# Competencies for Cloud Roles

**Disclaimer:** This document is solely intended as a learning aid for the course *Job Roles in the Cloud*, and is not a standalone document. If you want to share, direct others to the web-based training course. The job roles and competencies listed here are intended to serve solely as illustrative examples, and not official recommendations.

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## Cloud Enterprise Architect

A cloud enterprise architect understands the business needs, is technology-savvy, and can design cloud and hybrid solutions. A cloud enterprise architect should have excellent leadership skills and should be able to work with different teams and organizations across the business. It is important for cloud enterprise architects to have an extensive breadth of experience throughout the IT industry. They should have experience with all aspects of a cloud project—from development, testing, and implementation, to production—although they are primarily responsible for designing cloud architectures. This additional experience will help them make better design decisions. A cloud enterprise architect should also have the following competencies:

| Mandatory | Desirable |
|---|---|
| <ul><li>IT and business</li><li>Architecting and building IaaS and PaaS solutions</li><li>Software design patterns (microservices, messaging, distributed architectures)</li><li>Operating systems</li><li>Data management</li><li>Network services</li><li>Transaction processing</li><li>Security</li><li>System and network management</li></ul> | <ul><li>Agile/SCRUM methodologies</li><li>Continuous integration concepts and tools (bamboo, Jenkins)</li><li>Configuration management tools (Ansible, Chef, or Puppet)</li></ul> |

## Program Manager

A program manager is responsible for the planning, management, and close-out of cloud and digital transformation. They own the schedule, status, risks, and assigned budget. A program manager must be able to build and drive operational excellence in support of the organization's overall growth and success. A program manager should have excellent leadership skills and should be able to work with different teams and organizations across the business. A program manager should also have the following competencies:

| Mandatory | Desirable |
|---|---|
| <ul><li>Excellent communication skills</li><li>Ability to communicate with both business and technical teams</li><li>Experience managing multiple competing priorities and projects in a fast-paced environment</li><li>Experience communicating goals and strategies across multiple leadership levels of an organization</li><li>Excellent organizational skills</li><li>Ability to work across function and upward</li></ul> | <ul><li>Experience building and operating PM-type tools and systems</li></ul> |

## Financial Manager

A financial manager must be able to advise the business on decisions to ensure that the business is financially successful. A financial manager is responsible for obtaining business case approval and business commitment in terms of funding and mobilizing the program manager to begin work. A financial manager should have the following competencies:

| Mandatory | Desirable |
|---|---|
| <ul><li>Experience in managing financial analysts</li><li>Experience in building and operating financial control and analysis systems (cloud cost analysis, showback, and chargeback)</li><li>Ability to report on financial data</li><li>Ability to pull financial data</li><li>Experience understanding how cloud resources are tagged</li><li>Experience using tools to perform billbacks and showbacks</li><li>Experience providing suggestions about cost optimizations</li><li>Experience reporting to individual application owners or IT on cost savings ideas</li></ul> | <ul><li>Ability to work independently</li><li>Strong written and verbal communication skills with a customer focus</li></ul> |

## Cloud Infrastructure Architect

A cloud infrastructure architect must be able to design solution-specific cloud infrastructure architectures. A cloud infrastructure architect should have the following competencies:

| Mandatory | Desirable |
|---|---|
| <ul><li>Designing, developing, and deploying business software at scale</li><li>Cloud foundational services (compute, network, storage, and databases)</li><li>Highly available and fault-tolerant enterprise and web-scale software deployments</li><li>Linux- and Windows-based system administration skills</li></ul> | <ul><li>Configuration management using CloudFormation, Chef, and Puppet</li><li>Infrastructure automation through DevOps scripting</li><li>Software development lifecycle and agile/iterative methodologies</li><li>IT compliance and risk management (security, privacy, SOX, HIPPA, etc.)</li></ul> |

## Cloud Operations Engineer

A cloud operations engineer must be able to build, monitor, and manage the cloud infrastructure. A cloud operations engineer should have the following competencies:

| Mandatory | Desirable |
|---|---|
| • Deep technical background (operating systems, networking, application performance management, load balancing, security systems, etc.)<br>• Experience in building large distributed systems<br>• Experience in supporting highly available applications<br>• Developing and maintaining business continuity and disaster recovery processes<br>• Experience with enterprise monitoring tools<br>• Experience with databases (relational and NoSQL)<br>• Experience with networks (routing, firewalls, load balancers, DNS, etc.) | • Knowledge of DevOps, agile development, and cloud operations support processes |

## Cloud Security Architect

A cloud security architect must ensure that workloads are in compliance with security and governance standards. A cloud security architect should have the following competencies:

| Mandatory | Desirable |
|---|---|
| • Strong technical background<br>• Ability to architect, design, implement, support, and evaluate security-focused tools and services<br>• Ability to develop and interoperate security policies and procedures<br>• Ability to advise and consult on risk assessments, threat modeling, and fixing vulnerabilities<br>• Experience in security standards such as FISMA, DOD, ITAR, and FERPA<br>• Experience performing security assessments and analytical decision making<br>• Risk management experience<br>• Experience with security solutions such as WAF, IPS, and anti-DDOS systems | • Deep understanding of IT regulations<br>• Experience in interpreting law, policy and/or regulations<br>• Extensive knowledge of Internet security issues |

## Security Operations Engineer

A security operations engineer must have a strong technical background and be familiar with securing AWS services. A security operations engineer should have the following competencies:

| Mandatory | Desirable |
|---|---|
| • Knowledge of network, system, and web application attacks and mitigations<br>• Knowledge of application security, cryptography, network, and web protocols<br>• Ability to identify security issues and risks and develop mitigations<br>• Experience with accreditation programs (SOC, ISO-27001, etc.)<br>• Ability to participate in technical conversations and decisions | • Deep experience with AWS services<br>• Experience in application security architecture, security code reviews, security testing, incident response, or security infrastructure<br>• Experience with penetration testing |

## Application Architect

An application architect must be able to design cloud-optimized applications. An application architect should have the following competencies:

| Mandatory | Desirable |
|---|---|
| • Application programming<br>• Architecting, designing, and building applications using cloud platform services (Amazon, EC2, AWS Elastic Beanstalk, and OpsWorks)<br>• Architecting highly available systems that use load balancing, horizontal scaling, and high availability | • Configuration management platforms (Chef, Puppet, and Ansible)<br>• Scripting |

## Application Developer

An application developer must be able to develop, configure, release, and support business applications. An application developer should have the following competencies:

| Mandatory | Desirable |
|---|---|
| • Experience developing software<br>• Experience building complex software systems<br>• Experience with version control systems<br>• Knowledge of software development lifecycle best practices (coding standards, code review, source control management, build processes, testing, and operations) | • Passion for software engineering and coding<br>• Experience with AWS services |

## DevOps Engineer

A DevOps engineer must be able to build and operate fast and scalable workflows. A DevOps engineer should have the following competencies:

| Mandatory | Desirable |
|---|---|
| <ul><li>Deep software architecture and programming skills</li><li>Strong practical Linux- and Windows-based system administration skills in a cloud or virtualization environments</li><li>Experience building sophisticated and highly automated infrastructure</li><li>Experience with seamless/automated build scripts used for release management</li><li>Understanding and experience with tagging</li></ul> | <ul><li>Experience with Chef, Puppet, Salt, or Ansible in production environments with many nodes</li><li>Familiarity with CloudFormation and JSON</li><li>Strong scripting skills (PowerShell, Python, Bash, Ruby, Perl, etc.</li><li>Knowledge of networking VPNs, DNS, load balancing, and firewalling</li><li>Familiarity with monitoring tools such as Nagios, Incinga, and SiteScope</li><li>Experience with automated testing tools (i.e., Selenium and Jmeter)</li><li>Understanding and experience with code deployment</li><li>Understanding of service-oriented architecture</li></ul> |