Occupation Profile

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

Approved by: Digital Technology Technical Expert Group

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Purpose:

This occupation profile consists of 5 work situations routinely carried out in network 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

Applying methods and principles in project management

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

Work Situation

Supporting digital business transformation

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

Work Situation

Developing meta-skills and personal professionalism

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

Work Situation

Designing and implementing on-premises network infrastructure

Goal of work situation:
To design, implement and test on-premises network solutions to provide network services.

Brief outline:
This is about agreeing network requirements, performing network design and implementing and testing on-premises networks. This includes specifying technical configurations and components required for a network to support planned network traffic, installing and configuring network components, testing the performance of network services, resolving network issues and documenting network designs.

Performance requirements

1. Agreeing network requirements with stakeholders to specify design parameters in line with organisational procedures
2. Designing networks and selecting network components in line with organisational requirements and design standards
3. Translating logical designs into physical designs that meet specified operational requirements for capacity and performance
4. Providing operational configuration of network components in line with organisational requirements
5. Assessing network-related risks to specify recovery routines and contingency actions
6. Testing network performance following implementation or updates to ensure network meets operational requirements
7. Investigating and resolving network problems in line with organisational procedures
8. Collecting network performance statistics using network management software and tools in line with organisational procedures
9. Producing and maintaining network design and configuration documentation in line with organisational procedures

Knowledge and understanding requirements

1. How to determine the requirements for network design
2. Main steps involved when designing networks (including identifying network requirements, characterising networks and designing network topology)
3. Typical traffic characteristics of an enterprise network
4. Principles of network design, topologies, and performance
5. How to specify network design parameters
6. The roles of interconnected network components (including routers and switches) and how to configure and implement them
7. How to translate logical network designs into physical designs
8. Open Systems Interconnection (OSI) model that describe functions of networking systems and the seven layers of network communication protocols
9. How to assess network-related risks
10. How to investigate and resolve network problems
11. Industry standard network management software and tools and how to use them
12. How to test network Quality of Service (QoS) to indicate network performance
13. Metrics used to determine QoS including latency, jitter, packet loss, throughput, and bandwidth
14. How to produce and maintain network design and configuration documentation

Work Situation

Implementing on-premises network security

Goal of work situation:
To implement technical network security solutions to prevent, detect and monitor unauthorised access and compromise of network and network-accessible resources.

Brief outline:
This is about identifying network-accessible assets, specifying network security requirements, implementing network security devices, evaluating network security compliance, monitoring network traffic and reviewing network audit logs for security issues. This also includes implementing network hardening, securing wireless networks, escalating network threats and incidents and documenting network security implementation.

Performance requirements

1. Identifying network-accessible assets that need to be protected to specify network security requirements and prioritise levels of protection
2. Implementing network security devices to protect network systems in line with network security requirements
3. Implementing network system hardening to minimise vulnerabilities and exposure to threats
4. Evaluating network security compliance to check networks comply with organisational security standards before going live
5. Isolating and segmenting networks to create sub-networks to protect sensitive parts of networks
6. Providing enhanced security for wireless networks in line with organisational requirements
7. Monitoring incoming and outgoing network traffic to identify and report on potential threats in line with organisational security procedures
8. Reviewing network audit logs to identify new threats in line with organisational security procedures
9. Reporting and escalating potential network security threats, issues and incidents to security teams in line with organisational procedures

Knowledge and understanding requirements

1. Network-accessible assets that require protection including devices, systems and data
2. How to identify network security requirements and prioritise levels of protection
3. Main on-premises network security principles
4. The role of port security to help secure networks by preventing unknown devices from forwarding messages
5. Industry standard types of network security, including Network Access Control (NAC), Antivirus and Antimalware Software, Firewall Protection and Virtual Private Networks (VPNs)
6. Industry standard network security devices including firewalls, antivirus, content filtering and intrusion detection systems and how to install and configure them
7. What is meant by Unified Threat Management (UTM) devices and next gen firewalls
8. Steps involved in network system hardening and how to implement them
9. How to evaluate network security compliance with organisational security standards
10. How to segment networks to provide isolation and protection of critical subnetworks

10. Documenting network security implementation in line with organisational procedures

11. How to secure wireless networks including changing or masking Service Set Identifier (SSID), encrypting wireless access points, adding two-factor authentication, and password management

12. Steps involved in monitoring incoming and outgoing network traffic for threats and how to do this

13. How to review network audit logs to identify new threats

14. Steps involved in reporting and escalating potential network security threats, issues and incidents and how to apply them

15. How to document network 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	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Designing and implementing on-premises network infrastructure	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓
Implementing on-premises network 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	
Designing and implementing on-premises network infrastructure	ESKITP903401 Deliver Network Infrastructure Services Support	
Implementing on-premises network security	ESKITP903401 Deliver Network Infrastructure Services Support	