NCTA-Certified Cloud Architect (NCA) Exam NCA-110

Exam Information

Candidate Eligibility:

The *NCTA-Certified Cloud Architect* (NCA) exam requires no application fee, supporting documentation, nor other eligibility verification measures for you to be eligible to take the exam. Simply purchase an exam voucher here, then Logical Operations will send you an email containing the information you need to register to take the exam through Pearson VUE. You can also purchase a voucher directly through Pearson VUE. If your voucher came bundled with your NCTA Cloud Architecture training program, you will receive registration information from your training provider. Once you have obtained your voucher information, you can register for an exam time here. By redeeming your exam voucher, you agree to our Candidate Agreement.

Exam Prerequisites

While there are no formal prerequisites to register for and schedule an NCA-110 exam time, the National Cloud Technologists Association (NCTA) strongly recommends you first possess the knowledge, skills, and abilities to do the following:

- Assess various cloud solution options
- Prepare your organization for cloud migration
- Determine the technical requirements for your cloud needs
- Evaluate and select appropriate cloud service components
- Determine database requirements
- Evaluate and select an appropriate Service Level Agreement
- Design scalable cloud solutions
- Plan for and implement business continuity and disaster recovery programs
- Secure cloud-based data and user access to cloud services
- Prepare and present cloud migration plans to organizational leaders

You can obtain this level of skill and knowledge by taking the following Logical Operations (LO) course, which is available through training providers located around the world:

- *NCTA Cloud Architecture*

Exam Specifications

Number of Items: 25

Passing Score: 15 out of 25 (60%)

Duration: 55 minutes (**Note**: Published exam times include the 5 minutes you are allotted for reading and signing the Candidate Agreement and the 5 minutes you are allotted for the Pearson VUE testing system tutorial.)

Exam Options: In person at Pearson VUE test centers

Item Formats: Multiple Choice/Multiple Response/True-False

Exam Description

Target Candidate:

This exam is intended for experienced system administrators who are tasked with planning for, designing, and implementing cloud services for their organizations. Candidates should have a minimum of five years of experience evaluating and administering SaaS, PaaS, and IaaS solutions, and possess a deep understanding of the features, capabilities, and components of multiple cloud service providers to design cloud and hybrid solutions for application deployment and infrastructure facilitation. The successful candidate will also be able to evaluate and plan for specific organizational needs for compute, network, database, and security systems, and monitor such systems on an ongoing basis to maintain security and optimize performance.

To ensure exam candidates possess the aforementioned knowledge, skills, and abilities, the *NCTA-Certified Cloud Architect* exam will test them on the following objective domains with the following weightings:

Domain	% of Examination
1.0 Cloud Implementation Preparation	20%
2.0 Organizational Requirements and Cloud Service Options	44%
3.0 Feature and Component Selection	12%
4.0 Cloud Service Licensing	12%
5.0 Cloud Scalability	8%
6.0 Cloud Service Continuity, Security, and Recovery	4%
Total	**100%**

The information that follows is meant to help you prepare for your NCTA certification exam. This information does not represent an exhaustive list of all the concepts and skills that you may be tested on during your exam. The exam domains, identified previously and included in the objectives listing, represent the large content areas covered in the exam. The objectives within those domains represent the specific tasks associated with the job role(s) being tested. The information beyond the domains and objectives is meant to provide examples of the types of concepts, tools, skills, and abilities that relate to the corresponding domains and objectives. All of this information represents the industry-expert analysis of the job role(s) related to the certification and does not necessarily correlate one-to-one with the content covered in your training program or on your exam. The NCTA strongly recommends that you independently study to familiarize yourself with any concept identified here that was not explicitly covered in your training program or products.

Objectives:

Domain 1: Cloud Implementation Preparation

- **1.1. Prepare the organization for cloud migration**
  - **Cloud risks**
    - **Organizational goals vs. cloud strategy**
    - **Vendor considerations**
    - **Legacy IT issues**
    - **Integration challenges**
    - **Organizational culture**
    - **Communication**
    - **Migration failures**
  - **Cloud teams**
    - **Roles and responsibilities**
    - **Executive sponsorship**
  - **Documentation**
    - **Migration goals/benefits**
    - **Project structure**
    - **KPIs**
    - **Business reports**
      - **Financial**
      - **CRUSH**
- **1.2. Present solutions for organizational approval**
  - **Present/pitch to organization**
  - **TCO**
    - **Acquisition**
    - **O&M**

- o Training
- ROI
- Case studies
- Calls to action

Domain 2: Organizational Requirements and Cloud Service Options

2.1. **Determine your organizational requirements**
- **Operating system requirements**
  - o OS cost considerations
  - o Patching considerations
  - o Maintenance and support
  - o Features and capabilities
- **Application requirements**
  - o APIs
  - o Legacy application considerations
  - o Data migration considerations
  - o Middleware
  - o Access and performance expectations
- **Database requirements**
  - o SQL databases
    - Oracle MySQL
    - Oracle Database
    - Microsoft SQL Server
    - PostgreSQL
  - o NoSQL databases
    - Column store
    - Document database
    - Key-Value store
    - Graph databases

2.2. **Evaluate cloud service features and components**
- **Facilities**
  - o Data centers
    - Uptime Institute tiers (I-IV)
    - Modular data centers
    - Power, ping, and pipe
    - Telecommunications
    - Electrical redundancy
    - Geographic location
- **Cloud compute components**
  - o Blade vs. rack-mounted servers
  - o CPUs

- - **Brands/types**
  - **Cores**
  - **Frequency**
  - **Memory**
  - **Storage**
  - **Network access**
    - **NICs**
    - **Converged networking**
    - **Layers**
    - **Protocols and ports**
- **Cloud storage and delivery components**
  - **Disk types**
    - **SATA**
    - **SCSI/SAS**
    - **SSDs**
  - **IOPS**
  - **SANs/block storage**
  - **NAS**
  - **HTTP/object storage**
- **Virtualization software**
  - **Host servers**
  - **VMs**
  - **Container-based vs. hypervisor-based virtualization**
  - **Image libraries and templates**
- **Cloud management platform components**
  - **Portals and management APIs**
  - **Workflow management**
  - **Identity management**
  - **CDNs**

Domain 3: Feature and Component Selection

3.1. Select AWS infrastructure components
- **Global data center infrastructure**
  - **Regions**
  - **Availability zones**
- **AWS management and administration**
  - **Command Line Interface**
  - **Web Console**
  - **AWS API**
  - **AWS SDK**
    - **Android**

- iOS
- Browser
- Java
- .NET
- Python
  - AWS building blocks
- **AWS compute components**
  - **Amazon EC2**
    - **Load balancing**
  - **Amazon VPC**
    - **Public/private subnets**
    - **VPN**
  - **Purchase options**
    - **On-Demand**
    - **Reserved**
    - **Spot**
    - **Dedicated hosts**
- **AWS networking components**
  - **Elastic load balancing**
  - **Amazon WorkSpaces**
  - **Amazon Route 53**
  - **AWS Direct Connect**
- **AWS storage and content delivery components**
  - **Amazon S3**
    - **Amazon S3 Standard**
    - **Amazon Glacier**
  - **Amazon EBS**
    - **Disk types**
  - **AWS import/export services**
    - **AWS Import/Export Snowball**
    - **AWS Import/Export Disk**
    - **AWS SDK for Java**
  - **Amazon CloudFront**
- **AWS management and monitoring**
  - **Amazon SWF**
  - **Amazon CloudWatch**
  - **Amazon EMR**
  - **Amazon Kinesis**
  - **Amazon Data Pipeline**
  - **Third-party solutions**
    - **BI Tools**
    - **Hunk**
    - **HParser**

- - - **MapR for Hadoop**
  - **AWS PaaS features**
    - **AWS Elastic Beanstalk**
    - **Amazon SNS**
    - **Amazon SQS**
    - **Amazon SES**
    - **Amazon CloudSearch**
  - **AWS database services**
    - **Amazon RDS**
    - **Amazon SimpleDB**
    - **Amazon DynamoDB**
    - **Amazon Redshift**
    - **Amazon ElastiCache**

3.2. Select Rackspace cloud features and components

- **Rackspace cloud compute and network components**
  - **Rackspace Cloud Networks**
  - **Rackspace Cloud Servers**
  - **Service levels**
    - **Managed Infrastructure**
    - **Managed Operations**
  - **Rackspace Cloud Load Balancers**
  - **Rackspace Cloud DNS**
    - **The Cloud Control Panel and API**
  - **Rackspace OnMetal**
  - **Rackspace Auto Scale**
  - **RackConnect**
  - **Cloud Orchestration**
- **Rackspace cloud database services**
  - **Rackspace SQL databases**
    - **Rackspace MySQL**
    - **Percona Server**
    - **MariaDB**
  - **Rackspace NoSQL databases**
    - **ObjectRocket for MongoDB**
    - **ObjectRocket for Redis**
    - **ObjectRocket for Elastisearch**
    - **Cassandra**
  - **Cloud Big Data**
  - **Cloud Queues**
- **Rackspace cloud storage components**
  - **Rackspace Cloud Block Storage**
  - **Cloud Files**
  - **Cloud Backup**

- o **Rackspace Cloud CDN**
- **Rackspace service monitoring**
  - o **Rackspace Cloud Monitoring**
    - ▪ **Zone checks**
  - o **Rackspace Monitoring Agent**
    - ▪ **Load average**
    - ▪ **Filesystem**
    - ▪ **Memory**
    - ▪ **CPU**
    - ▪ **Network**
  - o **Alarms and notifications**
  - o **Rackspace third-party solutions**
    - ▪ **Airbrake**
    - ▪ **Alert Logic**

3.3. Select Microsoft Azure features and components
- **Azure compute and network components**
  - o **Azure VMs**
    - ▪ **Linux**
    - ▪ **Windows**
  - o **Azure Cloud Services**
  - o **Azure App Service**
    - ▪ **The Mobile Apps feature**
    - ▪ **The Web Apps feature**
    - ▪ **ExpressRoute**
    - ▪ **Azure virtual networks (VNets)**
    - ▪ **Azure Traffic Manager**
- **Azure database services**
  - o **Azure SQL Database**
    - ▪ **Single database model**
    - ▪ **Elastic database model**
  - o **Azure NoSQL databases**
    - ▪ **DocumentDB**
    - ▪ **Table Storage**
    - ▪ **Redis Cache**
    - ▪ **HBase**
  - o **Stretch Database**
- **Azure storage services**
  - o **Azure Storage**
    - ▪ **Blob Storage**
    - ▪ **File Storage**
    - ▪ **Table Storage**
    - ▪ **Queue Storage**
    - ▪ **Premium Storage**

- o **Hot vs. cool storage**
- o **Replication options**
  - ▪ **LRS**
  - ▪ **GRS**
  - ▪ **RA-GRS**
- o **Azure Site Recovery**
- **Azure app services**
  - o **Azure Media Services**
  - o **Azure Service Bus**
    - ▪ **Queues**
    - ▪ **Topics**
    - ▪ **Relays**
    - ▪ **Event Hubs**
  - o **Azure Notification Hubs**
  - o **Azure Scheduler**
  - o **BizTalk Services**
  - o **Azure Active Directory**
- **Azure monitoring services**
  - o **Azure cloud service monitoring**
  - o **Azure diagnostics**
    - ▪ **VM**
    - ▪ **Cloud service**
  - o **Diagnostics connection string**
  - o **Azure third-party solutions**
    - ▪ **Stackify**
    - ▪ **Cloudmonix**
    - ▪ **New Relic**
    - ▪ **Datadog**

Domain 4: Cloud Service Licensing

4.1. **Determine your organization's cloud service licensing requirements**
- **Licensing agreement types**
  - o **Enterprise License Agreements**
  - o **Blanket License Agreements**
  - o **End User License Agreements**
  - o **Per Module (Component) Licensing**
  - o **Service Provider License Agreements**

4.2. **Evaluate SLAs**
- **SLA considerations**
  - o **DLM**
    - ▪ **Contracts**

- Financial records
- Compliance (HIPAA, SOX, etc.)
  - High availability
  - Backup and disaster recovery
  - Data protection
    - PCI DSS
    - Security in transit
    - Security at rest
  - Intellectual property and copyright
- SLA types
  - Standard
  - Premium
  - Negotiated

Domain 5: Cloud Scalability

5.1. **Evaluate cloud service scaling options**
- Scale up vs. scale out
- Peak vs. average use
- Logical vs. physical upgrades
- Scaling considerations
  - Load balancing
  - Bolt-on solutions
  - Testing
  - Policy-based scaling

5.2. **Manage compute, memory, and storage resources**
- Compute management
  - CPU usage
    - Processing power
  - CPU-bound applications
  - Concurrent processing
  - CPU scalability
    - Vertical growth
    - Horizontal growth
- Memory management
  - Transaction processing
  - Memory-bound applications
  - Memory and performance
  - Caching
  - Memory scaling
- Storage management
  - Disks and spindles

- - Read/write characteristics
    - Storage-related application performance issues
  - 5.3. **Manage network components**
    - **Network performance issues**
      - **Bandwidth (volume)**
      - **Flow rate vs. storage volume**
      - **Public and private networks**
      - **LAN/WAN considerations**

Domain 6: Cloud Service Continuity, Security, and Recovery

  6.1. **Implement cloud service continuity and disaster recovery plans**
  - **DLM phases**
    - **Capture/collection/creation**
    - **Preservation**
    - **Integration**
    - **Analysis**
    - **Archiving**
    - **Purging**
  - **Information Lifecycle Management**
  - **Profile-based data retention policies**
  - **Data backup options**
    - **Onsite**
    - **Offsite**
    - **Archive**
    - **Vault**
  - **Data replication**
  - **High availability**
  - **System snapshots**
  - **Cloning**
  - **Business continuity**
    - **IT vs. other resources (people, non-IT facilities)**
    - **Chain of command**
      - **Escalation paths**
    - **IT process automation**
    - **Remote network connectivity**
    - **Failover and testing**
  - **Disaster recovery**
    - **DRP**
      - **DRP testing**
    - **BIAs**

- - RTO
  - RPO
  - Geographically separated datacenters
- **6.2. Secure data in the cloud**
  - **Encryption**
    - Encryption strength
      - Cypher/key
    - Encryption types
      - DH
      - RSA
      - DSA
    - Encryption methods
      - Symmetric
      - Asymmetric
    - Key pairs
  - **In-transit data security**
    - Secure connections
      - IPsec VPN
      - TLS
    - File level encryption
  - **At-rest data security**
    - Disk level encryption
    - VM encryption
    - Database encryption
    - Application encryption
    - Data portability
    - At-rest file level encryption
- **6.3. Provide secure access to cloud services**
  - **Perimeter security**
    - Firewalls
    - DDoS detection and mitigation
    - Tracking
    - Vulnerability scanning
  - **User authentication**
    - Authentication requirements
    - Multifactor authentication
      - Knowledge
      - Possession
      - Inherence
    - SSO
      - Social login
    - AWS Identify and Access Management
  - **Security incidents**

- o **FedRAMP**
- o **Security threats**
  - ▪ **Unauthorized access to data**
  - ▪ **Interruption of services**
  - ▪ **Access interruption**
  - ▪ **Hardware damage**
  - ▪ **Unauthorized facility access**
- o **Attack types**
  - ▪ **Physical security**
  - ▪ **Network-based**
  - ▪ **Software-based**
  - ▪ **Web app-based**
  - ▪ **Social engineering**
- o **Incident response**
  - ▪ **Escalation/notification**
  - ▪ **Documentation**
  - ▪ **Forensic investigation**
  - ▪ **Chain of custody**
  - ▪ **Correlated Event Management Portals**

Continuing Education Requirements

The *NCTA-Certified Cloud Architect* (NCA) certification is valid for three years from the time the certification is granted. You must re-take the most up-to-date version of the exam prior to the three-year period's end to maintain a continuously valid certification.

To view the NCTA Candidate Agreement, click here.

Then purchase a voucher to take the exam by clicking here.