Skills England

Standard Draft Preview

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Standard in development
L4: DevOps engineer
Version 2.0

Title of occupation

DevOps engineer

UOS reference number

ST0825

Core and options

No

Level of occupation

Level 4

Occupational maps data

Route: Digital
Pathway: Digital Production, Design and Development
Cluster: Software development advanced technician

Typical duration of apprenticeship

24 months

Target date for approval

07/01/2026

Resubmission

No

Would your proposed apprenticeship standard replace and existing framework?

No

Does professional recognition exist for the occupation?

No

Regulated occupation

Is this a statutory regulated occupation?

No

Occupational summary

This occupation is found in a wide and diverse range of public and private sector organisations, from tech start-ups through government departments to multinationals. Essentially any organisation of any size that builds and or operates modern IT services.

The broad purpose of the occupation is to enable organisations to get valuable working software out in front of active users, both external and internal, frequently and safely, reducing time to market, delivering increased value - both with respect to the end user and the business - and improving the quality of digital services. At its simplest, DevOps is a

philosophy and way of working that brings together two historically disparate parts of the IT organisation, namely those who develop the software and those who are then required to support it in the live environment. The DevOps Engineer encapsulates both disciplines, requiring the individual to understand and appreciate how their code functions when being used in the real world and troubleshoot any issues that may arise, while taking a cloud-infrastructure focused perspective. This means taking responsibility for all aspects of the development and operations process - the design, build, test, implement, release and continual iteration of products. Utilizing the advantages of Cloud computing to enable infrastructure to be defined in code moves the operations side away from traditional system administrator roles which are focused on troubleshooting traditional infrastructure-as-hardware. The convergence of these two topics drives DevOps culture and ways of working and creates the need for the new role of DevOps Engineer that works within the delivery team. The DevOps Engineer applies all the DevOps culture and software engineering disciplines to codified infrastructure.

In their daily work, an employee in this occupation interacts with other members of agile development teams, other areas within the organisation's IT department and business areas, as well as 3rd-party suppliers. This is an office based or remote working role, with co-location preferable.

An employee in this occupation will be responsible for working collaboratively with a minimum of direct supervision within broad but generally well-defined parameters, requiring the application of knowledge and understanding, skills and methods in a broad range of complex or technical work activities, performed in a variety of contexts. They will address problems which are non-routine while normally well defined, taking responsibility for courses of action, including, where relevant, responsibility for the work of others and allocation of resources. They will typically pair with other technical roles, or work alone at times, and provide input to the planning of work and advise on design.

Typical job titles

Automation engineer | Build and release engineer | Cyber operations engineer | Deployment engineer | Devops engineer | Full stack developer | Infrastructure engineer | Modernisation operations engineer | Network operations engineer | Network security operations engineer | Platform engineer | Reliability engineer | Security operations engineer | Site reliability engineer

Are there any statutory / regulatory or other typical entry requirements?

No

Occupation duties

DUTY	KSBS
Duty 1 Script and code in at least one general purpose language and at least one domain-specific language to orchestrate infrastructure, follow test driven development and ensure test coverage.	K5 K7 K8 K9 K10 K12 K13 K14 K19 S5 S7 S8 S9 S11 S13 S15 S17 B2 B3
Duty 2 Initiate and facilitate knowledge sharing and technical collaboration with teams and individuals, with a focus on supporting development of team members.	K5 K17 K18 S1 S3 S4 S11 S12 S16 B1 B2 B4 B5
Duty 3 Engage in productive pair and or mob programming to underpin the practice of peer review.	K4 K5 K8 K9 K19 S1 S4 S8 S9 S12 S13 B1 B3
Duty 4 Work as part of an agile team, and explore new ways of working, rapidly responding to changing user needs and with a relentless focus on the user experience. Understand the importance of continual improvement within a blameless culture.	K4 K5 K8 K17 K18 K23 S1 S2 S3 S4 S7 S16 B1 B3 B4 B5
Duty 5 Build and operate a Continuous Integration CI capability, employing version control of source code and related artefacts.	K1 K2 K9 K14 K21 S3 S5 S10 S11 S13 S15 B3
Duty 6 Implement and improve release automation and orchestration, often using Application Programming Interfaces API, as part of a continuous delivery and continuous deployment pipeline, ensuring that teams are able to deploy new code rapidly and safely.	K1 K2 K9 K16 K21 S3 S5 S10 S11 S13 S15 S18 B3 B5
Duty 7 Provision cloud infrastructure using APIs, continually improve infrastructure-as-code, considering use of industry leading technologies as they become available for example serverless, containers.	K1 K2 K3 K6 K9 K10 K11 K12 K13 K14 K16 K20 K21 K24 K25 S3 S5 S10 S11 S13 S16 S17 S18 S19 B3
Duty 8 Evolve and define architecture, utilising the knowledge and experience of the team to design in	K1 K3 K4 K5 K6 K8 K9 K10 K11 K12 K21 K23 K25

an optimal user experience, scalability, security, high availability and optimal performance.	S1 S3 S4 S5 S6 S7 S10 S11 S12 S13 S16 S17 B1 B3
Duty 9 Apply leading security practices throughout the Software Development Lifecycle SDLC.	K3 K4 K5 K7 K8 K9 K10 K11 K12 K15 S2 S3 S5 S6 S7 S9 S11 S12 S13 B1 B3
Duty 10 Implement a good coverage of monitoring for example metrics, logs, ensuring that alerts are visible, tuneable and actionable.	K5 K8 K9 K11 K13 K21 S2 S3 S5 S7 S11 S12 S13 S14 S19 S20 B3
Duty 11 Keep up with cutting edge by committing to continual training and development - utilise web resources for self-learning; horizon scanning, such as Meetup Groups; subscribe to relevant publications.	K4 K5 K20 K21 K22 K24 K26 S3 S11 B1 B2 B5
Duty 12 Look to automate any manual tasks that are repeated, often using APIs.	K1 K5 K8 K9 K10 K11 K13 K14 K16 K26 S3 S10 S12 S13 S18 S20 B3
Duty 13 Accept ownership of changes; embody the DevOps culture of 'you build it, you run it', with a relentless focus on the user experience.	K4 K5 K8 K20 K21 S1 S3 S4 S7 S12 S13 S19 S20 B1 B3 B4

KSBs

Knowledge

K1: Principles of Continuous Integration, Development and Delivery, including the benefits of frequent merging of code, build automation, the creation of build artefacts and ensuring all tests pass using common tooling.

K2: The principles of distributed Source Control, including how to exploit the features of the tool, such as branching, forking and pull requests.

K3: Ethical use of data, considering effects on people and society, Artificial Intelligence AI and automation included, following data protection policy and legislation such as General Data Protection Regulation GDPR.

K4: DevOps as a culture of shared responsibility and collaboration across development, operations, and the wider business, focused on continuous improvement, adaptability, and delivering value to end users.

K5: The business value of DevOps in Time, Cost, and Quality, and ensuring Quality through the software development lifecycle, with continuous feedback.

K6: Software or system architecture modelling techniques.

K7: Modern security tools and techniques - for example threat modelling, vulnerability scanning and dependency checking, with a general awareness of penetration testing and accepted security best practice such as Open Web Application Security Project OWASP.

K8: Problem solving techniques for the task at hand including root cause analysis, risk assessment and understanding impact.

K9: Principles of control flow and structure in programming.

K10: Immutable infrastructure and how it enables continuous refreshing of software, namely the updating of the operating system, container and security patching.

K11: Monitoring and alerting technologies with insights from infrastructure and applications for example AI anomaly detection, predictive analytics, logs and metrics, configuring alert thresholds, firing alerts and visualising data.

K12: The persistence layer, including which storage technologies are applicable to each platform type and application when considering non-functional and functional needs; for example. relational and non-relational data stores, monolith, microservice, read heavy, write heavy, recovery plans.

K13: How and why, we automate, the importance of repeatability within the software development lifecycle.

K14: Test driven development and the test pyramid.

K15: Techniques to secure data, such as encryption, hashing, masking, access control lists, principle of least privilege and zero trust.

K16: What an Application Programming Interface API is, how to find them and interpret the accompanying documentation.

K17: Roles within a multidisciplinary team and the interfaces with other areas of an organisation.

K18: Communication methods, channels and styles to meet audience requirements.

K19: Collaborative development techniques and when to use, for example pair and mob programming.

K20: Common patterns and strategies for translating user needs into cloud infrastructure and application code.

K21: The benefits and risks of buying verses building and how to make an informed choice that suits each use case.

K22: FinOps, cloud economics, cost and budget management.

K23: Principles, values, methodologies and frameworks of agile practice.

K24: Benefits and drawbacks for cloud adoption for example sustainability, agility, elasticity, cost and scalability.

K25: Refracturing and the difference between behavioural and structural changes.

K26: Impact of emerging technology, tools and approaches within their field for example AI

Skills

S1: Communicate with both technical and non-technical audiences at all levels, using diverse methods including Show & Tell, demos, and remote collaboration tools.

S2: Translate user needs into deliverable tasks, writing clear, concise and unambiguous user stories that the whole team can understand.

S3: Contribute to knowledge sharing and technical collaboration.

S4: Work in agile multi-disciplinary delivery teams, taking a flexible, collaborative and pragmatic approach to delivering tasks.

S5: Apply cloud security tools and techniques, for example automated threat modelling, container vulnerability scanning, dependency checking, reducing attack surface area and integrating security into automated pipelines.

S6: Assess identified and potential security threats and take action based on likelihood verses impact.

S7: Employ a systematic approach to solving problems to identify the source of issues.

S8: Engage in collaborative development techniques for example pair and mob programming.

S9: Write tests and follow unit testing discipline in various contexts for example Test driven development, behaviour driven development.

S10: Automate test, release, deployment, and orchestration as part of Continuous Integration workflow and Continuous Delivery pipelines whilst monitoring deployment health.

S11: Engage in continuous and collaborative learning, ensuring learning activities align with changing technical landscape.

S12: Code in a general-purpose programming language for example Python, JavaScript, C#.

S13: Develop infrastructure-as-code to deploy and maintain infrastructure.

S14: Interpret and correlate logs, metrics and traces to identify issues and make informed decisions.

S15: Writing code that makes merging easier and facilitates branching, for example feature toggling or small changes.

S16: Ability to model the components of a system and specify changes through use of diagrams to support collaborative development.

S17: Incremental refactoring to evolve the architecture by applying small behaviour-preserving code changes.

S18: Deploy immutable infrastructure

S19: Install, manage and troubleshoot monitoring tools.

S20: Navigate, troubleshoot and resolve issues in distributed systems for example microservices and cloud-native environments.

Behaviours

B1: Exhibits openness and an aptitude for working as part of a collaborative community; for example, sharing best practice, pairing with team members, learning from others and engaging in peer review practices.

B2: Invests time and effort in their own development, recognising that technology evolves at a rapid rate.

B3: Demonstrates a commitment to the mantra 'You build it, you run it' by either individual or team-based ownership of code, code deployments and continuous improvement.

B4: Is inclusive, professional and contributes towards a blameless culture.

B5: Shows curiosity to explore techniques, business context and opportunities to improve processes.

Qualifications

English and maths

English and maths qualifications must be completed in line with the apprenticeship funding rules.

Does the apprenticeship need to include any mandated qualifications in addition to the above-mentioned English and maths qualifications?

No

Consultation

The group consulted wider sector prior to starting revision to get feedback on what worked well with standard and what needed changing. Feedback in the main was around broadening the standard to allow wider apprentices from SME's to utilise which the group have done.

Progression routes

ST0119 Digital and technology solutions professional-1.2 L6

ST0023 Control systems engineer (degree)-1.1 L6

ST0027 Product design and development engineer (degree)-1.1 L6

Supporting uploads

Mandatory qualification uploads

Mandated degree evidence uploads

Professional body confirmation uploads

Subject sector area

6.1 Digital technology (practitioners)