



BCS Digital Industries Apprenticeship

Standard Specific Guidance for Training Providers

Level 3 Infrastructure Technician Apprenticeship

Version 3.0

May 2018

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

Change History

Any changes made to the project shall be clearly documented with a change history log. This shall include the latest version number, date of the amendment and changes made. The purpose is to identify quickly what changes have been made.

Version Number and Date	Changes Made
V1.0 March 2017	Document Created.
V1.1 March 2017	Example text removed from Summative Portfolio Declaration Page 74.
V1.2 September 2017	Removal of some work activities across the competencies.
V2.0 November 2017	Update to technical competencies standards, work activities.
V2.1 December 2017	Minor changes to minimum requirement work activities.
V3.0 May 2018	Removed typical evidence from all competencies and minor tweaks to proficiencies.

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Purpose of this Document

The purpose of this document is to provide useful information and suggested supporting documentation specific to the Infrastructure Technician Apprenticeship. It should be read in conjunction with the BCS General Guidance for Apprentices, Employers and Training Providers document and is designed to give training providers some tools to help them build their own programme from training plan through to end-point assessment.

This guide will provide:

- supporting information around how to help the infrastructure technician apprentice to meet and go beyond the standard;
- a number of useful documents to support the training provider in meeting their responsibilities in managing the apprenticeship from training plan through to the end-point assessment;
- evidence checklists to help the training provider support the apprentice in completing their summative portfolio;
- a template for completing the employer reference.

Introduction

The BCS Level 3 Infrastructure Technician Apprenticeship is one of the suite of Digital Industries Apprenticeships that have been designed by the industry to address skills shortages and meet the ever-changing needs of UK employers.

The General Guidance for Apprentices, Employers and Training Providers provides the broad view on how to run an apprenticeship programme to the BCS Digital Industries Standard. The collection of tables and templates contained within this document has been designed to give training providers the tools to build their programme and to assist them in helping apprentices and employers towards the successful completion of each element of the end-point assessment.

The areas where a training provider should be involved in ensuring a successful outcome to the apprenticeship are:

- mapping and assessing work against the standard;
- advising the employer and the apprentice on which knowledge modules, vendor or professional certificates and other relevant training and activities are most appropriate for their requirements, and agree a suitable training plan;
- assisting the apprentice with applying knowledge in the workplace;
- acting as an advisor to the apprentice and the employer to ensure the programme remains on track and any concerns are addressed;
- helping the apprentice to select evidence for their summative portfolio;
- supporting the apprentice through the synoptic project;
- confirming the apprentice's readiness for the end-point assessment.

The following series of checklists can be used by the training provider to help manage the process through to completion. Training providers may substitute their own processes and documentation as they see fit in order to effectively manage their key areas of responsibility as set out above.

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The Infrastructure Technician Apprentice

The primary roles of an infrastructure technician are to:

- provide support to internal and external customers, helping them to be productive when using technology to do their own jobs;
- use tools to problem solve and troubleshoot non-routine problems;
- set people up on systems and provide support when they need it;
- rectify issues to maintain the organisation's productivity.

Job titles may be different across different organisations so the role may also be referred to as Help Desk Technician, First or Second Line Support, Network Support or IT Infrastructure Technician.

Business Proficiencies

The proficiencies that should be demonstrated by an apprentice infrastructure technician are listed below.

Business skills

The apprentice can:

- demonstrate an analytical and systematic approach to issue resolution;
- demonstrate effective communication skills;
- contribute fully to the work of teams;
- appreciate the wider business context, and how their role relates to other roles and to the business of the employer or client.

Complexity

The apprentice can:

- perform a range of work, sometimes complex and non-routine, in a variety of environments;
- apply a methodical approach to issue definition and resolution.

Autonomy

The apprentice can:

- work under general direction;
- determine when issues should be escalated to a higher level.

Influence

The apprentice:

- has working-level contact with customers, suppliers and partners;

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Knowledge Standards, Technical Competence and Behaviour and Relationship Standards

Tables 1, 2 and 3 contain details of the topics that the training provider may decide to cover in their development plans and scheduled work activities in order to stretch the apprentice.

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Table 1 – Infrastructure Technician – Knowledge Standards

The knowledge standards define learning that must take place during the apprenticeship, **both through the activities and the apprentice’s own independent learning**. The additional learning outcomes detailed in the table show how a training provider can stretch the apprentice’s learning beyond the requirement as set out in the occupational brief. However, it is important to remember that stretching the apprentice in this way will only have a bearing on their final grading if the impact is demonstrated through their competence in the end-point assessment. These knowledge standards, therefore, show the additional learning that may support the apprentice in improving their overall competence. Technical knowledge and understanding is assessed throughout the apprenticeship through a combination of Ofqual regulated knowledge modules and specified vendor and professional qualifications. These must be passed before the end-point assessment can take place.

Knowledge standard	Expected requirement	Suggested learning outcomes to meet the standard and stretch the apprentice to exceed the minimum requirement
<p>Working knowledge of: a range of cabling and connectivity, the various types of antennas and wireless systems and IT test equipment.</p>	<ul style="list-style-type: none"> • understand and identify Ethernet, Co-axial, Fibre-optic and RJ45 connectors; • understand and identify a range of Cat 1-6 cables; • understand and identify directional, omnidirectional, point-to-point, point-to-multipoint and mobile antennas; • understand the types of wireless systems; • understand the relevant test equipment associated with each element of the above. 	<p>Explain the key differences between cables and connector types.</p> <ul style="list-style-type: none"> • copper; <ul style="list-style-type: none"> ○ 10Base2; ○ xBaseT; • fiber – glass / plastic; <ul style="list-style-type: none"> ○ multi-mode; ○ single-mode; • connectors; <ul style="list-style-type: none"> ○ RJ45; ○ BNC; ○ Straight Tip (ST); ○ Subscriber Connector (SC); ○ Local Connector (LC). <p>Describe the key features of Cat1-6 cables.</p> <ul style="list-style-type: none"> • identify Cat1-4 cable as older types of cable; • describe the main features of Cat5, 5A, 6, 6A; <ul style="list-style-type: none"> ○ capacity; ○ maximum distance; ○ network application; <ul style="list-style-type: none"> ▪ 10BastT; ▪ 100Base-TX;

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		<ul style="list-style-type: none"> ▪ 1000Base-T; ▪ 10GBase-T. <p>Explain the different antennas types.</p> <ul style="list-style-type: none"> • directional; • omni directional; • point-to-point; • point-to-multipoint; • mobile. <p>Understand the types of wireless systems.</p> <ul style="list-style-type: none"> • Bluetooth; <ul style="list-style-type: none"> ○ features; <ul style="list-style-type: none"> ▪ radio communication; ▪ medium range (1-10m); ○ typical purpose; <ul style="list-style-type: none"> ▪ wireless peripheral connection; • Near-field communication (NFC); <ul style="list-style-type: none"> ○ features; <ul style="list-style-type: none"> ▪ radio communication; ▪ very short range (6cm); ○ typical purpose; <ul style="list-style-type: none"> ▪ contactless payments; • IrDA / IR; <ul style="list-style-type: none"> ○ features; <ul style="list-style-type: none"> ▪ uses infrared radiation; ▪ typically short range communication (1-3m); ▪ typically slow speed; ▪ line of site; ○ typical purpose; <ul style="list-style-type: none"> ▪ communication link for older devices; ▪ control TV / setup box remote controls; • WiFi; <ul style="list-style-type: none"> ○ features; <ul style="list-style-type: none"> ▪ radio communication;
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		<ul style="list-style-type: none"> ▪ longer range (up to 100m); ▪ faster; ○ typical purpose; <ul style="list-style-type: none"> ▪ wireless network for tablet / phones / computers; • describe the key types of WiFi networking security; <ul style="list-style-type: none"> ○ WEP; ○ WPA; ○ WPA2; <ul style="list-style-type: none"> ▪ satellite; ○ features; <ul style="list-style-type: none"> ▪ typically uses a microwave link; ▪ high latency; ▪ expensive; ▪ long range; ○ typical purpose; <ul style="list-style-type: none"> ▪ where other communication links not available. <p>Identify testing equipment used with wired and wireless networks.</p> <ul style="list-style-type: none"> • wired; <ul style="list-style-type: none"> ○ multimeter; ○ wire map tester; ○ cable testers; ○ tone generator and probe; ○ loopback plug; • wireless; <ul style="list-style-type: none"> ○ wireless locator / WiFi analyser; ○ wireless heat maps.
<p>Understands maintenance processes and applies them in working practices.</p>	<ul style="list-style-type: none"> • understand the requirements for managing maintenance work-order records; • understand how to respond to real-time system down times for 	<p>Describe the typical information stored in maintenance work records.</p> <ul style="list-style-type: none"> • customer name; • company name; • system / device model and make; • system ID / serial number; • date; • engineer name; • description of maintenance activity;

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	<p>maintenance order requests;</p> <ul style="list-style-type: none"> • understand how to undertake short-notice tasking requests; • understand how to record all maintenance tasking through a job card system of control; • understand maintenance tools; • understand, configure and manage updates; • understand how to manage local storage; • understand how to monitor system performance. 	<ul style="list-style-type: none"> • purpose of the maintenance activity; • parts needed (if required). <p>Explain the purpose of maintenance work records.</p> <ul style="list-style-type: none"> • record of the work completed for customers; • help with scheduling periodic routine maintenance; • to improve quality of future maintenance work; • identify trends that will help prevent future disruption. <p>Explain how to use fault related information and business process information / SLA to select the correct outcome considering.</p> <ul style="list-style-type: none"> • the priority of the fault; • time the fault has been outstanding; • any required escalation. <p>Explain the consideration required when undertaking a task given at short notice.</p> <ul style="list-style-type: none"> • ensuring task is recorded / logged in line with organisational guidelines; • reprioritisation of all tasks in line with SLA's; • potential business impact of undertaking / not undertaking short notice task. <p>Describe typical status sequences of maintenance tasks.</p> <ul style="list-style-type: none"> • open – initial recording of task; <ul style="list-style-type: none"> ○ customer details; ○ description of task; ○ time; ○ business impact; ○ system(s) impacted; • pending – awaiting further input or information needed to progress; • fixed – awaiting confirmation an issue is resolved; • escalation – send the task to a more technically specialised team or more senior member of staff; • closed - confirmed complete with documented diagnosis and fix.
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		<p>Describe the purpose and use of the following maintenance tools when maintaining systems.</p> <ul style="list-style-type: none"> • systems backups; • system event logging; • antivirus; <ul style="list-style-type: none"> ○ software and antivirus pattern updates; ○ regular system scans; ○ monitoring of quarantined and uninfected items; • general tools; <ul style="list-style-type: none"> ○ scheduling through Task Scheduler; ○ Windows Control Panel – services. <p>Describe the purpose of updates and how to manage updates for the following:</p> <ul style="list-style-type: none"> • system updates: <ul style="list-style-type: none"> ○ application updates; ○ system updates; ○ security patches; ○ Windows Server Update Service; • firmware updates. <p>Describe how the following tools are used to manage local storage.</p> <ul style="list-style-type: none"> • monitoring disk space through drive properties; • Check Disk (chkdsk); • Disk Defragmentation; • 'disk clean-up' utility; • disk format; <ul style="list-style-type: none"> ○ FAT32; ○ NTFS. <p>Describe how the following tools are used to monitor system performance.</p> <ul style="list-style-type: none"> • Windows Event Viewer; • Linux - /var/log/messages; • Task Manager; • Windows Resource Monitor; • netstat -e;
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<p>Understands and applies the basic elements and architecture of computer systems and business IT architecture.</p>	<ul style="list-style-type: none"> • understand the basic architecture of 'computer systems'; • understand business IT architecture, taking into account the full range of devices, OS, applications, databases, servers, networking, security and services. 	<ul style="list-style-type: none"> • SMART monitoring tools. <p>Explain the features and purpose of basic computer systems components.</p> <ul style="list-style-type: none"> • CPU; • motherboard; • processor; • memory; • hard drive; • NIC; • power supply; • fan. <p>Explain the purpose of:</p> <ul style="list-style-type: none"> • operating system – software used to manage the basic functions of a computer; • applications – software designed to provide a specific task normally for end users; • databases – used to storage and rapid retrieval of information; • servers – provide systems resources that other computers can access; <ul style="list-style-type: none"> ○ Active Directory; ○ DNS; ○ web proxy server; ○ file and print; ○ email; ○ database; ○ virtualisation; • networking - provide managed communication links between computers; • security – maintaining the integrity of systems and data; • services – Infrastructure as a Service (IaaS), Platform as a Service (PaaS), Software as a Service (SaaS).
<p>Understands where to apply the relevant numerical skills e.g. binary.</p>	<ul style="list-style-type: none"> • understand internet protocol (IP) addresses and how they work; • understand how computers see IP addresses; 	<p>Describe the configuration and use of:</p> <ul style="list-style-type: none"> • IPV4 address; • netmask; • default gateway; • DNS server.

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	<ul style="list-style-type: none"> understand and be able to use binary arithmetic and create large numbers from groups of binary units or bits. 	<p>Describe key features of IPv6.</p> <ul style="list-style-type: none"> much larger address space; 128 bits in size; 64 bits used for host address; 64 bits used for network address. <p>Identify which part of an IPv4 address refers to the network and which to the host.</p> <p>Apply logical AND/OR on two 8 bit binary numbers.</p> <p>Apply a binary to decimal conversion on binary numbers up to 8 bits in length.</p> <p>Apply decimal to binary number conversion on decimal numbers up to 255.</p>
<p>Understands the relevant networking skills necessary to maintain a secure network.</p>	<ul style="list-style-type: none"> understand platforms and data communications; understand the requirements to configure IP settings; understand how to deploy and configure a DNS service; understand how to create and configure virtual networks; understand how to configure / support networking settings and connectivity; understand how to configure / support and maintain network security; understand how to configure / support remote management systems; 	<p>Identify the purpose of types of data communication platforms used in networking.</p> <ul style="list-style-type: none"> video; <ul style="list-style-type: none"> typically requires more bandwidth than voice or data; individual packets can be lost and communication still works but at reduced quality; impacted by jitter; voice; <ul style="list-style-type: none"> typically requires greater bandwidth than data less than video; individual packets can be lost and communication still works but at reduced quality; impacted by jitter; data; <ul style="list-style-type: none"> typically requires less bandwidth than video or voice; typically, a whole message must be received for the file to be uncorrupted. <p>Explain the settings needed to configure IP.</p> <ul style="list-style-type: none"> IP address; netmask; default gateway; static / dynamic; public / private.

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	<ul style="list-style-type: none"> • understand why and how to install domain controllers; • understand the need for creating and managing Active Directory users and computers; • understand how to create and manage Active Directory groups and organisational units (OUs). 	<p>Explain the purpose of a DNS server.</p> <ul style="list-style-type: none"> • name resolution; • storage of network records; • CNAME; • A. <p>Explain the purpose of configuring the IP address of DNS server on a client.</p> <ul style="list-style-type: none"> • enables DNS name resolution. <p>Explain how to create and configure virtual networks.</p> <ul style="list-style-type: none"> • VLAN; • VPN; • virtualised switch. <p>Describe how to configure and support networks by editing key settings.</p> <ul style="list-style-type: none"> • IP address / netmask / default gateway; • primary and secondary DNS; • firewall enabling / disabling; <ul style="list-style-type: none"> ○ the entire firewall; ○ ports; <ul style="list-style-type: none"> ▪ dhcp; ▪ dns; ▪ ftp; ▪ http; ▪ https; ▪ imap; ▪ pop3; ▪ RDP; ▪ smtp; ▪ ssh; ▪ telnet; ○ applications. <p>Explain the main configuration tools, what their functions are and how they are used to maintain security.</p>
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		<ul style="list-style-type: none"> • personal firewall; • perimeter firewall; • directory services (Active Directory); <ul style="list-style-type: none"> ○ users; ○ groups; • policies (group policy); <ul style="list-style-type: none"> ○ password policies; ○ hardware restrictions; ○ application and utility restrictions. <p>Describe how to configure remote support of systems using:</p> <ul style="list-style-type: none"> • RDP; • VNC; • SSH. <p>Describe the key purposes of domain controllers.</p> <ul style="list-style-type: none"> • centralise the management of directory services; • centralise the management of security policies; <p>Describe the major steps required to install a domain controller.</p> <ul style="list-style-type: none"> • install Windows Server; • configure networking; • install Active Directory; • configure a domain name. <p>Describe the purpose of creating and managing users and computer records within Active Directory:</p> <ul style="list-style-type: none"> • users – centralised management of user access to organisational network; • computers – centralised management of which computer can access a domain and domain resources. <p>Describe how to create, update and delete within Active Directory.</p> <ul style="list-style-type: none"> • organisational unit (OU); • users; • computers.
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<p>Understands the similarities, differences and benefits of the current Operating Systems available.</p>	<ul style="list-style-type: none"> • understanding of different platforms; • understands the process for constructing PCs with applied software utilised; • understands and is able to apply knowledge to various operating systems with installations required for end to end testing; • understand native applications and tools; • understands security principles associated with different platforms and operating systems. 	<p>Describe different operating system platforms.</p> <ul style="list-style-type: none"> • Windows Server; • Windows Desktop; • Linux servers; • Android; • Apple iOS. <p>List and order the basic process of building a PC.</p> <ul style="list-style-type: none"> • component selection; • order of component assembly; • environment precautions. <p>Describe the process for installing a software operating system.</p> <ul style="list-style-type: none"> • obtaining installation media; • identifying suitable hardware; • installing software; • configuring for first use. <p>List and describe the order of tasks required for end-to-end testing of an operating system to ensure it works as intended (WIndows, Linux).</p> <ul style="list-style-type: none"> • perform a log in as an administrative user; • test remote management; • perform a log in as a normal user; • verify that a normal user cannot use admin tools requiring elevated permissions; • verify that connectivity to network resources and internet services works correctly. <p>Summarise the native applications for different operating systems.</p> <ul style="list-style-type: none"> • IOS <ul style="list-style-type: none"> ○ Safari; ○ Maps; ○ App Store; • Windows; <ul style="list-style-type: none"> ○ IE; ○ Edge;
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		<ul style="list-style-type: none"> ○ Notepad; ○ Paint; ○ Command Prompt; ● Linux; <ul style="list-style-type: none"> ○ Nano; ○ Terminal; ● Android; <ul style="list-style-type: none"> ○ Chrome; ○ Maps; ○ Play Store. <p>Explain the security principles when running an operating system running on a platform; with a focus on physical hardware, virtual servers and cloud services.</p> <ul style="list-style-type: none"> ● secure configuration following recommended good practice; ● user access control; ● malware protection; ● patch management.
<p>Understands how to operate remotely and how to deploy and securely integrate mobile devices.</p>	<ul style="list-style-type: none"> ● undertake a data network deployment exercise to implement and deploy remote and mobile communications technology; ● understand secure communications interfaces for mobile connectivity; ● understand security in mobile devices; ● understand mobility; ● understand remote management and assistance; ● understand configuration for: 	<p>Describe the top-level tasks required to deploy a VPN.</p> <ul style="list-style-type: none"> ● configure VPN client settings; ● receive IP; ● configure WAN link; ● connect to remote server; ● encrypt traffic. <p>Describe how HTTPS provides secure access to web applications.</p> <p>Describe how VOIP provides voice communication over IP.</p> <p>Describe how using encryption technologies can securely transport data across mobile or wireless networks.</p> <ul style="list-style-type: none"> ● HTTPS; ● VPN technologies; ● wireless. <p>Describe the key features of mobility.</p>

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	<ul style="list-style-type: none"> ○ support remote access / connections; ○ support mobility options; ○ support security for mobile devices. 	<ul style="list-style-type: none"> • bring your own device; • extends the corporate network to mobile devices; • extends the implementation and enforcement of organisational security policies. <p>Explain how tools can be used to remotely manage devices or provide assistance to remote users.</p> <ul style="list-style-type: none"> • Remote Desktop / Remote Assistance; • Secure Shell. <p>Describe how each item in the list would help secure a mobile device.</p> <ul style="list-style-type: none"> • device encryption; • strong device passwords / biometric checks; • transport encryption such as HTTPS / VPN. <p>Explain the top-level configuration required for:</p> <ul style="list-style-type: none"> • connections that support secure remotely LAN access; <ul style="list-style-type: none"> ○ https; ○ VPN; • mobility options supported by mobile device management software; <ul style="list-style-type: none"> ○ remote wipe; ○ system / software updates; ○ phone tracking; ○ data encryption; ○ security policy enforcement; • security of mobile devices; <ul style="list-style-type: none"> ○ mobile security policy enforcement; ○ encryption at rest and in transit (on the wire). <p>Identify the benefits of device encryption and a strong passcode on a user's mobile device.</p> <ul style="list-style-type: none"> • if a device is lost or stolen, the data is encrypted; • a strong passcode to help prevent unauthorised access to data.
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<p>Understanding and working knowledge of cloud and cloud services.</p>	<ul style="list-style-type: none"> • understand how to create and configure virtual machines; • understand hosted applications, such as: email, server, storage, desktops; • understand and explain provision tenants; • understand how to configure secure passwords and management of passwords; • understand how to manage user and security groups and/or cloud identities and their importance; • understand how to configure DNS records for services; • understand how to enable client connectivity to cloud services. 	<p>Describe the key steps required for creating a virtual machine.</p> <ul style="list-style-type: none"> • resource allocation; <ul style="list-style-type: none"> ○ memory; <ul style="list-style-type: none"> ▪ static and dynamic; ○ storage; ○ compute (CPU); ○ network. <p>Explain and summarise the key purposes of hosted applications.</p> <ul style="list-style-type: none"> • email; • servers; • storage; • desktops. <p>Summarise and explain how multi-tenant cloud platforms allow for separately provisioned tenants (i.e. multiple customers to operate on the same service, but not share or interfere with each other).</p> <p>Understand factors required for secure password.</p> <ul style="list-style-type: none"> • set a strong password policy; • use multifactor / two-factor authentication where available. <p>List the pros and cons of password management tools and services.</p> <ul style="list-style-type: none"> • all passwords in one place; • access on multiple device; • password generation. <p>Identify the key steps required to manage users and / or identities, and groups within cloud tenants.</p> <ul style="list-style-type: none"> • create users / identities; • create security groups of users with common security access requirements; • allocate users to security groups; • authorise access to resources using security groups.
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		<p>Describe the importance of separating users into groups and managing what information / resources they have access to.</p> <p>List and describe the key DNS resource record types and what they're used for in relation to cloud services.</p> <ul style="list-style-type: none"> • A Record; • AAAA Record; • CNAME; • MX. <p>Describe how a client could be connected into a cloud service.</p> <ul style="list-style-type: none"> • client configured to enable network access; • user account / identity created; • user authorised to access resources.
<p>Understands the importance of disaster recovery, how a disaster recovery plan works and their role within it.</p>	<ul style="list-style-type: none"> • understand backup and recovery methods; • understand what a disaster recovery plan is and where it can be found; • understand their role within the disaster recovery plan; • understand what should be in a recovery plan; • understand how and when it should be practiced or tested; • understand how to implement and configure system recovery; • understand how to configure file recovery. 	<p>Describe backup and recovery options and their benefits.</p> <ul style="list-style-type: none"> • data and / or system; <ul style="list-style-type: none"> ○ data and system; <ul style="list-style-type: none"> ▪ take longer to backup; ▪ take up more media space; ▪ simplify restores - no need to install and configure OS; ○ data; <ul style="list-style-type: none"> ▪ quicker to backup; ▪ OS must be installed and configured when complete system is lost; • full; <ul style="list-style-type: none"> ○ backs up all data; ○ easy to restore and manage; • incremental; <ul style="list-style-type: none"> ○ backs up changes since last backup; ○ quicker to back up; ○ harder to restore - may require many restore sets; • differential; <ul style="list-style-type: none"> ○ backs up changes since last full backup; ○ quicker to back up the full image; ○ easier to restore than incremental - may require less restore sets.

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		<p>Describe the importance of testing backups and performing test restores.</p> <ul style="list-style-type: none"> • backup may have failed; • restore method may fail. <p>Describe the purpose of a disaster recovery plan.</p> <ul style="list-style-type: none"> • to document the steps that will be implemented in the event of business disruption. <p>Identify where a disaster recovery plan can be found.</p> <ul style="list-style-type: none"> • paper copies available to key personnel; • available on a company Intranet; • available from Information Systems Manager or IT Director. <p>Describe an infrastructure technician's role within a disaster recovery plan.</p> <ul style="list-style-type: none"> • understand role as stated in the disaster recovery plan; • undertake steps as defined in disaster recovery plan. <p>List the typical items that should be contained within a disaster recovery plan.</p> <ul style="list-style-type: none"> • risk assessment; • Business Impact Analysis (BIA); • business continuity and recovery strategy; • business process priorities; • roles and responsibilities; • test plan. <p>Explain when disaster recovery plan can be tested.</p> <ul style="list-style-type: none"> • tested / practiced when stated in test plan; • maximum amount time that can elapse before testing. <p>Explain how disaster recovery plan can be tested.</p> <ul style="list-style-type: none"> • simulation; • disaster recovery failover.
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		<p>Explain how to implement recovery following the steps outlined in the disaster recovery plan.</p> <ul style="list-style-type: none"> • system recovery - data and system restore from backup; • switch to redundant systems; • switch to hot / cold standby sites. <p>Explain the purpose of a three-two-one backup policy.</p> <ul style="list-style-type: none"> • three different backups; • two different types of media; • one backup off site. <p>Explain the difference between a data and system restore.</p>
<p>Understands the similarities and differences between a range of coding and logic.</p>	<ul style="list-style-type: none"> • understand working/scripting at command line, particularly when supporting any server work; • understand and recognise different coding and language; • understand application life cycle management; • understand algorithms and data structures; • understand web page development. 	<p>Explain what scripts are and what purpose they serve.</p> <ul style="list-style-type: none"> • Commonly used scripting languages. <ul style="list-style-type: none"> ○ DOS shell / Batch; ○ PowerShell; ○ Bash. • Automating tasks in Windows and Linux. • Command line interface (CLI) and what purpose they serve. <ul style="list-style-type: none"> ○ Performing systems administration tasks in Windows. <ul style="list-style-type: none"> ▪ ipconfig ▪ dir ▪ netstat /ob ▪ ping ▪ mkdir ▪ cd ▪ del(ete) ▪ ren(ame) ▪ copy ▪ move ▪ systeminfo ○ Performing systems administration tasks in Linux. <ul style="list-style-type: none"> ▪ ifconfig eth0 / ip addr show eth0 ▪ ls ▪ netstat -a

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		<ul style="list-style-type: none">▪ ping▪ mkdir▪ cd▪ rm (remove)▪ mv (move) - moves and renames▪ lscpu - CPU info▪ free -m▪ top▪ tail <p>Explain what the command line interface is and how it can be used in an infrastructure capacity.</p> <ul style="list-style-type: none">• Use of commands, command line switches and command line arguments, their purpose and what each term means.<ul style="list-style-type: none">○ General format of commands is <command> <switch> <argument>○ Linux:<ul style="list-style-type: none">▪ ls -l /▪ ls *▪ ls○ Windows:<ul style="list-style-type: none">▪ dir /b \▪ dir *▪ dir <p>Recognise file and directory operations in Windows and Linux.</p> <ul style="list-style-type: none">• Copy;• Rename;• Move;• Delete. <p>Identify diagnostics for networking, file systems, security and processes.</p> <ul style="list-style-type: none">• Windows:<ul style="list-style-type: none">○ ipconfig○ ping○ nslookup
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		<ul style="list-style-type: none"> ○ tracert ○ chkdsk ○ netstat • Linux: <ul style="list-style-type: none"> ○ ifconfig ○ ping ○ nslookup ○ traceroute ○ fsck ○ netstat <p>Explain how to achieve the running of scheduling tasks automatically at a set time.</p> <ul style="list-style-type: none"> • Windows - through Windows Scheduler; • Linux - through CRON. <p>Recognise Directory listings in Windows and Linux.</p> <ul style="list-style-type: none"> • time based sort; • alphanumeric based sort. <p>Recognise file and directory permissions.</p> <ul style="list-style-type: none"> • Linux: <ul style="list-style-type: none"> ○ viewing; ○ changing. • Windows: <ul style="list-style-type: none"> ○ icacls. <p>Recognise login script types.</p> <ul style="list-style-type: none"> • Windows: <ul style="list-style-type: none"> ○ Bat; ○ PS1. • Linux: <ul style="list-style-type: none"> ○ Bash. <p>Explain how to compress and decompress files.</p> <ul style="list-style-type: none"> • Windows:
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		<ul style="list-style-type: none"> ○ Zip.ps1 ○ Compress-archive ● Linux: <ul style="list-style-type: none"> ○ gzip <p>Explain how to list and stop running processes.</p> <ul style="list-style-type: none"> ● Windows: <ul style="list-style-type: none"> ○ net stop ○ net start ● Linux: <ul style="list-style-type: none"> ○ ps ○ kill <p>Recognise the syntax of scripting languages; with a focus on PowerShell, Windows DOS command line and Linux shell commands.</p> <ul style="list-style-type: none"> ● common scripting language features; <ul style="list-style-type: none"> ○ instructions; ○ data types; <ul style="list-style-type: none"> ▪ strings; ▪ integers; ▪ arrays; ▪ floating point; ○ operators; <ul style="list-style-type: none"> ▪ comparison; ▪ arithmetic and logical; ● mathematical +-* / ● comparison; <ul style="list-style-type: none"> ○ equal; ○ not equal; ○ greater than; ○ less than; ● functions; ● output; <ul style="list-style-type: none"> ○ log file; ○ screen;
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		<ul style="list-style-type: none"> ○ argument feeding another script; ○ redirect to a file; ● Constructs; <ul style="list-style-type: none"> ○ for loops; ○ while loops; ○ do while loops; ○ if / else. <p>Describe the primary steps required for scripting / software development.</p> <ul style="list-style-type: none"> ● Plan - Investigate and understand the purpose of the script and the problem it will solve. ● Design - Create a document detailing how the script will operate including any data flow. ● Develop / Build - Create the script, complete with comments. ● Test - Debug and test the script, preferably in a proper test environment (not live production, ideally a “model office”). ● Maintain - Document any changes made to the script and update and version the script as required, logging changes at the top of the script. <p>Explain the common algorithms that may be used on a day to day basis by an infrastructure technician.</p> <ul style="list-style-type: none"> ● Searches; <ul style="list-style-type: none"> ○ log file searches; ○ file searches, file matching; ○ in file searches; <ul style="list-style-type: none"> ▪ Windows – find ▪ Linux – grep ● sorting and filtering; <ul style="list-style-type: none"> ○ file filtering using wildcards; ○ log file filtering using wildcards; ○ file sorting using command line switches; <ul style="list-style-type: none"> ▪ Windows - DIR ▪ Linux - ls
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		<p>Describe the following data structures, how they are composed and an example of their usage.</p> <ul style="list-style-type: none"> • The purpose of delimiters and why they are sometimes (but not always) required in data structures. • data structure types; <ul style="list-style-type: none"> ○ int; ○ float; ○ string; ○ array; • data files; <ul style="list-style-type: none"> ○ CSV; ○ XML. <p>Explain that 'NULL' is used to represent no value in data structures.</p> <ul style="list-style-type: none"> • The “null” expression is used to signify that no value has been assigned to a specific field in an SQL or other database field. Some scripting languages also assign null values to variables when they are created. <p>Recognise HTML (Hypertext Mark-up Language).</p> <ul style="list-style-type: none"> • basic tags <, <html><body><head><h1><h2>, <A> <p>Explain how basic Cascading Style Sheets (CSS) is used to provide common look across pages.</p> <p>Describe the components, methods and protocols used to host a web site.</p> <ul style="list-style-type: none"> • FTP / FTPS (File Transfer Protocol); • HTTP / HTTPS. <p>Recognise the purpose of the OWASP Top 10.</p>
<p>Understands and complies with business processes.</p>	<ul style="list-style-type: none"> • understand security operating procedures; • understand and be able to work confidentially; 	<p>Identify common security legislation / standards.</p> <ul style="list-style-type: none"> • ISO 27001; • Computer Misuse Act; • Data Protection Act 1998; • GDPR.

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	<ul style="list-style-type: none"> • understand how to work within the company operating procedures; • understand and be able to comply with data protection. 	<p>Discuss how principles from legislation apply to daily operational scenarios.</p> <ul style="list-style-type: none"> • ISO 27001; • Computer Misuse Act; • Data Protection Act 1998; • GDPR. <p>Define what should and should not be classed as confidential material.</p> <p>Understand the necessity and use of:</p> <ul style="list-style-type: none"> • standard operating procedures (SOPs); • disaster recovery plans. <p>Identify relevant legislation / standards.</p> <ul style="list-style-type: none"> • Data Protection Act 1998; • Freedom of Information Act 2000; • GDPR. <p>Summarise the 8 data protection principles. Identify the exceptions to the principles.</p> <ul style="list-style-type: none"> • national security; • crime prevention. <p>Identify who enforces the Data Protection Act and what penalties they can enforce.</p> <ul style="list-style-type: none"> • fines; • prison sentences; • enforcement notices.
<p>Working knowledge of business IT skills relevant to the organisation.</p>	<ul style="list-style-type: none"> • understand company IT requirements; • understand company IT systems and platforms; • understand company IT business required skills; • understand software life cycles; 	<p>Understand an organisation’s IT requirements and how they relate to business strategy.</p> <ul style="list-style-type: none"> • network availability; • asset management; • security; • maintenance. <p>Recognise the difference between on premise and off premise.</p>

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	<ul style="list-style-type: none"> • understand desktop applications, messaging systems, document management. 	<p>Recognise the IT systems used for:</p> <ul style="list-style-type: none"> • Finance; • HR; • Sales and Marketing; • IT Service Help Desk. <p>Define the following terms:</p> <ul style="list-style-type: none"> • Infrastructure as a Service [IaaS]; • Software as a Service [SaaS]; • Platform as a Service [PaaS]. <p>Recognise the requirements of the following roles:</p> <ul style="list-style-type: none"> • HR; <ul style="list-style-type: none"> ◦ support and communication; • Finance; <ul style="list-style-type: none"> ◦ analytics and governance; • Sales and Marketing; <ul style="list-style-type: none"> ◦ design and communication; • IT service Help Desk; <ul style="list-style-type: none"> ◦ Technical advice and guidance. <p>Summarise the difference between Agile and Waterfall methods of software development.</p> <ul style="list-style-type: none"> • design; • build; • test; • maintain. <p>Recognise common types of desktop applications.</p> <ul style="list-style-type: none"> • word processor; • spreadsheets; • database; • email; • presentation software.
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		<p>Recognise different messaging clients and the benefit they can bring for team working / collaboration instead of email.</p> <p>Discuss good principles of document management.</p> <ul style="list-style-type: none">• revision numbers;• separate authors and reviewers;• backups;• consistent folder structure.
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These expected requirements are met through the delivery of the BCS Ofqual regulated knowledge modules and vendor training courses, details of which are contained in the course syllabi.

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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
<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. The apprentice should be able to demonstrate all of these activities.</i>

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

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Competency standard	Expected requirement	Work activities demonstrating expected level of competence
<p>Communication Works both independently and as part of a team and following the organisations standards; competently demonstrating an ability to communicate both in writing and orally at all levels, using a range of tools and demonstrating strong interpersonal skills and cultural awareness when dealing with colleagues, customers and clients during all tasks.</p>	<p>The apprentice should be able to use a minimum of 3 tools to communicate:</p> <ul style="list-style-type: none"> • Oral • Face-to-face • Remote • Diagrammatic <p>The apprentice should be able to demonstrate and compile three different forms of written professional correspondence.</p> <p>The apprentice must be able to explain 3 types of communication styles to ensure cultural awareness and appropriateness for customer is taken into account.</p>	<p>Responds to service requests for support by providing information to fulfil requests or enable resolution. Applies client services standards to resolve or escalate clients' service problems within a specified area of responsibility.</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 and observes all associated administrative and clerical procedures.</p>

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Competency standard	Expected requirement	Work activities demonstrating expected level of competence
<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>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>

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Competency standard	Expected requirement	Work activities demonstrating expected level of competence
Remote Infrastructure Effectively operates a range of mobile devices and securely adds them to a network in accordance with organisation's policies and procedures.	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).	Configures the hardware/software environment as required by the system being integrated.

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Competency standard	Expected requirement	Work activities demonstrating expected level of competence
<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>Assists users in making more effective use of desk-top systems, products and services. Makes initial diagnosis of any problems and advises known solutions where applicable.</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 are required, and for other routine functions associated with data management.</p>

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Competency standard	Expected requirement	Work activities demonstrating expected level of competence
<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 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>Provides information to enable incident resolution and promptly allocates incidents as appropriate</p>

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Competency standard	Expected requirement	Work activities demonstrating expected level of competence
<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>Carries out simple assignments related to the infrastructure technical specialism, either alone or as part of a team.</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>

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Competency standard	Expected requirement	Work activities demonstrating expected level of competence
<p>Health and Safety Interprets and follows IT legislation to securely and professionally work productively in the work environment.</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 and safety policies to everyday work.</p>	<p>Undertakes all work in accordance with agreed safety, technical and quality standards, using appropriate methods and tools.</p>

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Competency standard	Expected requirement	Work activities demonstrating expected level of competence
<p>Performance Optimises the performance of hardware, software and network systems and services in line with business requirements.</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>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>Carries out routine configuration / installation and reconfiguration of hardware and software.</p>

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Competency standard	Expected requirement	Work activities demonstrating expected level of competence
Environment Can explain the correct processes associated with WEEE (the Waste Electrical and Electronic Equipment Directive).	The apprentice must be able to explain how to comply when required with WEEE and the implications of data protection during disposal.	Ensures that relevant technical infrastructure strategies, policies, standards and practices are applied correctly.

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Criteria for demonstrating Significantly higher competencies.
Understands and applies a wide range of tools and methods.
Accurately and appropriately applies and effectively implements the right tools and methods in a variety of different situations.
A sophisticated user - fully exploits the functionality/capability of the tools and methods.
Extensive and deep understanding of different tools and methods and how and why they can be applied in different contexts.
Deals confidently and capably with a high level of interrelated and interdependent factors in their work.

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Table 3 – Generic Behaviour and Relationship Standards

The behaviour and relationship standards have been defined to demonstrate that the apprentice applies the good behaviours and interpersonal skills that are needed in a business environment. Behaviours and business relationship skills are assessed throughout the apprenticeship through a combination of the employer reference, the synoptic project and a summative portfolio, which is completed by apprentices from records of the work activities in which they have been involved. The training provider could assist the apprentice by offering some additional soft skills training over and above their apprenticeship. The apprenticeship standard sets out the attributes required within the occupation brief, which can be accessed via the Apprenticeship section of www.bcs.org.

Behaviour and relationship standard	Expected requirement
Apprentices can demonstrate the full range of skills, knowledge and behaviours required to fulfil their job role.	Knows what skills, knowledge and behaviours are needed to do the job well Are aware of their own strengths in the job role, and any areas for improvement Appreciate who else is important, for them to do their job and fulfil the role effectively (e.g. colleagues, managers, other stakeholders) Are aware of potential risks in the job role (e.g. security, privacy, regulatory) Use personal attributes effectively in the role Understand how the job fits into the organisation as a whole
Apprentices can demonstrate how they contribute to the wider business objectives and show an understanding of the wider business environment.	Understands the goals, vision and values of the organisation. Aware of the commercial objectives of the tasks/ projects they are working on. Understands their role in meeting or exceeding customers' requirements and expectations. Is in tune with the organisation's culture.
Apprentices can demonstrate the ability to use both logical and creative thinking skills when undertaking work tasks, recognising and applying techniques from both.	Logical thinking: <ul style="list-style-type: none"> • Recognises the conclusion to be reached; • Proceeds by rational steps; • Evaluates information, judging its relevance and value; • Supports conclusions, using reasoned arguments and evidence. Creative thinking: <ul style="list-style-type: none"> ○ Explores ideas and possibilities; ○ Makes connections between different aspects; ○ Embraces ideas and approaches as conditions or circumstances change.

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Behaviour and relationship standard	Expected requirement
<p>Apprentices can show that they recognise problems inherent in, or emerging during, work tasks, and can tackle them effectively.</p>	<p>Problem-solving:</p> <ul style="list-style-type: none"> • Analyses situations; • Defines goals; • Contributes to the development of solutions; • Prioritises actions; • Deals with unexpected occurrences.
<p>Apprentices can manage relationships with work colleagues, including those in more senior roles, customers / clients and other stakeholders, internal or external, and as appropriate to their roles, so as to gain their confidence, keep them involved and maintain their support for the task / project in hand.</p> <p>Apprentices can establish and maintain productive working relationships, and can use a range of different techniques for doing so.</p>	<p>Managing relationships:</p> <ul style="list-style-type: none"> • understands the value and importance of good relationships; • acknowledges other people's accomplishments and strengths; • understands how to deal with conflict; • promotes teamwork by participating. <p>Customer / client relationships:</p> <ul style="list-style-type: none"> • understands their requirements, including constraints and limiting factors; • sets reasonable expectations; • understands how to communicate with them in decisions and actions; • interacts positively with them; • provides a complete answer in response to queries (transparency, full disclosure). <p>Stakeholders:</p> <ul style="list-style-type: none"> • understands who they are and what their 'stake' is; • prioritises stakeholders in terms of their importance, power to affect the task and interest in it; • agrees objectives.

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Behaviour and relationship standard	Expected requirement
<p>Apprentices can communicate effectively with a range of people at work, one-to-one and in groups, in different situations and using a variety of methods.</p> <p>Apprentices can demonstrate various methods of communication, with an understanding of the strengths, weaknesses and limitations of these, the factors that may disrupt it, and the importance of checking other people’s understanding.</p>	<p>Intention / purpose:</p> <ul style="list-style-type: none"> • understands the purpose of communicating in a particular situation or circumstance (e.g. inform, instruct, suggest, discuss, negotiate etc.); • checks that the person / people with whom one is communicating also understand the purpose; • is sensitive to the dynamics of the situation; • is aware of anything that might disrupt the effectiveness of the communication (e.g. status, past history). <p>Method:</p> <ul style="list-style-type: none"> • understands the most appropriate method for the situation; • aware of the limitations of the chosen method, and the possible risks of miscommunication (e.g. ambiguity); • takes account of the affective dimensions of the method (e.g. body language, tone of voice, eye contact, facial expression etc.). <p>Execution:</p> <ul style="list-style-type: none"> • expresses self clearly and succinctly, but not over-simplifying; • checks that the other person / people understand what is being expressed; • takes account of the potential barriers to understanding (e.g. filtering, selective perception, information overload); • modifies the purpose and methods of communication during a situation in response to cues from the other person / people.

These attributes are difficult to measure and are subjective in nature so cannot actually guarantee that any greater level of competence or proficiency is being demonstrated. The BCS apprenticeship is mapped to the Skills Framework for the Information Age (SFIA), an internationally recognised skills framework, and to observable activities that an infrastructure technician apprentice working to the level of responsibility appropriate for the role should demonstrate. Accordingly, the proficiencies that should be demonstrated by an apprentice infrastructure technician are shown below.

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Proficiency standard	Work activities demonstrating expected level of proficiency	Work activities demonstrating competence beyond the minimum expected
Business skills	<p>Demonstrates an analytical and systematic approach to issue resolution.</p> <p>Demonstrates effective communication skills.</p> <p>Contributes fully to the work of teams.</p> <p>Appreciates the wider business context, and how their role relates to other roles and to the business of the employer or client.</p>	<p>Selects appropriately from applicable standards, methods, tools and applications.</p> <p>Undertakes work that is more critical or more difficult.</p> <p>Demonstrates an ability to extend or enhance their approach to work and the quality of outcomes.</p> <p>Doesn't just solve the problem but explores all known options to do it better, more efficiently, more elegantly or better met customer needs.</p> <p>Shows good project management skills, in defining problems, identifying solutions and making them happen.</p>
Complexity	<p>Performs a range of work, sometimes complex and non-routine, in a variety of environments.</p> <p>Applies a methodical approach to issue definition and resolution.</p>	<p>Drives solutions – with strong goal focused and appropriate level of urgency.</p>
Influence	<p>Has working level contact with customers, suppliers and partners.</p>	<p>Externally – works with customers, suppliers, and partners in a variety of situations.</p>
Autonomy	<p>Works under general direction.</p> <p>Determines when issues should be escalated to a higher level.</p>	<p>Internally – works alone, 1:1, in a team and with colleagues at all levels.</p> <p>Reads situation, adapts behaviours, and communicates appropriately for the situation and the audience.</p> <p>Actively works with others and leads by example.</p> <p>Can be trusted to deliver, perform and behave professionally, manages and delivers against expectations, proactively updates colleagues and behaves in line with the values and business ethics.</p>

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Infrastructure Technician Apprentice Templates

The following templates are designed to support the training provider, and will take them from training and development planning, through to the end-point assessment readiness check. As with the tables above they can be used by the training provider to help them manage the process through to completion, although training providers may also substitute their own processes and documentation as they see fit in order to effectively manage their programme.

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Infrastructure Technician Template 1 – Training and Development Plan

Apprentice details

Name	
ULN number	

Employer details

Contact name	
Company name	
Company address	

Training provider details

Contact name	
Company name	
Company address	

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Role mapping against the infrastructure technician standard

For each area of technical and behavioural competence an overall evaluation should be provided on a three-point scale to show how often this competence is required during the normal work carried out by the employer:

- **critical** – this competence is applied most of the time;
- **desirable** – this competence is applied some of the time;
- **occasional** – this competence is rarely required.

This evaluation could form the basis of an ongoing review with the apprentice on a regular basis.

Workplace competence map

The template shows the type of activities that are identified in the apprenticeship standard for infrastructure technicians as demonstrating the required competencies being applied in the workplace.

It is recognised that there are differences between the types of work carried out by different employers so this template provides the opportunity to include any other activity that demonstrates the apprentice’s competence during their normal duties.

The tables below could be used to make an evaluation of the apprentice’s work environment and detail the work activities that a competent apprentice should be able undertake. This activity should then lead to a discussion to identify any gaps with the employer and make a plan to redress the balance.

In the normal course of work, is the apprentice required to:	Critical	Desirable	Occasional
Demonstrate the necessary skills and behaviours to securely operate across all platforms and areas of responsibility in line with organisational guidance and legislation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Effectively operate a range of mobile devices and securely add them to a network in accordance with organisation’s policies and procedures?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Effectively record, analyse and communicate data at the appropriate level using the organisation’s standard tools and processes and to all stakeholders within the responsibility of the position?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Apply structured techniques to common and non-routine problems, testing methodologies and troubleshooting, and analyse problems by selecting the digital appropriate tools and techniques in line with organisation guidance and to obtain the relevant logistical support as required?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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Work flexibly and demonstrate the ability to work under pressure to progress allocated tasks in accordance with the organisation's reporting and quality systems?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Interpret and follow IT legislation to securely and professionally work productively in the work environment. Understand and apply health & safety policies to everyday work?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Optimise the performance of hardware, software and network systems and services in line with business requirement?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Understand and respond to the correct processes associated with WEEE (the Waste Electrical and Electronic Equipment Directive)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Please add any other activities you think demonstrate the apprentice's competence in this area.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

What is your overall evaluation of the apprentice's opportunity to demonstrate the technical competencies in the employer's normal workplace environment?

Please continue on a separate sheet if required.

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Knowledge module training plan

The knowledge standards define learning that should take place during the apprenticeship, **both through the training provider activities and the apprentice's independent learning**. The training provider should work with the employer to identify appropriate training for the apprentice to meet the requirements of the standard and the employer should identify opportunities within the scope of their normal business activities for the apprentice to demonstrate what they have learnt.

Knowledge and understanding will be delivered by a combination of BCS qualifications and vendor certifications in accordance with the infrastructure technician standard.

One recognised vendor or professional certification must be passed, which may be used to exempt one of the knowledge modules. Details of these, and the knowledge module that can be exempted, are contained in the standard. The training provider and the employer should agree which is best suited to their requirements.

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Training plan – knowledge

BCS qualification	Selected Y/N	Vendor certification alternative chosen
BCS Level 3 Award in Networking and Infrastructure		CCNA 1 MTA Network Fundamentals Network + A + CIW Network Technology Associate
BCS Level 3 Award in Mobile and Operating Systems		CCNA Security MCP Managing and Maintaining Windows 8 * MCP Configuring Windows 8 * MTA Mobility and Devices Fundamentals Security + Mobile + CIW – Internet Business Associate CIW – Mobile Application Development
BCS Level 3 Award in Cloud Services		MTA Server Admin * Enabling Office 365 Services Enabling Office 365 Identities and Requirements MTA Cloud Fundamentals Install Configure Windows Server 2012 * Administration of Windows Server 2012 * Configure Advanced Windows Server 2012 Services *
BCS Level 3 Award in Coding and Logic		MTA Software Development Fundamentals App Development
BCS Level 3 Award in Business Processes		CIW – Internet Business Associate ITIL Foundation Level

*Or their direct replacements.

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Technical competence development plan

The following template may be used to describe how to ensure that the apprentice will be given the opportunity to demonstrate each of the required technical competencies stated in the infrastructure technician standard.

Competency requirement to meet the standard	How will this be ensured?	Responsibility (employer or training provider)?
<p>Communication Works both independently and as part of a team and following the organisations standards; competently demonstrating an ability to communicate both in writing and orally at all levels, using a range of tools and demonstrating strong interpersonal skills and cultural awareness when dealing with colleagues, customers and clients during all tasks.</p>		
<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>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>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>		

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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>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>Health and Safety Interprets and follows IT legislation to securely and professionally work productively in the work environment.</p>		
<p>Performance Optimises the performance of hardware, software and network systems and services in line with business requirement.</p>		
<p>Environment Can explain the correct processes associated with WEEE (the Waste Electrical and Electronic Equipment Directive).</p>		

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Professional development activities plan

BCS has defined a number of professional development activities that support wider professional and career development. These activities have been associated with the various levels of responsibility, and the activities listed in the table below represent those that are appropriate for an infrastructure technician apprentice.

Training providers may wish to engage in assisting the apprentice in some of these activities as they can contribute towards the portfolio of evidence. The recommended activities include those shown below.

Professional development activities	Appropriate to the role	Agreed with apprentice and employer
Participating in group activities inside or outside the working environment that can assist with the development of interpersonal skills.	<input type="checkbox"/>	<input type="checkbox"/>
Undertaking unpaid activities that can help to develop professional skills or offer additional insight into, or understanding of, their working role.	<input type="checkbox"/>	<input type="checkbox"/>
Undertaking learning in subjects relevant to, but not directly related to, their role (e.g. mentoring skills, cultural awareness and diversity training), perhaps through self-study or evening classes.	<input type="checkbox"/>	<input type="checkbox"/>
Gaining basic knowledge of the employing organisation, its business, structure, culture, products/services, operations and terminology.	<input type="checkbox"/>	<input type="checkbox"/>
Gaining knowledge of IT activities in the employing organisation external to their function.	<input type="checkbox"/>	<input type="checkbox"/>
Exploring a topic that is not part of their normal responsibilities, and presenting findings to colleagues and/or management.	<input type="checkbox"/>	<input type="checkbox"/>
Attending meetings, seminars and workshops organised by a professional body, and reading published material such as journals and web content.	<input type="checkbox"/>	<input type="checkbox"/>
Undertaking learning and practice in the techniques of team and collaborative working. Gaining an understanding of the underlying concepts.	<input type="checkbox"/>	<input type="checkbox"/>
Undertaking learning and practice in oral and written communications, including report writing and presentations.	<input type="checkbox"/>	<input type="checkbox"/>

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Infrastructure Technician Template 2 – Weekly Diary

Week number	Activities completed	Competencies displayed	Supporting evidence

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Infrastructure Technician Template 3 – Periodic Workplace Competence Assessment and Remedial Action Plan

This template can be used to track the competencies being applied in the workplace on a continual/periodic basis. The training provider can then discuss any gaps with the employer and make a plan to redress the balance.

Competence assessment

In the normal course of work, is the apprentice demonstrating these competencies?	Sufficiently applied to meet minimum competence standard	Start/stop/continue – what should the apprentice start, stop or continue doing in order to develop this competence?
Communication Works both independently and as part of a team and following the organisations standards; competently demonstrating an ability to communicate both in writing and orally at all levels, using a range of tools and demonstrating strong interpersonal skills and cultural awareness when dealing with colleagues, customers and clients during all tasks.	<input type="checkbox"/>	
IT Security Demonstrates the necessary skills and behaviours to securely operate across all platforms and areas of responsibility in line with organisational guidance, legislation.	<input type="checkbox"/>	
Remote Infrastructure Effectively operates a range of mobile devices and securely adds them to a network in accordance with organisation's policies and procedures.	<input type="checkbox"/>	
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.	<input type="checkbox"/>	

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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>	<input type="checkbox"/>	
<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>	<input type="checkbox"/>	
<p>Health and Safety Interprets and follows IT legislation to securely and professionally work productively in the work environment.</p>	<input type="checkbox"/>	
<p>Performance Optimises the performance of hardware, software and network systems and services in line with business requirement.</p>	<input type="checkbox"/>	
<p>Environment Can explain the correct processes associated with WEEE (the Waste Electrical and Electronic Equipment Directive).</p>	<input type="checkbox"/>	
<p>Please add any other activities you think demonstrate the apprentice’s competence in this area.</p>	<input type="checkbox"/>	

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Remedial action plan

An important function of the training provider is to act as an advisor to the apprentice and the employer to ensure that the programme remains on track and any concerns are addressed. The training provider should agree how best to provide ongoing assistance/advice throughout the apprenticeship, possibly as part of their contract/service agreement with the apprentice's employer.

If any remedial action is required, the table below could be used to record it.

Remedial action (if any) required to deliver the plan/SLA agreed with the employer and apprentice to demonstrate the technical competencies in the employer's normal workplace environment:
--

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Infrastructure Technician – The Employer Reference Overview

This template and guidance will assist the training provider in supporting the employer when completing the employer reference, which forms a key part of the final end-point assessment.

This employer reference template should be used to record the employer's comments against the grading minimum standards, criteria and dimensions, as set out in the infrastructure technician standard.

For each area of technical competence and behavioural proficiency, the employer will be asked to provide an overall evaluation on a three-point scale:

- **met** – they have observed this behaviour in the apprentice most of the time;
- **exceeded** – they have observed this behaviour in the apprentice all of the time;
- **not met** – they have not observed this behaviour in the apprentice.

They should perform an evaluation using the checkboxes, and then provide an overall evaluation of the apprentice's competence or proficiency.

The template shows the type of activities that could demonstrate the required competencies and behaviours being applied in the workplace. There are always differences between individual employers and their requirements so there is the opportunity for the employer to include any other activity that they think demonstrates the apprentice's competence. It should be completed by a senior member of the team, who is able to comment directly on work activities.

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Infrastructure Technician Template 4 – The Employer Reference

Apprentice details

Name	
ULN number	

Training provider details

Contact name	
Company name	
Company address	

Employer details

Name	
Company address	
Signed by:	
Print name:	
Job title:	
Date:	

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Section 1 Technical competence evaluation

Please provide your evaluation of the technical competence of the apprentice using the tables below. Under each heading is a list of activities that a competent apprentice should be able to demonstrate.

Please indicate your assessment of each competence using the checkboxes, and then provide an overall evaluation of the apprentice's technical competence

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Competence – Communication

In your view, is the apprentice competent to:	The apprentice has MET this requirement	The apprentice has EXCEEDED this requirement	The apprentice has NOT MET this requirement
Work both independently and as part of a team and following the organisations standards; competently demonstrating an ability to communicate both in writing and orally at all levels, using a range of tools and demonstrating strong interpersonal skills and cultural awareness when dealing with colleagues, customers and clients during all tasks.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- **Met** – you have observed this behaviour in the apprentice most of the time.
- **Exceeded** – you have observed this behaviour in the apprentice all of the time.
- **Not Met** – you have not observed this behaviour in the apprentice.

What is your overall evaluation of the apprentice’s competence in communication?

Please give reasons, together with supporting examples, why you think the apprentice has demonstrated this level of competence in this area.

Please continue on a separate sheet if required.

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Competence – IT Security

In your view, is the apprentice competent to:	The apprentice has MET this requirement	The apprentice has EXCEEDED this requirement	The apprentice has NOT MET this requirement
Demonstrate the necessary skills and behaviours to securely operate across all platforms and areas of responsibility in line with organisational guidance and legislation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- **Met** – you have observed this behaviour in the apprentice most of the time.
- **Exceeded** – you have observed this behaviour in the apprentice all of the time.
- **Not Met** – you have not observed this behaviour in the apprentice.

What is your overall evaluation of the apprentice’s competence in IT security?

Please give reasons, together with supporting examples, why you think the apprentice has demonstrated this level of competence in this area.

Please continue on a separate sheet if required.

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Competence – Remote Infrastructure

In your view, is the apprentice competent to:	The apprentice has MET this requirement	The apprentice has EXCEEDED this requirement	The apprentice has NOT MET this requirement
Effectively operate a range of mobile devices and securely add them to a network in accordance with organisation’s policies and procedures?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- **Met** – you have observed this behaviour in the apprentice most of the time.
- **Exceeded** – you have observed this behaviour in the apprentice all of the time.
- **Not Met** – you have not observed this behaviour in the apprentice.

What is your overall evaluation of the apprentice’s competence in remote infrastructure?

Please give reasons, together with supporting examples, why you think the apprentice has demonstrated this level of competence in this area.

Please continue on a separate sheet if required.

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Competence – Data

In your view, is the apprentice competent to:	The apprentice has MET this requirement	The apprentice has EXCEEDED this requirement	The apprentice has NOT MET this requirement
Effectively record, analyse and communicate data at the appropriate level using the organisation’s standard tools and processes, and to all stakeholders within the responsibility of the position?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- **Met** – you have observed this behaviour in the apprentice most of the time.
- **Exceeded** – you have observed this behaviour in the apprentice all of the time
- **Not Met** – you have not observed this behaviour in the apprentice.

What is your overall evaluation of the apprentice’s competence in data?

Please give reasons, together with supporting examples, why you think the apprentice has demonstrated this level of competence in this area.

Please continue on a separate sheet if required.

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Competence – Problem Solving

In your view, is the apprentice competent to:	The apprentice has MET this requirement	The apprentice has EXCEEDED this requirement	The apprentice has NOT MET this requirement
Apply structured techniques to common and non-routine problems, testing methodologies and troubleshooting, and analyse problems by selecting the digital appropriate tools and techniques in line with organisation guidance and to obtain the relevant logistical support as required?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- **Met** – you have observed this behaviour in the apprentice most of the time.
- **Exceeded** – you have observed this behaviour in the apprentice all of the time.
- **Not Met** – you have not observed this behaviour in the apprentice.

What is your overall evaluation of the apprentice's competence in problem solving?

Please give reasons, together with supporting examples, why you think the apprentice has demonstrated this level of competence in this area.

Please continue on a separate sheet if required.

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Competence – Workflow Management

In your view, is the apprentice competent to:	The apprentice has MET this requirement	The apprentice has EXCEEDED this requirement	The apprentice has NOT MET this requirement
Work flexibly and demonstrate the ability to work under pressure to progress allocated tasks in accordance with the organisation’s reporting and quality systems?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- **Met** – you have observed this behaviour in the apprentice most of the time.
- **Exceeded** – you have observed this behaviour in the apprentice all of the time.
- **Not Met** – you have not observed this behaviour in the apprentice.

What is your overall evaluation of the apprentice’s competence in workflow management?

Please give reasons, together with supporting examples, why you think the apprentice has demonstrated this level of competence in this area.

Please continue on a separate sheet if required.

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Competence – Health and Safety

In your view, is the apprentice competent to:	The apprentice has MET this requirement	The apprentice has EXCEEDED this requirement	The apprentice has NOT MET this requirement
Interpret and follow IT legislation to securely and professionally work productively in the work environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- **Met** – you have observed this behaviour in the apprentice most of the time.
- **Exceeded** – you have observed this behaviour in the apprentice all of the time.
- **Not Met** – you have not observed this behaviour in the apprentice.

What is your overall evaluation of the apprentice’s competence in health and safety?

Please give reasons, together with supporting examples, why you think the apprentice has demonstrated this level of competence in this area.

Please continue on a separate sheet if required.

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Competence – Performance

In your view, is the apprentice competent to:	The apprentice has MET this requirement	The apprentice has EXCEEDED this requirement	The apprentice has NOT MET this requirement
Optimise the performance of hardware, software and Network Systems and services in line with business requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- **Met** – you have observed this behaviour in the apprentice most of the time.
- **Exceeded** – you have observed this behaviour in the apprentice all of the time
- **Not Met** – you have not observed this behaviour in the apprentice.

What is your overall evaluation of the apprentice’s competence in performance?

Please give reasons, together with supporting examples, why you think the apprentice has demonstrated this level of competence in this area.

Please continue on a separate sheet if required.

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Competence – Environment

In your view, is the apprentice competent to:	The apprentice has MET this requirement	The apprentice has EXCEEDED this requirement	The apprentice has NOT MET this requirement
Explain the correct processes associated with WEEE (the Waste Electrical and Electronic Equipment Directive)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- **Met** – you have observed this behaviour in the apprentice most of the time.
- **Exceeded** – you have observed this behaviour in the apprentice all of the time.
- **Not Met** – you have not observed this behaviour in the apprentice.

What is your overall evaluation of the apprentice’s competence in environment?

Please give reasons, together with supporting examples, why you think the apprentice has demonstrated this level of competence in this area.

Please continue on a separate sheet if required.

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Section 2 Behaviours, business skills and level of responsibility evaluation

Please provide an evaluation as to the level of responsibility of the apprentice you are providing a reference for using the tables below. Under each heading is a list of proficiencies that a competent apprentice should display. Please indicate your assessment of the apprentice's proficiency using the checkboxes, and then provide an overall evaluation of the apprentice's proficiency.

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Proficiency – Business Skills

In your view, is the apprentice proficient at:	The apprentice has MET this requirement	The apprentice has EXCEEDED this requirement	The apprentice has NOT MET this requirement
Demonstrating an analytical and systematic approach to issue resolution?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Demonstrating effective communication skills and contributing fully to the work of teams?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Appreciating the wider business context, and how their role relates to other roles and to the business of the employer or client?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- **Met** – you have observed this behaviour in the apprentice most of the time.
- **Exceeded** – you have observed this behaviour in the apprentice all of the time.
- **Not Met** – you have not observed this behaviour in the apprentice.

What is your overall evaluation of the apprentice’s business skills?

Please give reasons, together with supporting examples, why you think the apprentice has demonstrated this level of proficiency in this area.

Please continue on a separate sheet if required.

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Proficiency – Complexity

In your view, is the apprentice proficient at:	The apprentice has MET this requirement	The apprentice has EXCEEDED this requirement	The apprentice has NOT MET this requirement
Performing a range of work, sometimes complex and non-routine, in a variety of environments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Applying methodical approaches to issue definition and resolution?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- **Met** – you have observed this behaviour in the apprentice most of the time.
- **Exceeded** – you have observed this behaviour in the apprentice all of the time.
- **Not Met** – you have not observed this behaviour in the apprentice.

What is your overall evaluation of the apprentice’s proficiency at handling complexity?

Please give reasons, together with supporting examples, why you think the apprentice has demonstrated this level of proficiency in this area.

Please continue on a separate sheet if required.

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Proficiency – Autonomy

In your view, is the apprentice proficient at:	The apprentice has MET this requirement	The apprentice has EXCEEDED this requirement	The apprentice has NOT MET this requirement
Working under general direction?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Determining when issues should be escalated to a higher level?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- **Met** – you have observed this behaviour in the apprentice most of the time.
- **Exceeded** – you have observed this behaviour in the apprentice all of the time.
- **Not Met** – you have not observed this behaviour in the apprentice.

What is your overall evaluation of the apprentice’s proficiency to work autonomously?

Please give reasons, together with supporting examples, why you think the apprentice has demonstrated this level of proficiency in this area.

Please continue on a separate sheet if required.

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Proficiency – Influence

In your view, is the apprentice proficient at:	The apprentice has MET this requirement	The apprentice has EXCEEDED this requirement	The apprentice has NOT MET this requirement
Having working level contact with customers, suppliers and partners?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- **Met** – you have observed this behaviour in the apprentice most of the time.
- **Exceeded** – you have observed this behaviour in the apprentice all of the time.
- **Not Met** – you have not observed this behaviour in the apprentice.

What is your overall evaluation of the apprentice’s ability to influence?

Please give reasons, together with supporting examples, why you think the apprentice has demonstrated this level of proficiency in this area.

Please continue on a separate sheet if required.

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Section 3

Professional development

A number of professional development activities have been identified as part of the SFIA^{plus} framework to help career development. These activities have been associated with the various levels of responsibility, and the activities listed in the table below represent those that are appropriate for an infrastructure technician apprentice.

In your view, is the apprentice undertaking any of the following professional development activities:	The apprentice is demonstrably undertaking this activity	The apprentice is NOT demonstrably undertaking this activity
Participating in group activities inside or outside the working environment that can assist with the development of interpersonal skills?	<input type="checkbox"/>	<input type="checkbox"/>
Undertaking pro bono (unpaid) activities that can help to develop professional skills or offer additional insight into, or understanding of, their working role?	<input type="checkbox"/>	<input type="checkbox"/>
Undertaking learning in subjects relevant to, but not directly related to, their role (e.g. foreign language courses, mentoring skills, cultural awareness and diversity training), perhaps through self-study or evening classes?	<input type="checkbox"/>	<input type="checkbox"/>
Gaining basic knowledge of the employing organisation, its business, structure, culture, products/services, operations and terminology?	<input type="checkbox"/>	<input type="checkbox"/>
Gaining knowledge of IT activities in the employing organisation external to their function?	<input type="checkbox"/>	<input type="checkbox"/>
Exploring a topic that is not part of their normal responsibilities, and presenting findings to colleagues and/or management?	<input type="checkbox"/>	<input type="checkbox"/>
Attending meetings, seminars and workshops organised by a professional body and reading published material such as journals and web content?	<input type="checkbox"/>	<input type="checkbox"/>
Undertaking learning and practice in the techniques of team and collaborative working. Gaining an understanding of the underlying concepts?	<input type="checkbox"/>	<input type="checkbox"/>
Undertaking learning and practice in oral and written communications, including report writing and presentations?	<input type="checkbox"/>	<input type="checkbox"/>

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What is your overall evaluation of the apprentice's ability to undertake wider professional development?

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Section 4 - Overall impressions and constructive feedback

This section is an opportunity for you to provide written feedback outside the rigid competency structure.

It is a free text field to allow you to share general thoughts on the apprentice's performance in case you were unable to say everything you wanted to say using the structured template. For example, you may want to highlight some of the areas where you have not been able to give the apprentice the exposure they would have liked.

We would welcome any general constructive development advice you may wish to give.

Please continue on a separate sheet if required.

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Infrastructure Technician Template 5 – Declaration and Evidence Checklists for the Completion of the Summative Portfolio

These templates are provided to support the training provider in working with the apprentice and employer to ensure the successful completion of the summative portfolio.

The checklists can be used by training providers to help them manage the process through to completion, although training providers may also substitute their own processes and documentation as they see fit.

The key responsibilities of the apprentice in producing their summative portfolio can be found in the General Guidance for Apprentices, Employers and Training Providers, as can generic guidance on how to select evidence to compile the summative portfolio.

The apprentice should gather artefacts and record information that can evidence their activities undertaken in the workplace. The portfolio of evidence should demonstrate the full range of competencies, as shown in this template, which are required by the standard to show that the apprentice can fulfil the role of an infrastructure technician.

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Summative Portfolio Declaration Apprentice declaration

Name	
ULN	
Declaration	I confirm that all the evidence submitted is my own work and it has been completed as specified.
Signature	
Date	

Line manager declaration (employer)

Name	
Company	
Declaration	I confirm that the work contained within this portfolio has, to the best of my knowledge, been completed solely by _____
Signature	
Date	

Training provider declaration (training provider)

Name	
Company	
Declaration	I confirm that the work contained within this portfolio has, to the best of my knowledge, been completed solely by _____
Signature	
Date	

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Infrastructure Technician competencies evidence checklist

The defined competence areas and associated typical evidence are listed in this table. Not all employer businesses are identical so there will always be variation in the types of activity that will be carried out in the course of each apprentice's daily work; however, each infrastructure technician apprentice must be able to demonstrate evidence of every competence.

Acceptable evidence format
<p>The intention is to allow flexibility in the format that evidence can take in order to reflect the type of records that an apprentice could realistically be expected to have access to. This includes, but is not limited to:</p> <ul style="list-style-type: none">• photographic or video evidence of activity;• witness statement;• observation reports;• annotated screenshots;• signed-off work records;• printed outputs of pre- and post-configuration settings;• peer reviews.

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Competence		
<p>Communication Works both independently and as part of a team and following the organisations standards; competently demonstrating an ability to communicate both in writing and orally at all levels, using a range of tools and demonstrating strong interpersonal skills and cultural awareness when dealing with colleagues, customers and clients during all tasks.</p>		
Minimum expected requirement	List the evidence in the portfolio that fulfils this requirement	Reflections on applying knowledge learnt
Evidence of 3 tools to communicate.		
Evidence of 3 different forms of written professional correspondence.		
Evidence of 3 types of communication style for cultural awareness and appropriateness for the customer.		

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Competence		
IT Security Demonstrate the necessary skills and behaviours to securely operate across all platforms and areas of responsibility in line with organisational guidance and legislation.		
Minimum expected requirement	List the evidence in the portfolio that fulfils this requirement	Reflections on applying knowledge learnt
Evidence demonstrating compliance with organisational security processes.		
Evidence of recognising and escalating issues.		
Evidence of locating and following policies and legislation.		

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Competence		
Remote Infrastructure Effectively operate a range of mobile devices and securely add them to a network in accordance with organisation’s policies and procedures.		
Minimum expected requirement	List the evidence in the portfolio that fulfils this requirement	Reflections on applying knowledge learnt
Evidence of securely connecting a minimum of two different types of devices (e.g. laptop/mobile) to access the organisation’s network services (e.g. email, files, applications).		

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Competence		
Data Effectively record, analyse and communicate data at the appropriate level using the organisation's standard tools and processes, and to all stakeholders within the responsibility of the position.		
Minimum expected requirement	List the evidence in the portfolio that fulfils this requirement	Reflections on applying knowledge learnt
Evidence of selecting and securely using 3 appropriate tools when working with and analysing data.		

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Competence		
Problem Solving Apply structured techniques to common and non-routine problems, testing methodologies and troubleshooting, and analyse problems by selecting the digital appropriate tools and techniques in line with organisation guidance, and to obtain the relevant logistical support as required.		
Minimum expected requirement	List the evidence in the portfolio that fulfils this requirement	Reflections on applying knowledge learnt
Evidence of selecting and using three appropriate tools for testing, troubleshooting and analysing problems.		
Evidence demonstrating compliance with organisational guidance.		
Evidence demonstrating processes and practices for obtaining logistical support.		

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Competence		
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.		
Minimum expected requirement	List the evidence in the portfolio that fulfils this requirement	Reflections on applying knowledge learnt
Evidence demonstrating the ability to prioritise workflow and manage allocated tasks.		
Evidence of recording tasks and complying with organisation's quality processes.		

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Competence		
Health and Safety Interpret and follow IT legislation to securely and professionally work productively in the work environment.		
Minimum expected requirement	List the evidence in the portfolio that fulfils this requirement	Reflections on applying knowledge learnt
Evidence of interpretation and secure working practices in accordance with IT legislation.		
Evidence demonstrating an understanding and application of health and safety policies to everyday work.		

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Competence		
Performance Optimise the performance of hardware, software and network systems and services in line with business requirement.		
Minimum expected requirement	List the evidence in the portfolio that fulfils this requirement	Reflections on applying knowledge learnt
Evidence showing configuration of a minimum of three pieces of hardware in line with business requirements.		
Evidence showing configuration of a minimum of three different types of software in line with business requirements.		

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Competence		
Environment Can explain the correct processes associated with WEEE (the Waste Electrical and Electronic Equipment Directive).		
Minimum expected requirement	List the evidence in the portfolio that fulfils this requirement	Reflections on applying knowledge learnt
Evidence of compliance with WEEE legislation during disposal.		
Evidence of explaining the implications of data protection during disposal.		

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Generic levels of responsibility evidence checklist

Areas of responsibility and associated typical evidence are shown below.

Proficiency		
Business skills Demonstrates an analytical and systematic approach to issue resolution. Demonstrates effective communication skills and contributes fully to the work of teams. Appreciates the wider business context, and how their role relates to other roles and to the business of the employer or client.		
Minimum expected requirement	List the evidence in the portfolio that fulfils this requirement	Reflections on applying knowledge learnt
Evidence that you can demonstrate an analytical and systematic approach to issue resolution.		
Evidence that you can demonstrate effective communication skills.		
Evidence that you can contribute fully to the work of teams.		
Evidence that you can appreciate the wider business context, and how your role relates to other roles and to the business of the employer or client.		

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Proficiency		
Complexity Performs a range of work, sometimes complex and non-routine, in a variety of environments. Applies a methodical approach to issue definition and resolution.		
Minimum expected requirement	List the evidence in the portfolio that fulfils this requirement	Reflections on applying knowledge learnt
Evidence that you can perform a range of work, sometimes complex and non-routine, in a variety of environments.		
Evidence that you can apply a methodical approach to issue definition and resolution.		

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Proficiency		
Autonomy Works under general direction. Determines when issues should be escalated to a higher level.		
Minimum expected requirement	List the evidence in the portfolio that fulfils this requirement	Reflections on applying knowledge learnt
Evidence that you can operate under general direction.		
Evidence that you can determine when issues should be escalated to a higher level.		

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Proficiency		
Influence Has working level contact with customers, suppliers and partners.		
Minimum expected requirement	List the evidence in the portfolio that fulfils this requirement	Reflections on applying knowledge learnt
Evidence that you have working level contact with customers, suppliers and partners.		

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Professional development activities evidence checklist

Areas of additional professional development activities that might be undertaken and associated typical evidence are shown below.

Professional development topic	Objectives	Typical evidence
Understanding organisation	<p>Gaining basic knowledge of the employing organisation, its business, structure, culture, products/services, operations and terminology.</p> <p>Gaining knowledge of IT activities in the employing organisation external to their function.</p>	<ul style="list-style-type: none"> • organisation charts; • company annual reports; • company website; • documents or reports from other areas of the business.
Additional business skills	<p>Undertaking learning and practice in the techniques of team and collaborative working. Gaining an understanding of the underlying concepts.</p> <p>Undertaking learning and practice in oral and written communications, including report writing and presentations.</p> <p>Learning from experience and mistakes and applying the lessons as part of continuous improvement.</p>	<ul style="list-style-type: none"> • presentations, reports or minutes of meetings that demonstrate communication skills, report writing abilities and collaborative activities; • evidence of reviewing their work and suggesting improvements or critically appraising what they did and what they learned from it.
External activities	<p>Participating in group activities inside or outside the working environment that can assist with the development of interpersonal skills.</p> <p>Undertaking pro bono (unpaid) activities that can help to develop professional skills or offer additional insight into, or understanding of, their working role.</p>	<ul style="list-style-type: none"> • evidence of meetings attended through continuous professional development records; • evidence of activities undertaken.

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Additional learning	<p>Undertaking learning in subjects relevant to, but not directly related to, their role (e.g. foreign language courses, mentoring skills, cultural awareness and diversity training), perhaps through self-study or evening classes.</p> <p>Exploring a topic that is not part of their normal responsibilities, and presenting findings to colleagues and/or management.</p>	<ul style="list-style-type: none"> • evidence of learning undertaken from continuous professional development records; • evidence of presentations given to colleagues and/or management.
Professional networking	<p>Attending meetings, seminars and workshops organised by a professional body and reading published material such as journals and web content.</p>	<ul style="list-style-type: none"> • evidence of meetings attended through continuous professional development records; • written evidence summarising learning gained from reading.

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Infrastructure Technician Template 6 – End-Point Assessment Readiness Check

The training provider should assess whether the apprentice has met the criteria for the end-point assessment as defined in the standard.

The template below is a simple checklist that may be used.

Competence	Ready	Not ready	Comments
Communication Works both independently and as part of a team and following the organisations standards; competently demonstrating an ability to communicate both in writing and orally at all levels, using a range of tools and demonstrating strong interpersonal skills and cultural awareness when dealing with colleagues, customers and clients during all tasks.	<input type="checkbox"/>	<input type="checkbox"/>	
IT Security Demonstrates the necessary skills and behaviours to securely operate across all platforms and areas of responsibility in line with organisational guidance, legislation.	<input type="checkbox"/>	<input type="checkbox"/>	
Remote Infrastructure Effectively operates a range of mobile devices and securely adds them to a network in accordance with organisation's policies and procedures.	<input type="checkbox"/>	<input type="checkbox"/>	
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.	<input type="checkbox"/>	<input type="checkbox"/>	

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

<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>	<input type="checkbox"/>	<input type="checkbox"/>	
<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>	<input type="checkbox"/>	<input type="checkbox"/>	
<p>Health and Safety Interprets and follows IT legislation to securely and professionally work productively in the work environment.</p>	<input type="checkbox"/>	<input type="checkbox"/>	
<p>Performance Optimises the performance of hardware, software and network systems and services in line with business requirement.</p>	<input type="checkbox"/>	<input type="checkbox"/>	
<p>Environment Can explain the correct processes associated with WEEE (the Waste Electrical and Electronic Equipment Directive).</p>	<input type="checkbox"/>	<input type="checkbox"/>	