

Digital Industries Apprenticeship: Standard Specific Guidance for Training Providers – Infrastructure Technician

Table 2 – Infrastructure Technician – Technical Competency Standards

The competency standards have been defined to demonstrate that the knowledge learnt has been applied in real work tasks, activities and projects in a business environment.

Competencies are assessed throughout the apprenticeship through a combination of the employer reference, the synoptic project and a summative portfolio completed by apprentices from records of the work activities in which they have been involved.

The training provider should assist the employer to identify suitable work tasks, activities and projects within the scope of their normal business activities for the apprentice to practice what they have learnt and to demonstrate the competencies below.

The BCS apprenticeship is mapped to an internationally recognised skills framework and to work activities in which an infrastructure technician apprentice would be involved.

The following table sets out these competencies and the expected requirements against the work activities that might be demonstrated at and beyond the minimum expectation. The format is explained below:

Competency standard	Expected requirement	Work activities demonstrating the minimum expected level of competence	Work activities demonstrating competence beyond the minimum expected
<i>This column contains the competency as it is listed in the apprenticeship standard.</i>	<i>This column shows the expected requirements listed in the occupational brief for a successful outcome.</i>	<i>This column shows recognised work activities that demonstrate that the apprentice is meeting the expected requirement.</i> <i>The apprentice should be able to demonstrate all of these activities.</i>	<i>This column shows recognised work activities that demonstrate that the apprentice exceeds the expected requirement.</i> <i>These activities are additional to the expected activities and it is not required that an apprentice will demonstrate competence at this level in every activity.</i>

The infrastructure technician competency standard, requirements and activities demonstrating competence follow:

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<p>IT Security Demonstrates the necessary skills and behaviours to securely operate across all platforms and areas of responsibility in line with organisational guidance, legislation.</p>	<p>The apprentice must demonstrate how they comply with organisational security processes and how they would recognise and escalate issues.</p> <p>The apprentice must be able to locate and follow policies and legislation.</p>	<p>Ensures that relevant technical infrastructure strategies, policies, standards and practices are applied correctly.</p> <p>Installs or removes infrastructure hardware and/or software, using supplied installation instructions and tools; follows agreed standards, including those for electrical work. Agrees the timing of the work with those affected, e.g. users, operations management, including, where appropriate, hand-over to client.</p> <p>Conducts tests of the infrastructure hardware and/or software affected using supplied test procedures and diagnostic tools. Helps to resolve problems and faults, and corrects malfunctions, calling on help from more experienced colleagues if required. Documents results in accordance with agreed procedures.</p>	<p>Assists in providing advice on technical infrastructure aspects of system development and integration, including the operational and maintenance aspects of systems under development, and proposed system recovery procedures. Ensures that relevant technical strategies, policies, standards and practices are applied correctly.</p> <p>Installs or removes infrastructure hardware and/or software, using supplied installation instructions and tools within established procedures and quality systems, including, where appropriate, hand-over to client. Organises the disposal of decommissioned hardware in an environmentally secure manner. Follows agreed standards, including, where appropriate, those for electrical work.</p> <p>Ensures that network management systems and appropriate performance analysis equipment and diagnostic tools are used to test the hardware and/or software affected, and quantify and qualify changes made.</p>

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<p>Remote Infrastructure Effectively operates a range of mobile devices and securely adds them to a network in accordance with organisation's policies and procedures.</p>	<p>The apprentice must demonstrate how to securely connect a minimum of two different types of devices (e.g. laptop/mobile) to access the organisation's network services (e.g. email, files, applications).</p>	<p>Carries out simple assignments related to the infrastructure technical specialism, either alone or as part of a team.</p> <p>Ensures that relevant technical infrastructure strategies, policies, standards and practices are applied correctly.</p> <p>Configures the hardware/software environment as required by the system being integrated.</p> <p>Assists in the configuration of operating system software and infrastructure equipment for the systems testing of platform-specific versions of one or more products.</p> <p>Contributes to preparation of software implementation procedures with fall-back contingency plans. Installs, tests and evaluates new versions of system software.</p> <p>Carries out routine monitoring, logging and reporting tasks, taking defined action on simple problems. Reports unforeseen or exceptional events to supervisor. Carries out</p>	<p>Carries out specific assignments related to the infrastructure technical specialism, either alone or as part of a team.</p> <p>Assists in providing advice on technical infrastructure aspects of system development and integration, including the operational and maintenance aspects of systems under development, and proposed system recovery procedures. Ensures that relevant technical strategies, policies, standards and practices are applied correctly.</p> <p>Identifies and documents system integration components which will be held in the configuration management system.</p> <p>Participates in the configuration of operating system software and infrastructure equipment for systems testing of platform-specific versions of one or more products with minimum supervision.</p> <p>Reviews releases, upgrades and fixes available from system software suppliers and identifies those which merit action. Maintains awareness of existing and emerging software and hardware solutions and develops upgrade plans.</p> <p>Carries out required monitoring, logging and reporting tasks. Takes action on known errors and documented workarounds, logging such</p>

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		and observes all associated administrative and clerical procedures.	actions and advising supervisor or specialists when management or specialist attention is required. Uses network management systems tools to collect routine network load and model performance statistics.

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<p>Data Effectively records, analyses and communicates data at the appropriate level using the organisation's standard tools and processes and to all stakeholders within the responsibility of the position.</p>	<p>The apprentice must be able to select and securely use three appropriate tools when working with and analysing data.</p>	<p>Carries out simple assignments related to the infrastructure technical specialism, either alone or as part of a team.</p> <p>Collects performance data to monitor system efficiency against published service level agreements. Monitors both resource usage and failure rates of installed systems and provides feedback to management.</p> <p>Produces reports on infrastructure defect/problem reporting data (e.g. data extracted from the configuration management system/known error database). Takes agreed actions relating to infrastructure defect/problem.</p>	<p>Carries out specific assignments related to the infrastructure technical specialism, either alone or as part of a team.</p> <p>In the event of system software failure, collects critical information, adhering to agreed procedures. Analyses all documentation, storage dumps and logs relating to system software failures to identify the failing component. Isolates failures and recommends actions to circumvent problems and enable the restoration of services. Liaises with suppliers to obtain corrective code, installing and testing the code to ensure a permanent resolution.</p> <p>Produces reports and registers on defect/problem reporting data (e.g. data extracted from the incident management/configuration management system/known error database). Takes agreed actions relating to problem investigation and resolution within the allotted timescales.</p>

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<p>Problem solving Applies structured techniques to common and non-routine problems, testing methodologies and troubleshooting, and analyses problems by selecting the digital appropriate tools and techniques in line with organisation guidance and to obtain the relevant logistical support as required.</p>	<p>The apprentice must be able to select and use three appropriate tools for testing, troubleshooting and analysing problems.</p> <p>The apprentice must be able to demonstrate compliance with organisational guidance.</p> <p>The apprentice should demonstrate processes and practices for obtaining logistical support.</p>	<p>Conducts tests of the infrastructure hardware and/or software affected using supplied test procedures and diagnostic tools. Helps to resolve problems and faults, and corrects malfunctions, calling on help from more experienced colleagues if required. Documents results in accordance with agreed procedures.</p> <p>Provides assistance to users in a professional manner following agreed procedures for further help or escalation of request. Maintains accurate records of user requests, contact details and outcome. Provides feedback to users.</p> <p>Investigates potential and actual service problems and recommends solutions. Analyses change and system requests. Follows formal procedures to plan and test proposed solutions.</p> <p>Responds to simple calls and enquiries from users, specialists and others and takes appropriate action within defined limits of responsibility or area of specialism to deal with processing priorities. Accepts escalations and initiates</p>	<p>Ensures that network management systems and appropriate performance analysis equipment and diagnostic tools are used to test the hardware and/or software affected, and quantify and qualify changes made.</p> <p>Provides specialist guidance and some supervision to less experienced colleagues. Analyses work in progress, takes action to ensure targets are met within safety and quality procedures, including hand-over to client where appropriate.</p> <p>Tailors system software to ensure that the functionality of installed hardware is fully exploited. Prepares software implementation procedures with fall-back contingency plans. Installs and tests new versions of system software.</p> <p>Uses available monitoring tools, including network management systems tools, to maintain awareness and control of the network load and to model performance statistics. Identifies and rectifies a broad range of operational exceptions and error conditions and deals sensibly and responsibly with unexpected or extraordinary events or incidents. Where these actions necessitate modification, restriction or complete removal of resources or services available, communicates with users, specialists and others, using appropriate methods (e.g. single point of</p>

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		<p>first-level support action, personally resolving the majority of referred problems.</p> <p>Investigates, diagnoses and resolves low-impact network problems within service level agreement tolerances, referring to network users, other staff and suppliers, as necessary.</p> <p>Initiates action to resolve problems in infrastructure components. Documents such incidents and problems within the configuration management defect/problem reporting system. Matches unresolved infrastructure incidents against existing problems, known errors and other incidents (including parent incidents).</p> <p>Assists with the implementation of agreed infrastructure remedies and preventative measures, in close liaison with the service desk, incident management, change management, configuration management and asset management functions.</p> <p>Produces reports on infrastructure defect/problem reporting data (e.g.</p>	<p>contact such as service desk), to inform and escalate if necessary. Creates reports and proposals for improvement.</p> <p>Responds to enquiries by users, specialists or others and is able to deal effectively with a broad range of problems of moderate complexity, only escalating those which need specialist or management attention.</p> <p>Initiates speedy and permanent resolution to problems in infrastructure components by coordinating the efforts of the resolution team or teams. Documents such incidents and problems within the configuration management defect/problem reporting system. Matches unresolved incidents against existing problems, known errors and other incidents.</p> <p>Initiates the implementation of agreed infrastructure remedies, in close liaison with the service desk, incident management, change management, configuration management and asset management functions.</p> <p>Initiates preventative measures, such as identifying and investigating suspect operating system software and other infrastructure components. Ensures that existing problems and known errors in infrastructure components being brought into operation are understood and managed in the same way as those</p>

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		data extracted from the configuration management system/known error database). Takes agreed actions relating to infrastructure defect/problem	arising from operational incidents. Supports service level management in monitoring the impact of infrastructure problems on agreed service levels, and initiates any appropriate improvement actions.

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<p>Workflow management Works flexibly and demonstrates the ability to work under pressure to progress allocated tasks in accordance with the organisation's reporting and quality systems.</p>	<p>The apprentice must be able to demonstrate the ability to prioritise workflow and manage allocated tasks.</p> <p>The apprentice must be able to record tasks and comply with organisation's quality processes.</p>	<p>Installs or removes infrastructure hardware and/or software, using supplied installation instructions and tools; follows agreed standards, including those for electrical work. Agrees the timing of the work with those affected, e.g. users, operations management, including, where appropriate, hand-over to client.</p> <p>Accepts data, media, consumables and other items required for the processing of work and takes responsibility for the movement, storage and dispatch of such items as required, and for other routine functions associated with data management.</p>	<p>Installs or removes infrastructure hardware and/or software, using supplied installation instructions and tools within established procedures and quality systems, including, where appropriate, hand-over to client.</p> <p>Organises the disposal of decommissioned hardware in an environmentally secure manner. Follows agreed standards, including, where appropriate, those for electrical work.</p> <p>Ensures that all tasks and procedures are carried out effectively and efficiently to agreed levels of service or specific requirements of Service or Operational Level Agreements. Gathers and records service level information. Produces statistics for use in measuring key performance indicators (KPIs).</p>

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<p>Health and Safety Interprets and follows IT legislation to securely and professionally work productively in the work environment. Understands and applies health & safety policies to every day work.</p>	<p>The apprentice must be able to demonstrate their interpretation and secure working practices in accordance with IT legislation.</p> <p>The apprentice must demonstrate an understanding and apply health & safety policies to everyday work.</p>	<p>Assists in producing simple infrastructure designs and specifications, complying with known standards and good practices (e.g. IEEE standards).</p> <p>Provides guidance and assistance to less experienced colleagues in the execution of routine tasks and ensures that all safety, security, clerical and administrative procedures are completed correctly.</p>	<p>Performs simple infrastructure design work while complying with known standards and good practices (e.g. IEEE standards). Takes account of factors that can affect integration of components (e.g. environmental, security, usability, interoperability etc.).</p> <p>Helps to resolve problems (e.g. poor performance) and faults (e.g. system failure) occurring in the operation of infrastructure hardware and software – especially those requiring greater installation expertise.</p>

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<p>Performance Optimises the performance of hardware, software and network systems and services in line with business requirement.</p>	<p>The apprentice must be able to demonstrate how to configure a minimum of three pieces of hardware and configure three different types of software in line with business requirements.</p>	<p>Carries out required collection of information and records, including using network management systems and appropriate performance analysis equipment to monitor installation performance against agreed service levels. Takes action on known or moderately complex infrastructure problems, escalating to superiors and specialists only when their action is required.</p> <p>Contributes, as required, to the development of installation procedures and standards.</p> <p>Gathers performance statistics from the IT platforms to enable recommendations for the tuning of system software. Applies system software parameters to maximise throughput and efficiency.</p> <p>Accepts data, media, consumables and other items required for the processing of work and takes responsibility for the movement, storage and dispatch of such items as required, and for other routine functions associated with data management.</p>	<p>Corrects infrastructure malfunctions, calling on other experienced colleagues and external resources if required, and initiates action to ensure best use is made of available infrastructure assets.</p> <p>Initiates action to maintain or improve installation/decommissioning procedures and standards within area of authority, recognising issues that need to be escalated.</p> <p>Collects performance data to monitor system efficiency against published service level agreements. Monitors both resource usage and failure rates of installed systems and provides feedback to management.</p> <p>Ensures that all tasks and procedures are carried out effectively and efficiently to agreed levels of service or specific requirements of service or operational level agreements. Gathers and records service level information. Produces statistics for use in measuring key performance indicators (KPIs).</p> <p>Assists with the planning of infrastructure developments.</p>

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		Assists with the planning of relatively simple infrastructure developments.	

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<p>Environment Understands and responds to the correct processes associated with WEEE (the Waste Electrical and Electronic Equipment Directive).</p>	<p>The apprentice must be able to explain how to comply when required with WEEE and the implications of data protection during disposal.</p>	<p>Ensures that relevant technical infrastructure strategies, policies, standards and practices are applied correctly.</p> <p>Assists in producing simple infrastructure designs and specifications, complying with known standards and good practices (e.g. IEEE standards).</p> <p>Installs or removes infrastructure hardware and/or software, using supplied installation instructions and tools; follows agreed standards, including those for electrical work. Agrees the timing of the work with those affected, e.g. users, operations management, including, where appropriate, hand-over to client.</p>	<p>Assists in providing advice on technical infrastructure aspects of system development and integration, including the operational and maintenance aspects of systems under development, and proposed system recovery procedures. Ensures that relevant technical strategies, policies, standards and practices are applied correctly.</p> <p>Performs simple infrastructure design work while complying with known standards and good practices (e.g. IEEE standards). Takes account of factors that can affect integration of components (e.g. environmental, security, usability, interoperability etc.).</p> <p>Installs or removes infrastructure hardware and/or software, using supplied installation instructions and tools within established procedures and quality systems, including, where appropriate, hand-over to client. Organises the disposal of decommissioned hardware in an environmentally secure manner. Follows agreed standards, including, where appropriate, those for electrical work.</p>

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