Institute for Apprenticeships & Technical Education

End-point assessment plan for Network Engineer apprenticeship standard*

*this end-point assessment plan aligns with standard version 1.2

Apprenticeship standard reference number	Apprenticeship standard level	Integrated end-point assessment
ST0127	4	No

Contents

Introduction and overview

This document sets out the requirements for end-point assessment (EPA) for the Network Engineer apprenticeship standard. It is for end-point assessment organisations (EPAOs) who need to know how EPA for this apprenticeship must operate. It will also be of interest to Network Engineer apprentices, their employers and training providers.

Full time apprentices will typically spend 24 months on-programme (before the gateway) working towards the occupational standard, with a minimum of 20% off-the-job training. All apprentices must spend a minimum of 12 months on-programme.

The EPA period should only start, and the EPA be arranged, once the employer is satisfied that the apprentice is deemed to be consistently working at or above the level set out in the occupational standard, all of the pre-requisite gateway requirements for EPA have been met and can be evidenced to an EPAO.

For level 3 apprenticeships and above apprentices without English and mathematics at level 2 must achieve level 2 prior to taking their EPA.

The EPA must be completed within an EPA period lasting typically 3 months , after the EPA gateway.

The EPA consists of 2 discrete assessment methods.

The individual assessment methods will have the following grades:

Assessment method 1: **Simulated assessment and questioning**

- Fail
- Pass
- Distinction

Assessment method 2: **Professional discussion underpinned by portfolio**

- Fail
- Pass
- Distinction

Performance in the EPA will determine the overall apprenticeship standard grade of:

- Fail
- Pass
- Merit
- Distinction

EPA summary table

On-programme (typically, 24 months)	Training to develop the knowledge, skills and behaviours (KSBs) in the occupational standard. Compiling a portfolio to underpin the professional discussion.
End-point assessment gateway	Employer is satisfied the apprentice is consistently working at, or above, the level of the occupational standard. English and mathematics Level 2 Apprentices must submit: • A portfolio
End-point assessment (which will typically take 3 months)	Assessment method 1: **Simulation Assessment and Questioning** • Fail • Pass • Distinction Assessment method 2: **Professional discussion underpinned by portfolio** • Fail • Pass • Distinction Performance in the EPA will determine the overall apprenticeship standard grade of: • Fail • Pass • Merit • Distinction
Professional recognition	Aligns with recognition of Network Engineer on the Register of IT Technicians (RITTECH)

Length of end-point assessment period

The EPA will be completed within an EPA period typically lasting 3 months, after the EPA gateway.

Any supporting material which underpins an EPA assessment method must be submitted at the gateway.

Order of assessment methods

The assessment methods can be delivered in any order. The result of one assessment method does not need to be known before starting the next.

Gateway

The apprentice should only enter the gateway once the employer is content that the apprentice is working at or above the occupational standard. In making this decision, the employer may take advice from the apprentice's training provider(s), but the decision must ultimately be made solely by the employer.

The EPAO determines when all other gateway requirements have been met, and the EPA period will only commence once the EPAO has confirmed this.

In addition to the employer's confirmation that the apprentice is working at or above the level in the occupational standard, the apprentice must have completed the following gateway requirements prior to beginning EPA:

- Achieved English and mathematics at Level 2. For those with an education, health and care plan or a legacy statement, the apprenticeship's English and Mathematics minimum requirement is Entry Level 3. British Sign Language (BSL) qualifications are an alternative to English qualifications for those who have BSL as their primary language.

For the professional discussion underpinned by portfolio, the apprentice will be required to submit a portfolio:

- The format and structure of the portfolio should be agreed between the employer and the EPAO (e.g. hard copy or on-line). However, the content should be enough to evidence the apprentice can apply the knowledge, skills and behaviours required as mapped to assessment method 2 (AM2).
- There should be at least one piece of evidence relating to each knowledge, skill and behaviour mapped to AM2. One piece of evidence can be referenced against more than one knowledge, skill or behavioural requirement. It is expected that there will be a minimum of 5 pieces and a maximum of 10 pieces of evidence.
- The portfolio should cover the KSBs for the assessment method it is underpinning and of activities that have been completed and referenced against the KSBs, supported by appropriate evidence, including
    - photographic evidence, work products, work instructions, safety documentation, company policies and procedures as appropriate to activities undertaken. Progress review documentation, witness testimonies, and feedback from colleagues and/or clients should also be included.
- The apprentice's Manager/Mentor will typically support the development of the portfolio in accordance with company policy and procedures, although the EPAO will provide further guidance on the content

The portfolio presents evidence from real-work projects and is used to underpin the Professional Discussion. Apprentices are expected to draw on the contents of their portfolio when providing responses to questions. The portfolio will be created pre-gateway and before EPA starts and is not assessed as part of the EPA. It contains evidence from work activities that have been completed, throughout the apprenticeship. Typically, more complex activities will be completed towards the end of the apprenticeship.

The portfolio is not directly assessed. It underpins the professional discussion and therefore should not be marked by the EPAO. Independent Assessors should review the portfolio in preparation for the professional discussion but are not required to provide feedback after this review of the portfolio.

In cases where the apprentice is working in a confidential environment, the employer may insist that the independent assessor (on behalf of the EPAO) reviews the portfolio at the employer's premises only and that the portfolio is not made available for review away from those premises. In such cases, the EPAO and independent assessor should use their discretion to make suitable arrangements to verify to their satisfaction that the portfolio was completed and available for review at the Gateway. Detailed arrangements for satisfactory portfolio review by the independent assessor must be agreed with the employer as part of their arrangement with the EPAO. An employer and EPAO may agree and give examples of how to record restricted information in order to facilitate the reviewing of portfolio evidence off site by mutual agreement.

Assessment methods

Assessment method 1: Simulation Assessment and Questioning

(This assessment method has 2 components.)

Assessment method 1 component 1: Simulation Assessment - Virtual Network Lab

Overview

Apprentices will be required to undertake 2 simulation assessments in a virtual lab environment.

The rationale for this assessment method is to assess the apprentice in a consistent way, irrespective of their particular role in their organisation and to ensure that all KSBs mapped to this method are able to be demonstrated in a reasonable timeframe. The typical length of network engineering projects could make the EPA delivery through an observation impractical to schedule thus increasing costs and time spent at gateway.

Apprentices must complete 2 simulation assessments in a virtual lab environment online where they will demonstrate the KSBs mapped to this assessment method. The EPAO will arrange for the simulation assessment to take place, in consultation with the employer. The EPAO will select the simulation assessment the individual apprentice will take.

Each simulation assessment will include a short summary of the task to be completed, the timeframe permitted and the items available for use.

Simulation assessments must be carried out over an assessment time of 14 hours which must be completed over 2 consecutive days. Each assessment task will take 7 hours.

Assessment task 1 (Network Failure) will be completed and submitted online by the end of day 1 and assessment task 2 (Network Optimisation) will be completed and submitted online by the end of day 2 to ensure the security of assessment is maintained.

As part of each simulation assessment task the apprentice will be required to submit a virtual lab report consisting of evidence of completed test activity along with decision-making evidence including:

- the completed lab file (with all saved and completed work)
- test plans
- accompanying notes which explain why the apprentice chose a particular network engineering solution or to explain the approach they took during the simulation. Explanatory diagrams should also be included.

These items will be saved and uploaded online through the secure online portal. All work must be uploaded and saved within the total assessment time for this assessment method. Any work which is uploaded after the maximum assessment time will be disregarded and will not be assessed.

By submitting these items, the assessor will be able to make a judgement against the KSBs mapped to this assessment method and can determine whether the tasks have been completed competently.

Delivery

Before each simulated assessment begins, the apprentice must be provided with both written and verbal instructions on the tasks they must complete, including the timescales they are working to. This will not be included in the assessment time.

The simulation assessment must be overseen by an independent assessor or invigilator to ensure that the apprentice completes the assessment independently. This task can be undertaken face to face or online by use of a video camera to ensure that the apprentice is undertaking the simulated task assessment unaided. EPAOs must ensure that appropriate measures are in place to ensure that the security of the assessment is maintained and that the apprentice is not being aided in some way. If an EPAO cannot provide access to Proctor Software, they should use live streaming or another appropriate invigilation method. When using live streaming it must be by a continual feed.

The virtual lab environment must include a template facility for the apprentice to make brief explanatory notes of critical decision-making activities that underpin completion of the tasks in the simulated assessment. The notes facility must run alongside the online assessment activity and may be within the same software package. These notes are key to enabling the assessor to understand why the assessment solutions were arrived at and help ascertain the depth of understanding required to test occupational competence against the assigned KSBs.

Each of the simulation tasks will have a brief and instructions for the apprentice including how required outputs should be formatted. The brief and instructions will specify what systems, tools and platforms will be required to complete the tasks. This information will be contained within the software package for delivering the assessment. The software package will not be seen in advance and will be given to the apprentice at the start of each simulation task.

The Simulation Assessment MUST allow the following activities to be undertaken as a simulation assessment without these tasks would seriously hamper the opportunity for the apprentice to demonstrate occupational competence against the KSBs assigned to this assessment method:

Lab report and physical lab activity:

- Detect and resolve network failures:
  - Switch or Router configuration fault for remote access
  - Configure dynamic routing protocols
- Improve network performance:
  - Poor / insecure Wi-Fi configuration
  - Network response time is low
  - IPv4 or / IPv 6 problems
- Install and manage network architectures
- Test and analyse network issues
- Plan and work effectively
- Troubleshooting
- Fault diagnostics

Outputs from the lab activities could comprise the following:

- Ticketing Systems/replies/escalation
- Data Reports and log files

Each assessment task once begun may not be split, other than to allow comfort breaks as necessary. Meal breaks are permitted to ensure that the assessment complies with the working time directive legislation on breaks and lunchtimes. Any planned or unplanned breaks must be invigilated to ensure the security of the assessment is maintained.

There may be others undertaking the simulated assessment at the same time, but they must be at least two meters apart, at separate workstations and with their own system access. Each apprentice will undertake a different combination of simulated assessment tasks at any one time to mitigate against malpractice in the assessment.

The EPAO is responsible for ensuring a controlled environment is available and that local management arrangements are in place to ensure the security of this assessment method.

Work must be saved in the virtual lab between tasks – and backed up (note partial work is not assessed by the independent assessor during the assessment although it is possible to check that the work that has been done has not changed between work sessions).

The independent assessor will make all grading decisions.

Resources development

EPAOs will create and set simulation assessment tasks to assess related underpinning KSBs.

EPAOs will produce specifications to outline in detail how the simulation assessments will operate, what it will cover and what should be looked for. It is recommended that this be done in consultation with employers. EPAOs should put measures and procedures in place to maintain the security and

confidentiality of their specifications if employers are consulted. Specifications must be standardised by the EPAO.

EPAOs must develop 'practical specification banks' of sufficient size to prevent predictability and review them regularly (and at least once a year) to ensure they, and the specifications they contain, are fit for purpose.

Each simulation assessment (and its constituent 2 tasks) will present a typical business task, appropriate to an SME, an IT business, a large corporate or a non-IT business, and in the public and private sectors.

Existing simulation assessments and their constituent tasks will be rotated, and new ones introduced

Venue

Simulation assessments must be conducted in a suitable venue selected by the EPAO (e.g. a training provider's premises or an employer's premises) The venue must:

- Have reliable internet connectivity
- Have access to reliable devices able to operate the practical assessment software
- Provide a virtual lab environment to facilitate the identified scenarios required for the assessment method.
- Suitable video conferencing capability including desktop sharing facility to enable remote observation.

As a minimum the virtual online lab will comprise of a virtual Wide Area Network configuration made up of the following virtual features, assets and components:

- 1 x File server
- 1 x Email server
- 1 x Web server
- 4 x Clients per location
- Main location (head office) and Branch location connected
- Each location to have a router
- Each location to have minimum a desktop switch, master switch and Wi-Fi access point switch
- Each location to have Wi-Fi with access point
- Default gateway
- Main and guest Wi-Fi access

For the avoidance of doubt, the items listed above are virtual features, assets and components within the online lab environment.

Support materials

EPAOs will produce the following material to support this assessment method:

- independent assessor and invigilator assessment materials
- structured specification
- grading guidance
- outline of the assessment method's requirements
- marking materials

- guidance document for employers and apprentices on the process/timescales for the assessment method
- guidance document for independent assessors on how to carry out the assessment
- lab instructions

Assessment method 1 component 2: Questioning

Overview

This component will take the form of questioning which must be appropriately structured to draw out the best of the apprentice's competence and excellence and cover the KSBs assigned to this assessment method. It will involve questions that will focus on coverage of the simulated assessment activity.

Questioning will occur on a separate day after the completion of the simulated assessment tasks to enable the Independent Assessor sufficient time to assess the outputs of each simulation task and generate appropriate questioning.

The rationale for this assessment method is:

It is usual for people in this occupation to engage in detailed technical discussions, so this assessment method mirrors their day to day work.

Delivery

The independent assessor will conduct and assess the questioning.

Questioning will happen after both simulated assessment tasks have been completed and assessed by the independent assessor. The independent assessor should have a minimum of 2 working days to a maximum of 5 in which to assess the work submitted by the apprentice and generate appropriate questioning with agreement with the employer.

The apprentice should be given a minimum of 2 working days' notice of the date for their questioning session.

The outputs from the simulated assessment will be shared with the apprentice by the independent assessor online throughout the questioning. The apprentice will not be allowed to have access to the simulated assessment outputs in advance of the questioning session in order to maintain the security of the assessment method.

The questioning must last for 45 minutes. The independent assessor has the discretion to increase the time of the questioning by up to 10% to allow the apprentice to complete their last answer. The assessor will ask a minimum of 10 open questions.

During this method, the independent assessor must use questions generated by themselves in addition to those from an EPAO generated question bank.

The purpose of questioning will be to check the knowledge & skills shown in the simulated assessment and explore the underpinning reasoning where the supporting notes may be insufficiently detailed or ambiguous.

Video conferencing can be used to conduct the questioning, but the EPAO must have processes in place to verify the identity of the apprentice and ensure the apprentice is not being aided in some way.

The independent assessor must use the assessment tools and procedures that are set by the EPAO to record the questioning and answers given.

Outputs from the simulated scenario and answers to questions will be assessed holistically. The

independent assessor will make all grading decisions.

Question development

A ‘question bank’ must be developed by EPAOs. The ‘question bank’ must be of sufficient size to prevent predictability and the EPAO must review it regularly (at least once a year) to ensure that it, and its content, are fit for purpose. The questions relating to the underpinning KSBs, must be varied yet allow assessment of the relevant KSBs. Independent assessors must use the question bank as a source for questioning and are expected to use their professional judgment to tailor those questions appropriately. Independent assessors are responsible for generating suitable follow-up questions in line with the EPAO’s training and standardisation process.

EPAOs must ensure that apprentices have a different set of questions in the case of re-sits/re-takes.

EPAOs will produce the following material to support this assessment method:

- question bank
- outline of the assessment method’s requirements
- marking materials
- guidance document for employers and apprentices on the process/timescales for the assessment method
- guidance document for independent assessors on how to carry out the assessment

Venue

The questioning should take place in a quiet room, free from distractions and influence.

The questioning can take place in any of the following:

- employer’s premises
- a suitable venue selected by the EPAO (for example a training provider's premises)
- via video conferencing

Assessment method 2: Professional discussion underpinned by portfolio

Assessment method 2 component 1: Professional discussion underpinned by portfolio

Overview

This assessment will take the form of a professional discussion which must be appropriately structured to draw out the best of the apprentice’s competence and cover the KSBs assigned to this assessment method.

The rationale for this assessment method is to draw out KSBs and in particular behaviours, which would not naturally occur in the practical assessment. It is commonplace for people in this occupation to engage in detailed technical discussions, so this assessment method mirrors their day-to-day work.

Delivery

The independent assessor will conduct and assess the professional discussion.

The professional discussion must last for 60 minutes. The independent assessor has the discretion to increase the time of the professional discussion by up to 10% to allow the apprentice to complete their last answer.

This is a 1:1 conversation in an appropriate environment (a quiet room free from distraction). Evidence must be captured using documentation produced by the EPAO. The assessor will ask a minimum of 15 open questions. Questions can be taken from an EPAO question bank or be those generated by the independent assessor. Follow up questions can be used to draw out further evidence.

The apprentice should be encouraged to refer to their portfolio of evidence during the professional discussion to support their responses. The independent assessor should have a minimum of 10 days to review the contents of the portfolio to generate appropriate questions. The apprentice will have a minimum of 2 working days' notice of the date for the professional discussion with agreement with the employer.

Video conferencing can be used to conduct the professional discussion, but the EPAO must have processes in place to verify the identity of the apprentice and ensure the apprentice is not being aided in some way. e.g. use of a 360-degree camera.

The independent assessor must use the assessment tools and procedures that are set by the EPAO to record the professional discussion.

The independent assessor will make all grading decisions.

Venue

The professional discussion should take place in a quiet room, free from distractions and influence.

The professional discussion can take place in any of the following:

- employer's premises
- a suitable venue selected by the EPAO (for example a training provider's premises)

Other relevant information

A question bank must be developed by EPAOs. The 'question bank' must be of sufficient size to prevent predictability and the EPAO must reviewed regularly (at least once a year) to ensure that it, and its content, are fit for purpose. The specifications, including questions relating to the underpinning KSBs, must be varied yet allow assessment of the relevant KSBs.

EPAOs must ensure that apprentices have a different set of questions in the case of re-sits/re-takes.

Independent assessors must be developed and trained by the EPAO in the conduct of professional discussion and reaching consistent judgement.

EPAOs will produce the following material to support this assessment method:

- question bank
- outline of the assessment method's requirements
- marking materials
- guidance document for employers and apprentices on the process/timescales for the assessment method
- guidance document for independent assessors on how to carry out the assessment

Reasonable adjustments

The EPAO must have in place clear and fair arrangements for making reasonable adjustments for this apprenticeship standard. This should include how an apprentice qualifies for reasonable adjustment and what reasonable adjustments will be made. The adjustments must maintain the validity, reliability and integrity of the assessment methods outlined in this assessment plan.

Weighting of assessment methods

All assessment methods are weighted equally in their contribution to the overall EPA grade.

Grading

Assessment method 1: Simulation Assessment and Questioning

KSBs	Fail	Pass Apprentices must meet all the pass descriptors in order to achieve a pass	Distinction In addition to the pass criteria apprentices must meet all of the following distinction descriptors in order to achieve a distinction
Across all tasks **B1**	Does not meet the pass criteria	Demonstrates independent working initiative being resourceful when faced with the online simulation tasks and taking responsibility for solving problems within their own remit B1	
Detecting and resolving Network Failures **K1 K12 K17** **S1** **B6**	Does not meet the pass criteria	Identifies network failures, setting out the rationale behind the identified task. K1 K12 Demonstrates a diagnostic strategy when faced with a network failure to establish the root cause and the options available and reason for the choice of solution. B6 Implements a secure fix to resolve network failure proportionate to the need describing the constraints and considerations within the Network Failure solution. S1 K17	Evaluates the long- and short-term impacts of network failure solutions within the simulation. K1 Analyses and reviews the effectiveness of maintaining the security of the network within the simulation. S1 K17
Improving Network Performance **K3 K4 K5** **S6 S12**	Does not meet the pass criteria	Identifies network performance issues within specified parameters K3 Demonstrates a working solution to resolve performance issues showing a response in real time K4 Selects uses and justifies diagnostic tools to deliver	Reviews the effectiveness of methods used to securely troubleshoot network service performance' K4 Compares and contrasts the effectiveness of methods used to securely trouble shoot network service performance including analytical

		improved system performance S6 Uses organizational procedures to deal with recording information effectively and in line with protocols K5 Delivers service performance optimisation with a rationale for why this is the best option. S12	approaches to diagnosis of network issues and recommendations of future requirements based on outcomes and results of the simulation tests carried out. S6
Install and Manage Network Architecture **K2 S2 S10**	Does not meet the pass criteria	Plans and carries out their installation and configuration activity to show the stages of activity required and explains the choice and use of hardware and or software to manage and maintain a secure network K2 S2 Manages network architecture tasks in line with tickets raised by customers to resolve or escalate as necessary S10	'Reviews their choice of network architecture and evaluates the effectiveness of their choice' K2 Analyses customer response to determine the suitability of hardware and software choice S10
Test and Analyse Network issues **S3 S6 S9**	Does not meet the pass criteria	Tests the network to identify issues using more than one method and compiles test plans in line with identified faults S3 S9 Demonstrates analytical approaches to diagnose Network Issues S6	
Planning and working effectively S17 **B4 B8**	Does not meet the pass criteria	Plans and prioritises tasks arising balanced with costs and efficiencies S17 B4 Works within the simulation tasks effectively under pressure showing resilience B8	

Assessment method 2: Professional discussion underpinned by portfolio

KSBs	Fail	Pass Apprentices must demonstrate all the pass descriptors in order to pass	Distinction In addition to the pass criteria apprentices must demonstrate all the following distinction descriptors in order to get a distinction
Planning Work **S13 S14**	Does not meet the pass criteria	Outlines how they have organised and prioritised clients/stakeholders' requests and explains the use of Service Level Agreements S13 Describes how they have outlined their role as a Network Engineer to key stakeholders S14	
Define Network Tasks **K8 K9 K10** **S18 S20**	Does not meet the pass criteria	Explains the purposes and uses of ports and protocols in Network Engineering activities K8 Describes features and factors that play a role in deployment of devices, applications, protocols and services at their appropriate OSI and/or TCP/IP layers. K9 Explains the concepts and characteristics of routing and switching in Network Engineering activities K10 Explains how to apply numerical skills in Network Engineering activities to ensure that outcomes meet the defined specifications for the network task S18 Describe how they have selected the appropriate tools in regard to	Analyses how the use of different hardware and software required for network engineering activities could provide benefits to the organisation and evaluates the associated risks. S20

		specific Network activities and comply with organisation policies and processes when upgrading systems S20	
Maintain Security **K19** **S4 S15** **B2**	Does not meet the pass criteria	Explains the types of current security threats to networks and describes K19 Describes how they have maintained the security and performance of the system against known standard threats. S4 Explains how they have applied the appropriate process, policies and legislation to ensure security and performance requirements have been met S15 B2	Analyses the evolving landscape of security threats to networks and how they mitigate threats S4 B2
Trouble shooting Network Issues **S5**	Does not meet the pass criteria	Explains how they use diagnostic tools to trouble-shoot problems within the Network environment S5	Explains how they investigate new approaches and tools to troubleshoot the organisations network with a focus on security. S5
Implement Solutions **K11 K13 K14 K15 K16 K18 K20** **S8 S11**	Does not meet the pass criteria	Identifies the characteristics of network topologies, types and technologies K11 Explains cloud concepts and their purposes within the network engineering environment. K13 Describes the functions of network services K14 Explains how they have undertaken Network maintenance activities K15 S11 Explains how current legislation relates to network engineering activities K16 Describes the integration of a server into a network and explains how they have maintained system performance and integrity. K18 Explains how they have upgraded, applied and tested	Compare and contrast approaches to maintaining system performance and integrity K15 K18 S8 S11

		components to systems configurations ensuring that the system meets the organisation's requirements and minimises downtime. This should include backup processes and an understanding of the use of automated tools K20 S8	
Recordkeeping **K6 S7 S16**		Describe how they have communicated and recorded Network Engineering outcomes to stakeholders in line with organizational procedures and Service Level Agreements taking into consideration an organisation's cultural awareness and its technical ability K6 S7 S16	
The bigger picture **K7 K21** **S19** **B3 B5 B7**		Describes their role in the organisations Business Continuity and Disaster Recovery process. K7 Explains the principles of change management within the network engineering environment and how they have ensured compliance. K21 S19 Explains how they have worked within the goals, vision and values of the organisation B3 Describe how they have met or exceeded customers' requirements and expectations B5 Explains how they take responsibility for their own CPD and technical skill developments and reflects on the outcome of feedback on their own performance based on the expectations of the organisation' B7	Justifies how they have utilised a new approach or technical development to network engineering and evaluates the outcome. K21 S19

Overall EPA grading

All EPA methods must be passed for the EPA to be passed overall.

Grades from individual assessment methods should be combined in the following way to determine the grade of the EPA as a whole:

Assessment method 1 – Simulation assessment and questioning	Assessment method 2 – professional discussion	Overall grading
Fail	Any grade	Fail
Any grade	Fail	Fail
Pass	Pass	Pass
Pass	Distinction	Merit
Distinction	Pass	Merit
Distinction	Distinction	Distinction

Re-sits and re-takes

Apprentices who fail one or more assessment method will be offered the opportunity to take a re-sit or a re-take. A re-sit does not require further learning, whereas a re-take does.

An apprentice who fails an assessment method, and therefore the EPA in the first instance, will be required to re-sit or re-take any failed assessment methods only.

Apprentices should have a supportive action plan to prepare for the re-sit or a re-take. The apprentice's employer will need to agree that either a re-sit or re-take is an appropriate course of action.

The timescales for a re-sit/re-take is agreed between the employer and EPAO. A re-sit is typically taken within two months of the EPA outcome notification. The timescale for a re-take is dependent on how much re-training is required and is typically taken within four months of the EPA outcome notification.

All assessment methods must be taken within a six-month period, otherwise the entire EPA will need to be re-sat/re-taken, unless in the opinion of the EPAO exceptional circumstances apply outside the control of the apprentice or their employer.

Re-sits and re-takes are not offered to apprentices wishing to move from pass to merit or merit to distinction.

Where any assessment method must be re-sat or re-taken, the overall apprenticeship grade is not capped, meaning that an apprentice is still able to achieve an EPA grade of distinction.

Roles and responsibilities

Role	Responsibility
Apprentice	As a minimum, apprentices should: • participate in and complete on-programme training to meet the KSBs as outlined in the occupational standard for a minimum of 12 months • undertake 20% off-the-job training as arranged by the employer and training provider • understand the purpose and importance of EPA • undertake the EPA including meeting all gateway requirements
Employer	As a minimum, employers should: • work with the training provider (where applicable) to support the apprentice in the workplace to provide the opportunities for the apprentice to develop the KSBs • arrange and support a minimum of 20% off-the-job training to be undertaken by the apprentice • decide when the apprentice is working at or above the occupational standard and so is ready for EPA • select the EPAO • ensure that all supporting evidence required at the gateway is submitted in accordance with this EPA plan • remain independent from the delivery of the EPA • confirm arrangements with the EPAO for the EPA (who, when, where) in a timely manner (including providing access to any employer specific documentations as required, for example company policies) • ensure that the EPA is scheduled with the EPAO for a date and time which allow appropriate opportunity for the KSBs to be met • ensure the apprentice is well prepared for the EPA • ensure the apprentice is given sufficient time away from regular duties to prepare for and complete all post-gateway elements of the EPA, and that any required supervision during this time (as stated within this EPA plan) is in place • where the apprentice is assessed in the workplace, ensure that the apprentice has access to the resources used on a daily basis

	• work collaboratively with the EPAO to ensure a suitable EPA venue is available.
EPAO	As a minimum, EPAOs should: • make all necessary contractual arrangements, including agreeing the price of the EPA • understand the occupational standard • appoint administrators (and invigilators where required) to administer the EPA as appropriate • provide training for independent assessors in terms of good assessment practice, operating the assessment tools and grading • provide adequate information, advice and guidance documentation to enable apprentices, employers and training providers to prepare for the EPA • arrange for the EPA to take place, in consultation with the employer • conform to the requirements of this EPA plan and deliver its requirements in a timely manner • develop and provide appropriate assessment recording documentation to ensure a clear and auditable process is in place for providing assessment decisions and feedback to all relevant stakeholders • have no direct connection with the apprentice, their employer or training provider. In all instances including when the EPAO is the training provider (i.e. HEI) there must be no conflict of interest • have policies and procedures for internal quality assurance (IQA), and maintain records of regular and robust IQA activity and moderation for external quality assurance (EQA) purposes • conform to the requirements of the nominated external quality assurance provider (EQAP) • conform to the requirements of the Register of End-Point Assessment Organisations (RoEPAO) • deliver induction training for independent assessors, and for invigilators and markers where used • undertake standardisation activity on this apprenticeship standard for all independent assessors before they conduct an EPA for the first time, if the EPA is updated and periodically as appropriate (a minimum of annually)

	• manage invigilation of apprentices in order to maintain security of the assessment in line with their malpractice policy • verify the identity of the apprentice being assessed • use language in the development and delivery of the EPA that is appropriate to the level of the occupational standard • request certification via the Apprenticeship Service upon successful achievement of the EPA • develop and produce assessment materials including specifications and marking materials (for example mark schemes, practice materials, training material) • appoint suitably qualified and competent independent assessors • provide details of the independent assessor's name and contact details to the employer • have and apply appropriately an EPA appeals process
Independent assessor	As a minimum, an independent assessor should: • have the competence to assess the apprentice at this level and hold any required qualifications and experience in line with the requirements of the independent assessor as detailed in the IQA section of this EPA plan • understand the occupational standard and the requirements of this EPA • have, maintain and be able to evidence up to date knowledge and expertise of the subject matter • deliver the end-point assessment in-line with the EPA plan • comply with the IQA requirements of the EPAO • have no direct connection or conflict of interest with the apprentice, their employer or training provider; in all instances including when the EPAO is the training provider (i.e. HEI) • attend induction training • attend standardisation events when they begin working for the EPAO, before they conduct an EPA for the first time and a minimum of annually on this apprenticeship standard • assess each assessment method, as determined by the EPA plan, and without extending the EPA unnecessarily • assess against the KSBs assigned to each assessment method, as shown in the mapping of assessment methods and as determined by the EPAO, and without extending the EPA unnecessarily

	• make all grading decisions • record and report all assessment outcome decisions, for each apprentice, following instructions and using assessment recording documentation provided by the EPAO, in a timely manner • use language in the development and delivery of the EPA that is appropriate to the level of the occupational standard
Training provider	As a minimum, the training provider should: • work with the employer and support the apprentice during the off-the-job training to provide the opportunities to develop the knowledge, skills and behaviours as listed in the occupational standard • conduct training covering any knowledge, skill or behaviour requirement agreed as part of the Commitment Statement (often known as the Individual Learning Plan). • monitor the apprentice's progress during any training provider led on-programme learning • advise the employer, upon request, on the apprentice's readiness for EPA • remain independent from delivery of the EPA. Where the training provider is the EPA (i.e. a HEI) there must be procedures in place to mitigate against any conflict of interest •
Invigilators	As a minimum, invigilators should: • attend induction training as directed by the EPAO • have no direct connection or conflict of interest with the apprentice, their employer or training provider; in all instances, including when the EPAO is the training provider (i.e. HEI) • invigilate and supervise apprentices during tests and in breaks during assessment methods to prevent malpractice in accordance with the EPAO's invigilation procedures

Internal Quality Assurance (IQA)

Internal quality assurance refers to the requirements that EPA organisations must have in place to ensure consistent (reliable) and accurate (valid) assessment decisions. EPA organisations for this EPA must:

- appoint independent assessors who are competent in the occupation they are assessing.
- assessors must have achieved a relevant qualification at a level equivalent to or higher than the apprenticeship standard being assessed and have recent relevant experience of the occupation/sector gained in the last two years or significant experience of the occupation/sector.
- maintain (and produce on request) an up-to-date and accurate record of their CPD activities which should equate to at least 5 days CPD in the last year relevant to the KSB's
- demonstrate that their CPD activities are of learning activities relevant to current or future practice
- seek to ensure that their CPD has benefited the quality of their practice
- if applicable hold additional security clearance as required by the employing organisation.
- appoint independent assessors who have been trained by the EPAO on the use and assessment of virtual lab
- provide training for independent assessors in terms of good assessment practice, operating the assessment tools and grading
- have robust quality assurance systems and procedures that support fair, reliable, and consistent assessment across the organisation and over time
- operate induction training and standardisation events for independent assessors when they begin working for the EPAO on this standard and before they deliver an updated assessment method for the first time
- ensure independent assessors attend standardisation events on an ongoing basis and at least once per year for this standard.

Affordability

Affordability of the EPA will be aided by using at least some of the following practice:

- using an employer's premises
- online assessment tools including virtual lab software and video conferencing

Professional body recognition

This apprenticeship is designed to prepare successful apprentices to meet the requirements for registration as a Network Engineer on the Register of IT Technicians (RITTECH)

Mapping of knowledge, skills and behaviours (KSBs)

Assessment method 1: Practical Assessment and Professional Discussion

Knowledge
K1 the causes and consequences of network and IT infrastructure failures
K2 the architecture of typical IT systems, including hardware, OS, server, virtualisation, voice, cloud and applications
K3 the techniques for systems performance and optimisation
K4 diagnostic techniques and tools to interrogate and gather information regarding systems performance
K5 organizational procedures to deal with recording information effectively and in line with protocols
K12 wireless technologies and configurations.
K17 troubleshooting methodologies for network and IT infrastructure
Skills
S1 apply the appropriate tools and techniques when securely operating and testing Networks
S2 install and configure the elements required to maintain and manage a secure Network
S3 implement techniques to monitor and record systems performance in line with defined specifications
S6 apply the appropriate tools and techniques to gather information to troubleshoot issues and isolate, repair or escalate faults
S9 record task details whether face-to-face, remote or in writing in line with organisational requirements
S10 interpret information received from a manager, customer or technical specialist and accurately implement the defined requirements
S12 implement techniques to optimise systems performance in line with defined specifications
S17 apply the appropriate level of responsibility when planning and prioritizing work tasks
Behaviours
B1 work independently and demonstrate initiative being resourceful when faced with a problem and taking responsibility for solving problems within their own remit
B4 take a wider view of the strategic objectives of the tasks/ projects they are working on.
B6 Identifies issues quickly, enjoys investigating and solving complex problems and applies appropriate solutions. Has a strong desire to push to ensure the true root cause of any problem is found and a solution is identified which prevents recurrence
B8: work effectively under pressure showing resilience

Assessment method 2: Professional discussion underpinned by portfolio

Knowledge
K6: Service Level Agreements (SLAs) and their application to delivering network engineering activities in line with contractual obligations
K7: their role in Business Continuity and Disaster Recovery
K8: the purposes and uses of ports and protocols
K9: devices, applications, protocols and services at their appropriate OSI and/or TCP/IP layers.
K10: the concepts and characteristics of routing and switching
K11: the characteristics of network topologies, types and technologies
K13: cloud concepts and their purposes
K14: functions of network services
K15 the different types of network maintenance
K16: how current legislation relates to or impacts occupation
K18: how to integrate a server into a network
K19: the types of security threats to networks and IT infrastructure assets
K20: how to use tools to automate network tasks
K21: approaches to change management
Skills
S4 maintain security and performance of the system against known and standard threats
S5 apply the appropriate tools and techniques to identify systems performance issues
S7 communicate outcomes of tasks and record in line with organisational procedures and SLAs
S8 upgrade, apply and test components to systems configurations ensuring that the system meets the organisation's requirements and minimises downtime. This should include backup processes
S11 monitor, identify and implement required maintenance procedures
S13 organise and prioritise clients/stakeholders' requests in line with SLAs and organization processes
S14 explain job role within the business context to stakeholders
S15 operate securely and apply the appropriate process, policies and legislation within their business responsibilities
S16 communicate with a range of stakeholders taking into consideration of organisations cultural awareness and technical ability

S18 apply the relevant numerical skills (Binary, dotted decimal notation) required to meet the defines specifications
S19 ensure compliance of network engineering outputs with change management processes
S20 select the appropriate tools and comply with organisation policies and processes when upgrading systems
Behaviours
B2: work securely within the business
B3 work within the goals, vision and values of the organisation
B5 works to meet or exceed customers' requirements and expectations
B7 committed to continued professional development in order to ensure growth in professional skill and knowledge.