

Occupation Profile

Technical Apprenticeship in Digital Technology - Cloud Infrastructure at SCQF Level 8

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Purpose:

This occupation profile consists of 5 work situations routinely carried out in cloud infrastructure roles. Collectively these describe all the performance requirements and knowledge and understanding requirements apprentices need to demonstrate competence in the occupation. Each work situation has a unique reference number and is set out as follows:

- Work situation title, goal, brief outline, performance requirements and knowledge and understanding requirements



Contents

| | |
|--|------|
| Mandatory work situations..... | 4-11 |
| <i>Meta-skills alignment</i> | 12 |
| <i>National Occupational Standards alignment</i> | 13 |



Mandatory work situations

| | |
|--|------|
| Applying methods and principles in project management..... | 4-5 |
| Supporting digital business transformation..... | 6-7 |
| Developing meta-skills and personal professionalism..... | 8 |
| Creating and deploying cloud applications..... | 9-10 |
| Implementing cloud security..... | 11 |

Goal of work situation:

This work situation involves using project management tools to plan, organise and monitor the progress of activities to achieve production quality performance indicators.

Brief outline:

This is about applying methods and principles of project management in line with organisational requirements. This includes ensuring activities are delivered in accordance with the business case and safe systems of work, and involves liaising with and reporting progress to stakeholders, ensuring activities contribute to key milestones and deliverables.

Performance requirements

1. Providing support to prepare business cases for approval of activities
2. Identifying roles, responsibilities and skill sets needed for project activities and resources
3. Planning and scheduling projects in line with agreed objectives, timescales, and organisational requirements
4. Managing activities in line with plans and to achieve milestones
5. Managing change in line with organisational procedures
6. Escalating to relevant personnel where there are deviations from plans
7. Identifying, agreeing, and implementing contingencies to mitigate problems
8. Communicating plan progress in formats to meet the needs of all relevant stakeholders
9. Reporting on progress in line with organisational reporting procedures
10. Collating and evaluating lessons learned to contribute to the continuous improvement of activities

Knowledge and understanding requirements

1. Relevant legislation and codes of practice, safe systems of work, risk and impact assessments for activities
2. The principles and approaches to developing good business cases
3. Different methodologies to plan and deliver activities and how to apply these
4. The tools and processes for identifying and analysing risks and opportunities and how to use them
5. Techniques and tools for monitoring and reviewing risks including when and how to escalate to management
6. Quantitative and qualitative measures of risk analysis and how to apply these
7. The importance of monitoring and controlling project performance including accountability
8. Industry specific tools and software for monitoring performance
9. The importance of establishing an agreed change control process, and the impact and consequences that changes can have on schedule, resources, and budget
10. The type of changes that may affect key performance criteria including time, cost, quality, and business case

11. The importance of contingency plans
12. The importance of evaluating and monitoring the benefits and challenges of activities and how to do this
13. Different ways, formats and frequency of reporting and presenting information on progress to internal and external stakeholders
14. The importance of liaising with internal and external stakeholders and how to do this

Goal of work situation:

To identify, evaluate and prioritise the opportunities to apply digital technology to improve operations by transforming business processes.

Brief outline:

This involves evaluating the organisational processes to propose digital technology solutions within businesses to reduce costs, enhance performance and deliver improved services as a result of digital transformation.

Performance requirements

1. Identifying and documenting organisational processes which require digital technology improvement
2. Establishing information requirements of the organisational processes requiring digital technology improvement
3. Evaluating the potential for digital technology solutions to transform the organisational processes that deliver organisational competitiveness
4. Analysing organisational processes to propose potential digital technology solutions
5. Conducting relevant research to inform decision making for digital transformation
6. Conducting health and safety risk assessments of digital transformation scenarios
7. Developing and delivering well-structured digital technology proposals in the form of business reports and presentations which resonate with stakeholders

Knowledge and understanding requirements

1. The meaning and significance of the 'digital economy' and 'digital transformation'
2. How to model business processes
3. How organisations manage and implement technology driven change
4. How to formulate proposals for new digital technology solutions, including estimation of both costs and benefits
5. How digital technologies can be integrated within business processes
6. How digital transformation of business processes is implemented to provide improved productivity and service benefits
7. The legislation, regulations and organisational policies that relate to digital technology and safe use of IT in the workplace
8. The range of professional and unprofessional behaviour in digital technology contexts
9. The principles of business change and how organisations develop in the context of technological change
10. The organisational business objectives and how business strategy is used to achieve these
11. The range of metrics which might be used to evaluate the success of business operations

12. Current issues and ethical aspects in digital transformation implementation
13. The safe use of digital technology equipment in business operations

Goal of work situation:

To develop meta-skills and personal professionalism through reflective practice, goal setting and active learning to improve own performance in line with organisational requirements.

Brief outline:

This is about taking responsibility for the development of own meta-skills and personal professionalism. This involves reflecting on and learning from practice; seeking and acting on feedback; agreeing and working towards own goals for continuous professional development (CPD); and managing own wellbeing.

Performance requirements

1. Self-evaluating meta-skills regularly to identify own strengths and improvement needs for development
2. Identifying own strengths and improvement needs for professional development
3. Setting and agreeing SMART objectives for personal development and to achieve business objectives
4. Planning development activities to improve own performance and to achieve business objectives
5. Completing formal and informal activities to support and progress own development
6. Seeking and acting on feedback to improve own performance
7. Critically reflecting on own performance and involvement in activities to support own development and achievement
8. Critically evaluating the development and application of meta-skills in own work to identify future development needs
9. Completing and maintaining records and documents in line with organisational policy and procedures

Knowledge and understanding requirements

1. The purpose and importance of meta-skills including their definitions and how they relate to own work
2. The importance and impact of personal professionalism within the organisation and own role
3. How to use critical reflection and reflective practice to identify gaps in role specific knowledge, skills and meta-skills and the purpose and importance of this
4. How to participate effectively in performance reviews
5. How to set and agree SMART goals – Specific, Measurable, Achievable, Realistic, Time-bound
6. How to prepare development plans, including their content and duration
7. The importance of career and personal goals, including collective organisational learning, when planning own development
8. Sources of up-to-date and appropriate information to support own CPD activities
9. The impact and benefits of CPD including the organisation's key performance indicators (KPIs) and how they are measured and recorded
10. The importance of managing well-being for success in own role and where to get support
11. Appropriate ways to seek and act on feedback to develop own skills and knowledge including the process of 360-degree feedback
12. Different learning models and styles and how to use these for own development

Goal of work situation:

To build and manage cloud applications in virtualised and cloud environments in line with organisational requirements.

Brief outline:

This is about identifying organisational requirements and designing, developing and deploying cloud applications. This includes interfacing cloud applications to cloud data storage, testing cloud applications, monitoring cloud application performance and documenting cloud application development and deployment.

Performance requirements

1. Identifying cloud application requirements to plan cloud application developments
2. Designing cloud applications to deliver the required cloud services in line with organisational procedures
3. Developing cloud-native applications in line with organisational procedures
4. Interfacing cloud applications with cloud storage to support cloud applications in line with organisational procedures
5. Testing applications to confirm they function correctly and deliver required services
6. Deploying cloud applications into live cloud-hosted environments in line with organisational procedures
7. Monitoring cloud application performance to identify and report operational issues
8. Documenting cloud application developments and deployments in line with organisational standards

Knowledge and understanding requirements

1. What is a cloud-based application
2. Main characteristics of cloud-based applications
3. Fundamental concepts of cloud infrastructure and application deployment
4. Business cases for cloud computing and benefits and limitations of cloud applications to organisations
5. Cloud deployment service models including Infrastructure as a Service (IaaS), Platform as a Service (PaaS) and Software as a Service (SaaS)
6. Differences between public, private, hybrid and multi-cloud environments
7. Main cloud technologies and cloud infrastructure components such as virtualisation, Virtual Machines (VMs), containers, microservices, serverless computing and cloud storage
8. Programming languages, tools, and techniques used to create cloud-based applications and how to apply them
9. How to develop and deploy cloud-based applications
10. How to test cloud-based applications
11. Main types of cloud data storage used to support cloud applications and how to apply them

12. How containers and Kubernetes support cloud native application development by improving management, automation, deployment and scalability of applications across live environments
13. How to monitor the operational performance of cloud applications in live environments
14. How to document cloud application development and deployment

Implementing cloud security

Goal of work situation:

To implement cloud security to protect cloud environments, applications and data against internal and external cybersecurity threats.

Brief outline:

This is about implementing cloud environment hardening, data encryption, identity and access management, and intrusion detection and prevention technology. It also includes conducting security assessments, identifying and resolving cloud security issues and documenting cloud environment security implementations.

Performance requirements

1. Hardening cloud environments to remove vulnerabilities
2. Implementing encryption to protect data in cloud environments
3. Upgrading password security to ensure password management meets minimum organisational security requirements
4. Implementing identity and access management for cloud environments including multi factor authentication and least privilege access in line with organisational procedures
5. Implementing intrusion detection and prevention technology to provide continuous monitoring and real-time alerts
6. Conducting cloud environment security assessments to validate compliance with cloud security policies
7. Identifying, resolving or escalating potential security issues in cloud environments in line with organisational procedures
8. Documenting cloud environment security implementation in line with organisational procedures

Knowledge and understanding requirements

1. What is meant by cloud security
2. The dynamic nature of cloud computing creates more complex security environments
3. Main cloud security threats
4. How to harden cloud environments
5. Main concepts in cloud security implementation and monitoring
6. Security tools and configuration options that cloud service providers offer and how to apply them
7. Shared responsibility model for organisations and their cloud service providers
8. What is meant by least privilege access
9. Steps involved in implementing identity and access management for cloud environments and how to apply them
10. The importance of endpoint security for cloud environments
11. How to implement and configure Intrusion Detection and Prevention Systems (IDPS)
12. Steps involved in conducting security assessments and how to apply them
13. How to identify, resolve or escalate cloud environment security issues
14. How to develop documentation for cloud environment security implementations

The relationship between meta-skills and work situations

| Work situation | Meta skills alignment | | | | | | | | | | | |
|---|-----------------------|---------------|---------------|------------|-------------------|-----------|---------|-----------|------------|-----------|---------|--------------|
| | Adapting | Collaborating | Communicating | Creativity | Critical thinking | Curiosity | Feeling | Focussing | Initiative | Integrity | Leading | Sense making |
| Applying methods and principles of project management | ✓ | ✓ | ✓ | | ✓ | | | ✓ | | ✓ | | |
| Supporting digital business transformation | ✓ | | ✓ | | ✓ | | | ✓ | | | | |
| Developing meta-skills and personal professionalism | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Creating and deploying cloud applications | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | | ✓ |
| Implementing cloud security | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | | ✓ |

The table above indicates where there are opportunities to develop and evidence meta-skills in each work situation within the occupation profile. Please note, this information is for guidance, and indicates where meta-skills are explicit rather than an exhaustive list. There may be opportunities for individuals to develop and evidence other meta-skills when carrying out their role.

The relationship between National Occupational Standards and work situations

The table below indicates where there are links between National Occupational Standards and each work situation within the occupation profile

| Work situation | National Occupational Standards Alignment | |
|--|---|---|
| Applying methods and principles of project management | Project management suite Engineering and Manufacturing suite 4 Engineering Leadership and Manufacture suite 4 Industrial Design Suite TECIS30131 Maintain IT project-based documentation TECIS30141 Initiate an IT project | TECIS30142 Develop an IT project management plan TECIS30143 Monitor and control the delivery of an IT project TECIS30144 Close and review an IT project TECIS30145 Manage risks in an IT project |
| Supporting digital business transformation | ESKITP2024.03 Carry out business process design and improvement assignments ESKITP2034.03 Assist in the design, implementation and maintenance of change management plans and assignments ESKITU040 Use safe and secure practices when working with digital systems | |
| Developing meta-skills and personal professionalism | Business and Administration suite Management and Leadership suite | |
| Creating and deploying cloud applications | TECIS40944 Optimise performance of cloud services TECIS40932 Cloud services performance monitoring | |
| Implementing cloud security | TECIS40945 Implement security solutions for cloud services | |