminal Outcomes:**

- Perform impact analysis to evaluate various cloud architecture options.
- Design the architecture for cloud solutions as per business requirements.

| Duration: *20:00* | Duration: *40:00* |
|---|---|
| **Theory – Key Learning Outcomes** | **Practical – Key Learning Outcomes** |
| <ul><li>Describe popular schemas for deploying cloud resources.</li><li>Outline the procedure to create a cloud architecture.</li><li>Explain the term 'distributed solution architecture' and discuss its advantages</li><li>Explain the term 'scalable solution architecture' and discuss its advantages</li><li>Describe the term 'cloud-native architecture' and explain its pros and cons.</li><li>List popular cloud-native frameworks and tools available to develop a cloud-native architecture.</li><li>Describe impact analysis in the context of software development.</li><li>Study the methodologies to conduct impact analysis.</li><li>Explain how to create an impact analysis document and present it in an appropriate format.</li><li>Explain what a RAID (Risk, Assumption, Issues and Dependencies) catalogue is and discuss its significance.</li><li>Examine common security threats associated with different types of cloud architectures.</li><li>Describe different approaches to measure and optimize the performance of cloud solution architectures.</li><li>Discuss how to monitor changes to architecture designs.</li><li>Outline the best practices and the importance of various stakeholders associated with developing and documenting cloud architecture designs.</li></ul> | <ul><li>Perform impact analysis using sample cloud architectures.</li><li>Create an impact analysis document for a sample cloud architecture and present it in an appropriate format.</li><li>Create a RAID catalogue for a sample cloud architecture.</li><li>Use appropriate tools to measure and optimize the performance of sample cloud solution architectures.</li><li>Develop architecture for a sample cloud project by specifying application stack and network requirements as per business requirements.</li></ul> |
| **Classroom Aids:** | |
| <ul><li>Whiteboard and Markers</li></ul> | |

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|---|
| • LCD Projector and Laptop for presentations |

**Tools, Equipment and Other Requirements**

Labs equipped with the following:
- PCs/Laptops
- Chart paper and sketch pens
- Internet with Wi-Fi (Min 2 Mbps dedicated)

Tools and Programming Languages:
- Cloud computing platforms such as Microsoft Azure, Amazon (AWS, Virtual private cloud, etc.), Rackspace, IBM (Public cloud, Bluemix, Relay, etc.)
- Architecture design tools such as Cloudkraft, Gliffy, Microsoft Visio, SmartDraw, etc.
- BI tools such as Qlikview, Tableau, OBIEE, etc.
- Workflow management software such as Evernote, Jira, VersionOne, Workzone, Scrum Mate, Trello, etc.
- Documentation tools such as Adobe, MS-Word, etc.

# Module 8: Security risk mitigation
*Mapped to SSC/N8307 (Version No. 2)*

**Terminal Outcomes:**

- Evaluate the security capabilities of sample cloud service providers.
- Develop security controls, access management standards, and disaster recovery and risk mitigation plan to secure a cloud solution architecture.

| Duration: *15:00* | Duration: *35:00* |
|---|---|
| **Theory – Key Learning Outcomes** | **Practical – Key Learning Outcomes** |
| <ul><li>Describe the security and regulatory standards prescribed to create secure cloud architectures.</li><li>Examine the methodologies to evaluate security risks and threats in a cloud solution.</li><li>Describe ways to evaluate the security capabilities provided by cloud service providers.</li><li>Explain the concepts of Identity and Access Management (IAM).</li><li>Describe ways to control and regulate physical and logical access to IT assets.</li><li>Discuss how to manage the identification and authentication of people and devices.</li><li>Describe ways to prevent or mitigate access control attacks.</li><li>Explain what a disaster recovery plan is and discuss its significance in ensuring continued service availability.</li><li>Discuss the methodologies to acquire business continuity needs.</li><li>Explain how to create a disaster recovery plan to respond to unplanned incidents.</li><li>Describe recovery time objectives and recovery point objectives.</li></ul> | <ul><li>Demonstrate how to assess the security capabilities provided by sample cloud service providers.</li><li>Demonstrate how to control and regulate physical and logical access to IT assets and prevent access control attacks.</li><li>Demonstrate how to manage the identification and authentication of people and devices.</li><li>Demonstrate how to create, implement, and manage authorization mechanisms.</li><li>Create a disaster recovery plan to handle security incidents in sample cloud solutions.</li></ul> |
| **Classroom Aids:** ||
| <ul><li>Whiteboard and Markers</li><li>LCD Projector and Laptop for presentations</li></ul> ||
| **Tools, Equipment and Other Requirements** ||
| Labs equipped with the following:<ul><li>PCs/Laptops</li><li>Chart paper and sketch pens</li><li>Internet with Wi-Fi (Min 2 Mbps dedicated)</li></ul>Tools and Programming Languages: ||

- Cloud computing platforms such as Microsoft Azure, Amazon (AWS, Virtual private cloud, etc.), Rackspace, IBM (Public cloud, Bluemix, Relay, etc.)
- Architecture design tools such as Cloudkraft, Gliffy, Microsoft Visio, SmartDraw, etc.
- Identity and Access Management tools such as Microsoft Azure Active Directory, Oracle Identity Management, Auth0, SailPoint, etc.
- BI tools such as Qlikview, Tableau, OBIEE, etc.
- Documentation tools such as Adobe, MS-Word, etc.

## Module 9: Security architecture
### *Mapped to SSC/N8308 (Version No. 2)*

**Terminal Outcomes:**

- Design security architecture for cloud solutions incorporating suitable security safeguards, controls, and standards.
- Describe how to test the robustness of cloud security architecture.
- Explain how to upgrade the security architecture of cloud solutions.

| Duration: *20:00* | Duration: *40:00* |
|---|---|
| **Theory – Key Learning Outcomes** | **Practical – Key Learning Outcomes** |
| <ul><li>Describe the basic principles of cloud security design and architecture.</li><li>Discuss ways to capture security requirements for a cloud solution.</li><li>Study various security design frameworks related to cloud architecture.</li><li>List common types of security threats and risks associated with cloud deployments.</li><li>Explain the security safeguards and controls (e.g., routers, firewalls, etc.) that should be incorporated to secure networks.</li><li>Describe various security tests to verify that the cloud systems perform as per expectations.</li><li>Discuss methodologies for upgrading and maintaining the security architecture.</li><li>Study sample disaster recovery plans.</li><li>Outline best practices to implement security architecture.</li></ul> | <ul><li>Prepare a list of security requirements for sample cloud solutions.</li><li>Demonstrate how to design and implement security architecture across various layers of sample cloud solutions.</li><li>Implement a suitable security design framework in sample cloud solutions.</li><li>Demonstrate ways to prevent unauthorized access to systems and sub-systems deployed on the cloud.</li><li>Conduct security tests on sample cloud solutions to check their adherence to the prescribed security design and standards.</li><li>Demonstrate ways to identify, align and implement security monitoring models to detect security anomalies at an appropriate instance.</li><li>Demonstrate how to automate security services.</li><li>Demonstrate how to upgrade the security architecture of a sample cloud solution.</li><li>Create disaster recovery plans for sample solutions.</li></ul> |
| **Classroom Aids:** ||
| <ul><li>Whiteboard and Markers</li><li>LCD Projector and Laptop for presentations</li></ul> ||
| **Tools, Equipment and Other Requirements** ||
| Labs equipped with the following:<ul><li>PCs/Laptops</li><li>Chart paper and sketch pens</li><li>Internet with Wi-Fi (Min 2 Mbps dedicated)</li></ul>Tools and Programming Languages:<ul><li>Cloud computing platforms such as Microsoft Azure, Amazon (AWS, Virtual private cloud, etc.), Rackspace, IBM (Public cloud, Bluemix, Relay, etc.)</li></ul> ||

- Identity and Access Management tools such as Microsoft Azure Active Directory, Oracle Identity Management, Auth0, SailPoint, etc.
- API services such as REST and SOAP
- Documentation tools such as Adobe, MS-Word, etc.
- Programming languages such as HTML, JavaScript, JSON and XML

# Module 10: Scalability, resilience, and fault-tolerance
*Mapped to SSC/N8309 (Version No. 2)*

**Terminal Outcomes:**

- Measure the performance of cloud systems.
- Build scalable and resilient systems using auto-scaling and load balancing services.
- Test cloud systems' performance and upgrade them to meet the prescribed performance standards.

| Duration: *15:00* | Duration: *35:00* |
|---|---|
| **Theory – Key Learning Outcomes** | **Practical – Key Learning Outcomes** |
| <ul><li>Explain essential system parameters that are required to monitor system performance.</li><li>Discuss popular analytical tools to measure and analyze system performance.</li><li>Define Service-Oriented Architecture (SOA) and explain its advantages in the context of cloud computing.</li><li>Define cloud-native architecture and discuss common cloud-native frameworks.</li><li>Explain the concept of system scalability and reliability in the context of cloud computing.</li><li>Discuss ways to measure and reduce the latency of the systems deployed on the cloud.</li><li>Define containers and explain how to use them for scalability requirements</li><li>List popular container technologies and container orchestration services.</li><li>Explain how to plan for system updates and upgrades.</li><li>Discuss methodologies to measure the adaptability and portability of cloud architecture.</li><li>Describe popular disaster recovery and mitigation frameworks.</li><li>Outline the best practices, standards, and organizational guidelines related to interoperability, scalability, resilience, security, and upgradation of cloud systems.</li></ul> | <ul><li>Demonstrate how to measure the performance of sample cloud systems using suitable tools.</li><li>Demonstrate how to automatically scale and re-distribute load using auto-scaling and load balancing services.</li><li>Demonstrate how to create containers and orchestrate them using appropriate tools.</li><li>Demonstrate ways to prevent unauthorized access to systems and sub-systems deployed on the cloud.</li><li>Develop disaster recovery and mitigation plans.</li><li>Demonstrate how to test sample cloud systems for scalability, reliability, recovery, and latency performance using suitable tools.</li><li>Demonstrate how to upgrade cloud systems to meet performance requirements.</li></ul> |
| **Classroom Aids:** ||
| <ul><li>Whiteboard and Markers</li><li>LCD Projector and Laptop for presentations</li></ul> ||
| **Tools, Equipment and Other Requirements** ||
| Labs equipped with the following: ||

- PCs/Laptops
- Chart paper and sketch pens
- Internet with Wi-Fi (Min 2 Mbps dedicated)

Tools and Programming Languages:
- Cloud computing platforms such as Microsoft Azure, Amazon (AWS, Virtual private cloud, etc.), Rackspace, IBM (Public cloud, Bluemix, Relay, etc.)
- Configuration management tools such as Puppet, Chef, Ansible, CFEngine, JUJU, Bamboo, etc.
- Containers and cluster management tools such as Docker, Kubernetes, Microsoft containers, Solaris containers, Kubernetes, Apache Mesos, Docker Swarm, Docker Data Centre, etc.
- Identity and Access Management tools such as Microsoft Azure Active Directory, Oracle Identity Management, Auth0, SailPoint, etc.
- Cloud Monitoring Tools such as Cloudyn, Dell Boomi, Enstratius, Informatica, CloudHub, AppDynamics, Retrace, etc.
- Programming and scripting languages such as Java, Javascript, C++, Ruby, etc.

# Module 11: Cloud monitoring
*Mapped to SSC/N8310 (Version No. 2)*

**Terminal Outcomes:**

- Analyze utilization patterns of cloud resources and monitor the performance of cloud systems.
- Automate cloud monitoring processes using scripts.

| Duration: *15:00* | Duration: *33:00* |
|---|---|
| **Theory – Key Learning Outcomes** | **Practical – Key Learning Outcomes** |
| <ul><li>Describe the schemas for deploying cloud resources.</li><li>Explain how resource consumption is billed under different cloud delivery models.</li><li>List the components of the cloud which require monitoring (e.g., virtual machine monitoring, database monitoring, virtual network monitoring, storage monitoring, etc.)</li><li>Describe the methods and processes to monitor the performance of cloud applications and infrastructure.</li><li>Describe common parameters/KPIs available for monitoring cloud resources.</li><li>Explain how to create new KPIs to monitor the performance of cloud services.</li><li>Discuss methodologies to identify and use appropriate cloud monitoring tools.</li><li>List the threshold performance parameters for different components of the cloud for optimum performance.</li><li>Outline the best practices and importance of various stakeholders in monitoring cloud systems and applications.</li></ul> | <ul><li>Demonstrate how to monitor the performance of various components of cloud applications and infrastructure.</li><li>Develop KPIs for monitoring the performance of sample cloud services.</li><li>Demonstrate how to automate cloud monitoring using scripts.</li><li>Demonstrate how to generate performance reports of cloud resources.</li></ul> |

| **Classroom Aids:** |
|---|
| <ul><li>Whiteboard and Markers</li><li>LCD Projector and Laptop for presentations</li></ul> |
| **Tools, Equipment and Other Requirements** |
| Labs equipped with the following:<ul><li>PCs/Laptops</li><li>Chart paper and sketch pens</li><li>Internet with Wi-Fi (Min 2 Mbps dedicated)</li></ul><br>Tools and Programming Languages:<ul><li>Cloud computing platforms such as Microsoft Azure, Amazon (AWS, Virtual private cloud, etc.), Rackspace, IBM (Public cloud, Bluemix, Relay, etc.)</li></ul> |

- Cloud Monitoring Tools such as Cloudyn, Dell Boomi, Enstratius, Informatica, CloudHub, AppDynamics, Retrace, etc.
- Programming and scripting languages such as Java, Javascript, C++, Ruby, etc.

# Module 12: Validation of project plan
*Mapped to SSC/N8311 (Version No. 2)*

**Terminal Outcomes:**

- Evaluate project plans including SLAs, budget, resource allocation, and project schedule.
- Develop risk assessment strategy and conduct risk assessment for cloud projects.

| Duration: *10:00* | Duration: *15:00* |
|---|---|
| **Theory – Key Learning Outcomes** | **Practical – Key Learning Outcomes** |
| <ul><li>Explain the term 'project plan' and discuss its key components.</li><li>Discuss how to identify the resources and time required for a project.</li><li>Explain how to determine the following components for a cloud project:<ul><li>– project milestones and timelines</li><li>– various deliverables of the project</li><li>– budget</li></ul></li><li>Describe the methodology to conduct risk assessment of a project plan</li><li>Study sample risk management strategies and their key components.</li><li>Explain how Service Level Agreements (SLAs) are defined against different IT & business goals.</li><li>Outline the importance of various stakeholders in validating a project plan.</li></ul> | <ul><li>Analyze a project plan for a sample cloud implementation project and evaluate the following components:<ul><li>– project milestones and timelines</li><li>– various deliverables of the project</li><li>– budget</li><li>– SLAs</li></ul></li><li>Conduct risk assessment of sample project plans.</li><li>Develop a risk management strategy for sample project plans.</li></ul> |
| **Classroom Aids:** | |
| <ul><li>Whiteboard and Markers</li><li>LCD Projector and Laptop for presentations</li></ul> | |
| **Tools, Equipment and Other Requirements** | |
| Labs equipped with the following:<br><ul><li>PCs/Laptops</li><li>Chart paper and sketch pens</li><li>Internet with Wi-Fi (Min 2 Mbps dedicated)</li></ul><br>Tools and Programming Languages:<br><ul><li>BI tools such as Qlikview, Tableau, OBIEE, etc.</li><li>Documentation tools such as Adobe, MS-Word, etc.</li></ul> | |

## Module 13: Cost models and customer proposals
### *Mapped to SSC/N8312 (Version No. 2)*

**Terminal Outcomes:**

- Translate business requirements into technical specifications.
- Develop implementation plans, customer proposals, and resource consumption forecasts for cloud projects.

| Duration: *10:00* | Duration: *15:00* |
|---|---|
| **Theory – Key Learning Outcomes** | **Practical – Key Learning Outcomes** |
| <ul><li>Describe what functional and non-functional requirements are.</li><li>Explain how to translate functional and non-functional requirements into technical specifications.</li><li>Study various templates available to create a technical requirements document.</li><li>Define the term "project scope".</li><li>Recognize the tools and techniques used for defining the project scope.</li><li>Explain the components of a project plan (such as cost, schedule, quality, license requirements, etc.).</li><li>Explain how resource consumption is billed under different cloud delivery models.</li><li>Examine the consumption cycles and billing cycles defined by various cloud service providers.</li><li>Describe the parameters that influence the success of a cloud project.</li><li>Explain how to forecast the consumption of cloud resources.</li><li>Recognize the importance of various stakeholders, organizational policies, and best practices associated with developing project proposals and cost models.</li></ul> | <ul><li>Demonstrate the process of capturing business requirements using sample cases.</li><li>Develop technical specifications for sample functional and non-functional requirements.</li><li>Prepare project implementation plan and customer proposal for a sample cloud project.</li><li>Demonstrate the billing process for sample cloud delivery models and projects.</li><li>Demonstrate the methods to forecast the consumption of cloud resources.</li></ul> |
| **Classroom Aids:** ||
| <ul><li>Whiteboard and Markers</li><li>LCD Projector and Laptop for presentations</li></ul> ||
| **Tools, Equipment and Other Requirements** ||
| Labs equipped with the following:<ul><li>PCs/Laptops</li><li>Chart paper and sketch pens</li><li>Internet with Wi-Fi (Min 2 Mbps dedicated)</li></ul>Tools and Programming Languages:<ul><li>BI tools such as Qlikview, Tableau, OBIEE, etc.</li><li>Documentation tools such as Adobe, MS-Word, etc.</li></ul> ||

## Module 14: Vendor Assessment
### Mapped to SSC/N8304 (Version No. 2)

**Terminal Outcomes:**

- Describe the methods or frameworks to shortlist vendors.
- Define partnership model, analyze the risks involved and develop service contracts with cloud service providers.

| Duration: *10:00* | Duration: *15:00* |
|---|---|
| **Theory – Key Learning Outcomes** | **Practical – Key Learning Outcomes** |
| <ul><li>Discuss popular cloud service providers available in the market.</li><li>Explain the methods to create a suitable framework to evaluate a cloud service provider.</li><li>List the regulatory and compliance certificates desired in a cloud service provider.</li><li>Explain the terms 'long term dependency risk', security risk', and 'compliance risk' and how to manage them.</li><li>Examine the BCP (Business Continuity Plan) and contingency plan of sample cloud service providers.</li><li>Explain the different components of a partnership model.</li><li>Discuss the importance of various stakeholders in vendor assessment.</li><li>Outline the best practices and general organizational policies related to vendor assessment.</li></ul> | <ul><li>Demonstrate how to evaluate service providers in terms of services and security features for a sample cloud project.</li><li>Create a service contract with a sample cloud service provider.</li><li>Demonstrate how to analyze risks involved in partnering with a service provider.</li><li>Create a self-complimentary cloud eco-system with multiple vendors for a sample cloud project.</li></ul> |
| **Classroom Aids:** | |
| <ul><li>Whiteboard and Markers</li><li>LCD Projector and Laptop for presentations</li></ul> | |
| **Tools, Equipment and Other Requirements** | |
| Labs equipped with the following:<ul><li>PCs/Laptops</li><li>Chart paper and sketch pens</li><li>Internet with Wi-Fi (Min 2 Mbps dedicated)</li></ul>Tools and Programming Languages:<ul><li>BI tools such as Qlikview, Tableau, OBIEE, etc.</li><li>Documentation tools such as Adobe, MS-Word, etc.</li></ul> | |

## Module 15: Persuasive Communication
### Mapped to SSC/N9010 (Version No. 2)

**Terminal Outcomes:**

- Evaluate the principles of persuasive communication, credibility, and trust.
- Discuss methods to persuade groups of people to build consensus.

| Duration: 04:00 | Duration: 08:00 |
|---|---|
| Theory – Key Learning Outcomes | Practical – Key Learning Outcomes |
| <ul><li>Discuss the principles of persuasive communication, credibility, and trust.</li><li>Discuss the differences between persuasion and manipulation.</li><li>Discuss the importance of listening to people in order to persuade them.</li></ul> | <ul><li>Demonstrate the use of evidence to support arguments.</li><li>Frame goals by finding common ground with those to be persuaded.</li><li>Apply visual and verbal communication techniques to influence perspectives and change behaviours.</li></ul> |
| **Classroom Aids:** ||
| <ul><li>Whiteboard and markers</li><li>Chart paper and sketch pens</li><li>LCD Projector and Laptop for presentations</li></ul> ||
| **Tools, Equipment and Other Requirements :** ||
| Labs equipped with the following:<ul><li>PCs/Laptops</li><li>Internet with Wi-Fi (Min 2 Mbps Dedicated)</li></ul> ||

## Module 16: Project Management
### Mapped to SSC/N9011 (Version No. 2)

**Terminal Outcomes:**

- Describe approaches that aid successful project execution such as prioritizing project tasks, allocating team resources and training project teams

| Duration: *04:00* | Duration: *08:00* |
|---|---|
| **Theory – Key Learning Outcomes** | **Practical – Key Learning Outcomes** |
| <ul><li>Explain leadership fundamentals that aid successful project execution.</li><li>Describe general organizational support structures that aid successful project execution.</li><li>Discuss different management approaches to deal with project complexity.</li><li>Explain the process of defining the scope of a project and developing a project plan.</li><li>Discuss the importance of ensuring consistent and high quality of project deliverables.</li></ul> | <ul><li>Demonstrate the process of developing a project plan.</li><li>Apply the principles of team management and resource management.</li><li>Demonstrate the methods to train team members.</li></ul> |

**Classroom Aids:**

- Whiteboard and markers
- Chart paper and sketch pens
- LCD Projector and Laptop for presentations

**Tools, Equipment and Other Requirements:**

Labs equipped with the following:
- PCs/Laptops
- Internet with Wi-Fi (Min 2 Mbps Dedicated)

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## Module 17: Stakeholder Management
*Mapped to SSC/N9012 (Version No. 2)*

**Terminal Outcomes:**

- Apply different approaches to build rapport and collaborate with stakeholders.

| **Duration:** *04:00* | **Duration:** *08:00* |
|---|---|
| **Theory – Key Learning Outcomes** | **Practical – Key Learning Outcomes** |
| <ul><li>Describe the principles of stakeholder relationship management.</li><li>Explain ways to collaborate with various stakeholders and manage a wide range of situations.</li><li>Explain ways to improve one-on-one communication and build rapport with various stakeholders.</li><li>Explain conflict resolution techniques.</li><li>Describe the fundamentals of negotiations such as negotiating positions, BATNA (Best Alternative to a Negotiated Agreement) and integrative and distributive negotiations.</li></ul> | <ul><li>Apply the principles of stakeholder relationship management to collaborate with various stakeholders.</li><li>Demonstrate the ways to understand stakeholder needs and manage expectations effectively.</li><li>Apply effective persuasion and negotiation techniques to deal with challenging behaviours.</li><li>Apply strategies to gain stakeholder cooperation and support for project success.</li><li>Apply conflict resolution techniques to handle difficult situations.</li></ul> |
| **Classroom Aids:** | |
| <ul><li>Whiteboard and markers</li><li>Chart paper and sketch pens</li><li>LCD Projector and Laptop for presentations</li></ul> | |
| **Tools, Equipment and Other Requirements** | |
| Labs equipped with the following:<ul><li>PCs/Laptops</li><li>Internet with Wi-Fi (Min 2 Mbps Dedicated)</li></ul> | |

## Module 18: Inclusive, and Environmentally Sustainable Workplace
### Mapped to SSC/N9014 (Version No. 1)

**Terminal Outcomes:**

- Illustrate sustainable practices at workplace for energy efficiency and waste management.
- Apply different approaches to maintain gender equality and increase inclusiveness for PwD.

| Duration: 04:00 | Duration: 08:00 |
|---|---|
| **Theory – Key Learning Outcomes** | **Practical – Key Learning Outcomes** |
| <ul><li>Describe different approaches for resourceful energy utilisation and waste management.</li><li>Describe the importance of following the diversity policies.</li><li>Identify stereotypes and prejudices associated with differently abled people and its negative consequences.</li><li>Discuss the importance of promoting, sharing and implementing gender equality and PwD sensitivity guidelines at organization level.</li></ul> | <ul><li>Practice the segregation of recyclable, non-recyclable and hazardous waste generated.</li><li>Demonstrate different methods of energy resource optimization and conservation.</li><li>Demonstrate essential communication methods in line with gender inclusiveness and PwD sensitivity.</li></ul> |
| **Classroom Aids:** ||
| Whiteboard and markers<br>Chart paper and sketch pens<br>LCD Projector and Laptop for presentations ||
| **Tools, Equipment and Other Requirements** ||
| Labs equipped with the following:<br>PCs/Laptops<br>Internet with Wi-Fi (Min. 2 Mbps dedicated) ||

# Annexure

## Trainer Requirements

| Trainer Prerequisites | | | | | | |
|---|---|---|---|---|---|---|
| **Minimum Educational Qualification** | **Specialization** | **Relevant Industry Experience** | | **Training Experience** | | **Remarks** |
| | | *Years* | *Specialization* | *Years* | *Specialization* | |
| Graduate | Science/Computer Science/Electronics and Engineering /Information Technology | 5 years of full-time experience in cloud architect or related roles | The full-time experience would include work, internship and apprenticeship undertaken post completion of regular graduation | 1 year of full-time experience in cloud architect or related roles | | |

| Trainer Certification | |
|---|---|
| **Domain Certification** | **Platform Certification** |
| Certified for Job Role: "Cloud Architect" mapped to QP: "SSC/Q8302, V2.0". Minimum accepted score is 80% | Recommended that the trainer is certified for the Job role "Trainer" mapped to the Qualification Pack "MEP/Q2601, V1.0". Minimum accepted score is 80% aggregate |

## Assessor Requirements

| Assessor Prerequisites | | | | | | |
|---|---|---|---|---|---|---|
| Minimum Educational Qualification | Specialization | Relevant Industry Experience | | Training/Assessment Experience | | Remarks |
| | | *Years* | *Specialization* | *Years* | *Specialization* | |
| Graduate | Science/Computer Science/Electronics and Engineering /Information Technology | 5 years of full-time experience in cloud architect or related roles | The full-time experience would include work, internship and apprenticeship undertaken post completion of regular graduation | 1 year of full-time experience in cloud architect or related roles | | |

| Assessor Certification | |
|---|---|
| **Domain Certification** | **Platform Certification** |
| Certified for Job Role: "Cloud Architect" mapped to QP: "SSC/Q8302, V2.0". Minimum accepted score is 80% | Recommended that the assessor is certified for the Job role "Assessor" mapped to the Qualification Pack "MEP/Q2701, V1.0". Minimum accepted score is 80% aggregate |

## Assessment Strategy

This section includes the processes involved in identifying, gathering and interpreting information to evaluate the learner on the required competencies of the program.

**Assessment System Overview**

A uniform assessment of job candidates as per industry standards facilitates progress of the industry by filtering employable individuals while simultaneously providing candidates with an analysis of personal strengths and weaknesses.

**Assessment Criteria**

Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council (SSC). Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down the proportion of marks for Theory and Skills Practical for each PC.

The assessment for the theory part will be based on a knowledge bank of questions created by the SSC. Assessment will be conducted for all compulsory NOS, and where applicable, on the selected elective/option NOS/set of NOS.

| Guidelines for Assessment | | | |
|---|---|---|---|
| **Testing Environment** | **Tasks and Functions** | **Productivity** | **Teamwork** |
| • Carry out assessments under realistic work pressures that are found in the normal industry workplace (or simulated workplace). <br> • Ensure that the range of materials, equipment and tools that learners use are current and of the type routinely found in the normal industry workplace (or simulated workplace) environments. | • Assess that all tasks and functions are completed in a way, and to a timescale, that is acceptable in the normal industry workplace. <br> • Assign workplace (or simulated workplace) responsibilities that enable learners to meet the requirements of the NOS. | • Productivity levels must be checked to ensure that it reflects those that are found in the work situation being replicated. | • Provide situations that allow learners to interact with the range of personnel and contractors found in the normal industry workplace (or simulated workplace). |

**Assessment Quality Assurance framework**

NASSCOM provides two assessment frameworks NAC and NAC-Tech.

## NAC (NASSCOM Assessment of Competence)

NAC follows a test matrix to assess Speaking & Listening, Analytical, Quantitative, Writing, and Keyboard skills of candidates appearing for assessment.

## NAC-Tech

NAC-Tech test matrix includes assessment of Communication, Reading, Analytical, Logical Reasoning, Work Management, Computer Fundamentals, Operating Systems, RDBMS, SDLC, Algorithms & Programming Fundamentals, and System Architecture skills.

## Methods of Validation

To pass a QP, a trainee should score an average of 70% across generic NOS' and a minimum of 70% for each technical NOS. In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack.

## Method of assessment documentation and access

The assessment agency will upload the result of assessment in the portal. The data will not be accessible for change by the assessment agency after the upload. The assessment data will be validated by SSC assessment team. After upload, only SSC can access this data.

# Recommended Supplemental Readings

The learning modules covered in the Model Curriculum for Cloud Architect are designed to meet the expected outcomes as per the QP. While the modules aligned to NOS are focused on technical/ behavioral competencies, bridge modules cover the prerequisite/ preparatory topics that are indispensable to complete the course. However, to provide additional QP specific knowledge to the learners, the following supplemental readings on related topics are recommended. These readings will equip the learners with an understanding of advanced or ancillary concepts to take up more complex tasks as listed in the QP.

| QP | Recommended Supplemental Reading |
|---|---|
| **SSC/Q8302: Cloud Architect** | 1. Network-as-a-Service <br> 2. Advanced Security techniques of Load Balancing <br> 3. Secure Integration of Cloud with IoT and Blockchain <br> 4. Edge Cloud Architecture <br> 5. Green Cloud Architecture <br> 6. Server-less Architecture <br> 7. Omni-cloud System |

# References

## Glossary

| Term | Description |
|------|-------------|
| **Key Learning Outcome** | Key learning outcome is the statement of what a learner needs to know, understand and be able to do in order to achieve the terminal outcomes. A set of key learning outcomes will make up the training outcomes. Training outcome is specified in terms of knowledge, understanding (theory) and skills (practical application). |
| **Training Outcome** | Training outcome is a statement of what a learner will know, understand and be able to do **upon the completion of the training**. |
| **Terminal Outcome** | Terminal outcome is a statement of what a learner will know, understand and be able to do **upon the completion of a module.** A set of terminal outcomes help to achieve the training outcome. |
| **National Occupational Standard** | National Occupational Standard specify the standard of performance an individual must achieve when carrying out a function in the workplace |
| **Persons with Disability** | Persons with Disability are those who have long-term physical, mental, intellectual or sensory impairments which in interaction with various barriers may hinder their full and effective participation in society on an equal basis with others. |

## Acronyms and Abbreviations

| Term | Description |
|------|-------------|
| QP | Qualification Pack |
| NSQF | National Skills Qualification Framework |
| NSQC | National Skills Qualification Committee |
| NOS | National Occupational Standards |
| SSC | Skill Sectors Councils |
| NASSCOM | National Association of Software & Service Companies |
| NCO | National Classification of Occupations |
| ISO | International Organization for Standardization |
| SLA | Service Level Agreement |
| IT | Information Technology |
| RDBMS | Relational Database Management System |
| SDLC | Software Development Life Cycle |
| CRM | Customer Relationship Management |
| PC | Performance Criteria |
| PwD | Persons with Disability |
| KPI | Key Performance Index |