



Programme Guide

# CLOUD NETWORK SPECIALIST

LEVEL 3

QA.com

## DIGITAL AND DEGREE APPRENTICESHIPS

### Building tech careers in the workplace

We offer digital and degree apprenticeships that focus on the most in-demand tech skills including; cyber, IT, software development, data and digital marketing, along with others in project management and senior leadership.

With programme pathways from Level 3 – Level 7, we help learners to progress and grow within your company, helping you retain talent and build capabilities.

Our award-winning approach to blended learning enables apprentices to develop further and faster, adding immediate value to their roles, whilst our interactive portal with real-time dashboards and trigger alerts enable managers to effectively and efficiently track progress.



**Experience:** 30,000 apprenticeships placed



**An unrivalled talent pool:** 100,000 apply to join our programmes every year



**Award-winning:** Recipient of the Gold Award at the Learning Tech Awards 2020 for our apprenticeship delivery model



**Proven:** We have the highest overall pass rate among UK tech training providers\*

\*based on end-point assessments by the BCS 2020

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# ROLE PROFILE

## CLOUD NETWORK SPECIALIST

A Cloud Network Specialist's role is both desk based and involves visits to client's premises to resolve issues. A Cloud Network Specialist will be responsible for the installation of Network cabling and hardware.

They may be required to install cloud services to support a business expansion and provide better network services. They will use network management tools to collect and report on load and performance statistics to improve network performance.

### Cloud Network Specialists need:

- Strong technical skills
- A methodical, step-by-step approach to resolving issues
- Business skills like effective communication, teamwork and task/time management
- The adaptability to do a range of work -sometimes complex and non-routine in different environments
- The ability to work under direction, use discretion and determine when to escalate issues

## JOB ROLE SUITABILITY

As an employer is it important to assess whether a candidate (a new hire or existing employee) is working in a suitable job role to successfully complete their programme.

The checklist has been created to help you assess whether your apprentice will be in a position to demonstrate all of the following Cloud Network Specialist's duties, during their programme.

### Job roles this programme is a great match for:

- Network Support Technician
- Data Centre Support Technician
- Network Operative
- IT Field Technician

### Checklist

- |    |   |
|----|---|
| 1  | Will the apprentice be involved in providing technical support to customers both internal and external through a range of communication channels?   |
| 2  | Will they be responsible for establishing and diagnosing ICT problems/faults using the required troubleshooting methodology and tools?  |
| 3  | Will they be interpreting technical specifications relevant to the ICT task?  |
| 4  | Will they be applying the appropriate security policies to ICT tasks in line with organisational requirements?  |
| 5  | Will they undertake the relevant processes with the relevant tools and technologies to resolve ICT technical issues?  |
| 6  | Will they be communicating with all levels of stakeholders, talking them through steps to take to resolve issues or set up systems, keeping them informed of progress and managing escalation and expectations? |
| 7  | Will they apply appropriate testing methodologies to hardware or software or cabling assets?  |
| 8  | Will they practice guided continuous self-learning to keep up-to-date with technological developments to enhance relevant skills and take responsibility for their own professional development?                |
| 9  | Will they be documenting or escalating ICT tasks as appropriate to ensure a clear audit trail and progression of issues?  |
| 10 | Will they complete cabling tasks for example coaxial, copper, fibre or remotely?  |
| 11 | Will they administer mobile devices on a network?   |
| 12 | Will they deliver network tasks prioritising security with a view to mitigating and defending against security risks?   |
| 13 | Will they be installing and configuring relevant software and physical or virtual hardware as appropriate for example: network devices, switches and routers?   |

# ENTRY REQUIREMENTS

## The entry requirements for this programme are as follows:

- 3 GCSEs (or equivalent) at grades 4+ (A-C) in any subject
- GCSE Maths and English (or equivalents) at grades 3+ (D or above)
- Prospective apprentices must not hold an existing qualification at the same or higher level as this apprenticeship in a similar subject

## Experience (if the learner can't meet the qualification requirements):

Those working in the Tech Industry e.g. having 6 months plus of experience working in any IT position or 1 year plus work experience in any other profession or sector and able to demonstrate working towards Level 2 in Maths and English.

# FINDING NEW TALENT

We offer an extensive attraction and recruitment service for employers who are looking to use apprenticeships to bring new talent into their organisation.

We use multiple channels and tactics to attract people who are interested in and are passionate about building a career in tech. Our recruitment model combines vigorous AI assessments with 1-2-1 interviews to ensure we select apprentices of the highest calibre.

We are committed to increasing diversity in tech and to help achieve this, we work closely with special interest groups including; Code First: Girls, Stemettes and Young Professionals to ensure apprentices from all backgrounds are given the same opportunities, and to support us to close the gender and diversity gap in tech.




Proactively engaged with over **4,000** sixth forms/colleges and universities, attending careers fairs to ensure we reach talent first



QA attracts **100,000 applicants** a year for its apprenticeship and tech academy roles and has nearly 200,000 in its candidate database



Significantly higher than average gender balance with **37%** of our apprenticeship starts being female, compared to an industry average of 19%



**14.2%** of our applicant pool indicated they have a BAME background - higher than the industry average of 13.3%



# DIVERSITY AND INCLUSION

## We're passionate about diversity in tech

It's our mission to help eradicate the gender gap, and make sure equal opportunities are given to applicants from all backgrounds. We do this through our long-standing partnerships, QA-driven initiatives and use of trending tools and software.

### Diversity-first candidate attraction

We've invested in using augmented copy checking tools to ensure language is inclusive, open to all and free from bias.

We use inclusive imagery throughout our campaigns – producing visual content that promotes diversity and inclusion.

### Promoting inclusivity

We nurture relationships with influencers, schools, colleges and universities via events and interactive sessions to ensure learners from all backgrounds are given the same opportunities.

### Diversity partnerships

We forge partnerships with like-minded organisations who share our vision on STEM gender equality including Code First: Girls, Stemettes and Young Professionals.

### Skills Scans

Every candidate goes through Skills Scans where their knowledge and skills are measured and mapped against apprenticeship standards. This process ensures the right learner is placed on the right programme at the right time, which we know contributes towards a successful completion and a good learner experience.

### We make tech skills accessible to all

We run free tech workshops including 'Teach the Nation to Code' and 'Teach the Nation to Cloud' so anyone can explore technology career opportunities.

# A BLENDED APPROACH TO LEARNING

## How we deliver

QA apprenticeships are designed to immerse the apprentice in their job role and provide more flexibility for the employer.

Allowing individuals to learn through a combination of project and lab work, live events, self-research, self-paced learning and peer-to-peer learning.

The required 20% off-the-job training is a crucial part of the competency development. The latest apprenticeship standard can also now contribute to the off-the-job training, helping to ensure a positive ROI is achieved in relation to salary costs, productivity, efficiency and innovation.



# LEARNER SUPPORT



## Safeguarding at QA

Safeguarding means ensuring the safety and wellbeing of our learners.

At QA, this means ensuring our policies and processes promote and protect learner wellbeing and that while you are on programme, and that while on programme, we teach learners about the types of risk facing modern day British citizens.

This includes cyber risks, mental and physical health information, risks of radicalisation or grooming and much more.

### Ways to access support if you are worried for yourself or someone else:

- Call us – anytime 07808 050273
- Email: [safeguarding@qa.com](mailto:safeguarding@qa.com)
- Contact your Digital Learning Consultant (DLC), tutor or account manager
- Speak to any member of QA staff onsite



## Prevent at QA

Prevent is part of the Government's counter-terrorism strategy.

At QA, this means we teach our staff and learners about the four British values: democracy, rule of law, individual liberty and respect and tolerance.

We also work with Prevent partners to identify people at risk of being or causing terror related harm.



## Mental Health at QA

Emotional and mental wellbeing is an important component of successful learning.

Understanding how to protect mental health and promote emotional wellbeing is part of modern British citizenship.



# DIGITAL BY DESIGN APPRENTICESHIP PROGRAMMES

## Digital by Design programmes

QA Digital by Design apprenticeships provide a greater focus on online learning together with using live interaction where it adds the most value for learners.

It means that there is a single learner journey which brings teaching, coaching, learning and assessment into a single, repeatable flow for every module. This ensures that from the beginning of the programme there is a clear focus on successful completion of the end-point assessment (EPA).

In Digital by Design, these three elements will work together:

- The content
- The service and support
- The technology

## Discover, practise and apply

All QA apprenticeships use a guided discovery approach to learning, as opposed to traditional methods of delivery such as live events. This shifts the emphasis from content delivery to our learners and their context, resulting in the apprentice feeling empowered to take ownership of their learning experience through the “Discover, Practise, Apply” model.



### DISCOVER

Learners will learn the theory, by exploring subjects online and in the live events.



### PRACTISE

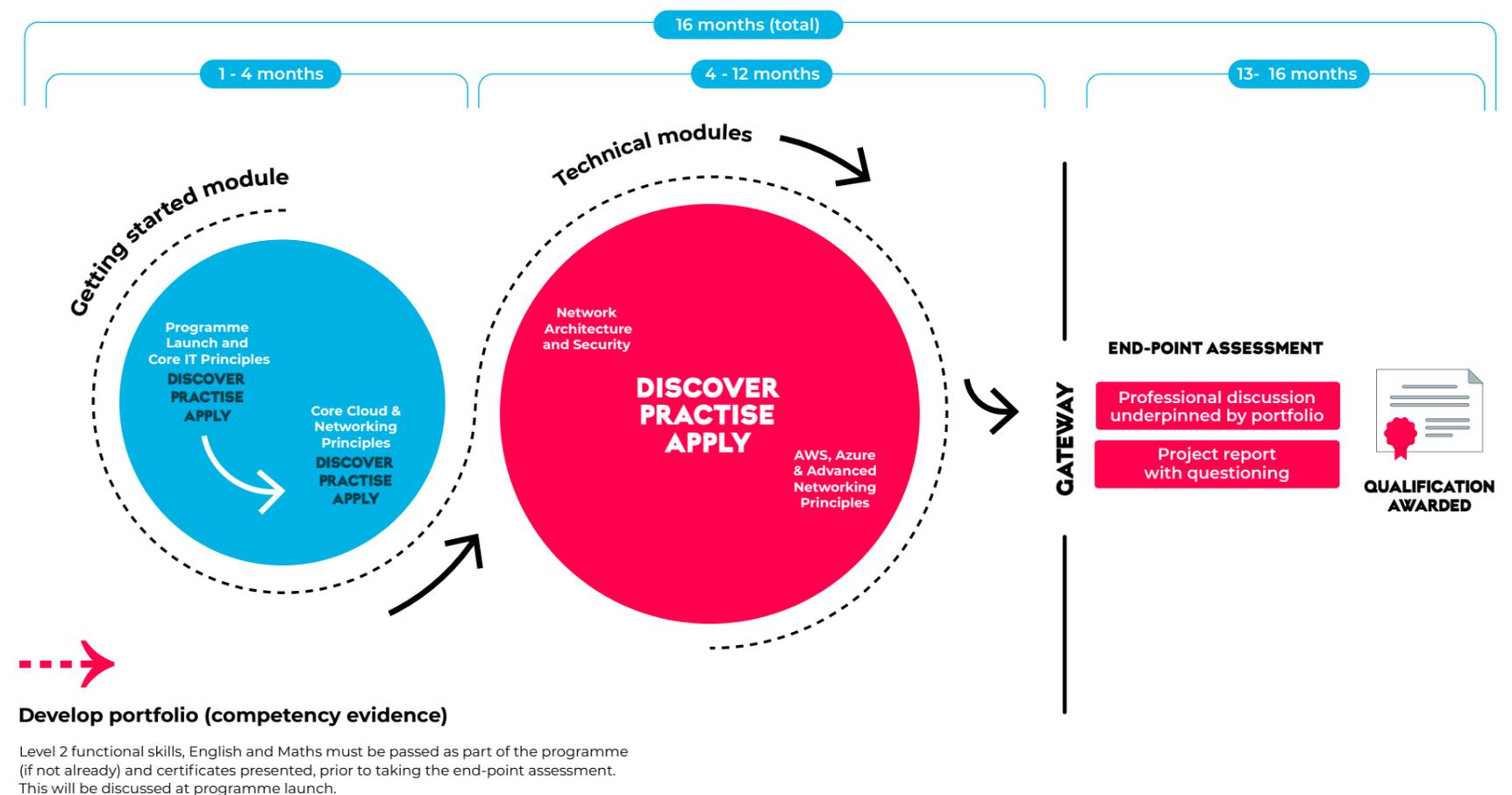
Learners will practise their new-found knowledge by completing activities - online, in the live events and (most importantly) directly at work in their day-to-day role.



### APPLY

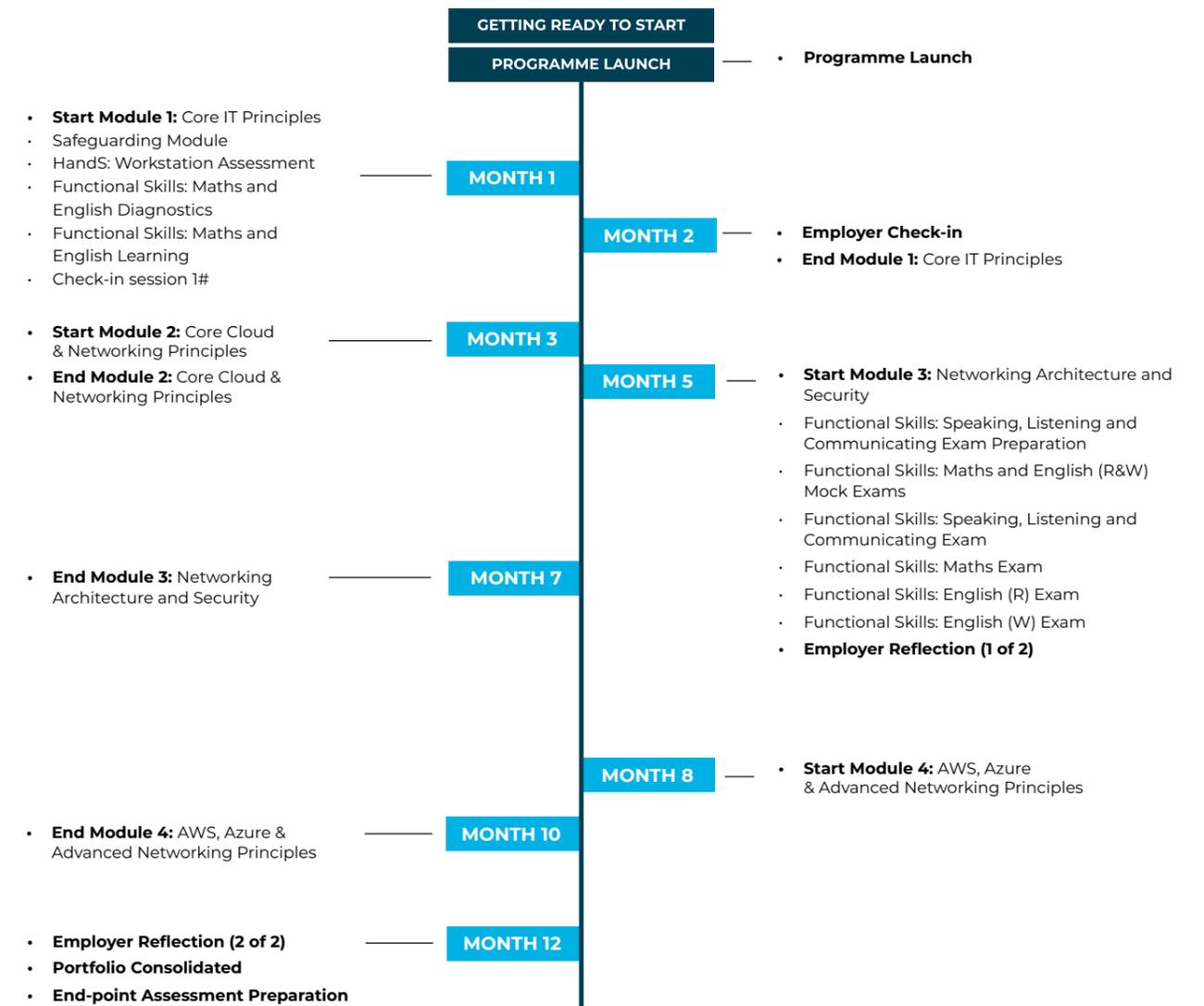
Learners will apply what they've discovered and practised at work. They will actively contribute to your organisation whilst building their portfolio of evidence (showing how they've applied their new skills) to gain their qualification.

## Cloud Network Specialist



# THE LEARNER'S JOURNEY

Programme timeline | Duration: 16 Months | Gateway: 12 Months



Qualification  
Awarded

# GETTING STARTED MODULE

The modules in our Cloud Network Specialist apprenticeship equip learners with the advanced technical skills they need for their role. Each module develops the core set of skills they must be able to do well to be competent.

In each module, learners will 'discover', 'practice' and 'apply' what they've learned. This helps them put their newly-found knowledge into action back at work.

There are 4 modules to complete with the following learning outcomes.

## Module 1: Introduction and Core IT Principles

### Programme Launch (Synchronous session online)

- Learn about the programme and structure
- Calendar of apprenticeship events
- Setting expectations
- Complete first networking activity

### Discover. Practise. Apply.

This module introduces learners to the key organisational, cultural and health and safety considerations that are required by Cloud Specialists. We also cover a broad range of foundational networking knowledge and skills.

#### Discovery activities include:

- What is binary?
- How strong is my password?
- Have I been Pwned: Check if your email has been compromised in a data breach
- Diversity and cultural awareness
- Knowledgebase / user guide structure and format
- Introduction to STARRS (Situation, Task, Action, Result, Reflection, Strengthen)
- WEEE legislation introduction (video)
- Introduction to network components - Hub, Switches, Routers, DNS, DHCP, Servers
- Network topologies and access methods - Star, Mesh, Ring, Bus, Logical and physical topologies
- Technical document structure and format

#### Practical activities include:

- Binary game
- Write your introduction
- How we communicate in the workplace (tech vs non-tech)
- Health and safety / organisational compliance
- Numeric conversions (Binary, Decimal and Hexadecimal)
- Introduction to Wi-Fi and how to approach fixing connection problems
- Fix and report using STARR
- Introduction to virtual network components - VM's, Virtual networks, VPN, Internet, Intranet and Extranet
- Cloud literacy
- Introduction to IPv4 addressing (video)
- Create and format your portfolio and project documents

#### Apply activities include:

Description of their role, their employer and where they fit in the organisation including identifying relevant stakeholders.

**Module duration:** 9 weeks **Classroom attendance:** 2 days

# TECHNICAL MODULES

The technical modules focus on the knowledge and skills required of a Cloud Network Specialist in detail. After each module learners will 'apply' what they've learned at work on current projects.

## Module 2: Core Cloud & Networking Principles

This module introduces learners to core networking principles including network addressing, Cloud, Virtualisation and Security.

### Discovery activities include:

- Approaches to problem solving
- Documenting actions and the benefits of task tracking with ticketing systems
- Maintenance approaches - preventative, predictive, reactive
- Describe backup and recovery options and their benefits
- Describe mobile device security - encryption, strong password, biometric checks, transport encryption

### Practical activities include:

- IPv4 - addressing, subnetting; NAT, static IP, gateway; APIPA; network classes, classful/ classless IP addressing;; reserved address ranges for local use (including local loopback ip)
- IPv6 - why use IPv6; addressing; ipv4toipv6 tunneling protocols to ensure backwards compatibility; dual ip stack; subnetmask; gateway; ports; packets; reserved address ranges for local use (including local loopback ip)
- Names resolution - DNS, resource records, Windows Internet Name Service (WINS), steps in the name resolution process, HOSTS file, LMHOSTS file
- Networking services - Dynamic Host Configuration Protocol (DHCP), Network Address Translation (NAT), firewalls, remote access, VPN
- TCP/IP - tools such as ping; tracert; pathping; Telnet; IPconfig; netstat, reserved address ranges for local use (including local loopback ip); protocols
- Wireless networking - types of wireless networking standards and their characteristics (802.11A, B, G, N, AC including different Ghz ranges), types of network security (for example, WPA/WEP/802.1X ), point-to-point (P2P) wireless, ad hoc networks, wireless bridging
- Fix and report (STARRS)

### Apply activities include:

- Interpreting customer requirements, use of various tools and techniques to troubleshoot
- Ensuring security of personal data
- Communicating with stakeholders and keeping effective relationships with all parties
- Prioritising workload, documenting tasks and knowing when to escalate

**Module duration:** 9 weeks **Classroom attendance:** 5 days



## Module 3: Network Architecture and Security

This module will provide learners with an extended understanding of the principles, hardware, protocols and services that form part of on-premise, cloud and hybrid network architectures.

### Discovery activities include:

- Concepts of the Internet, Intranet, and Extranet - VPN, security zones, firewalls
- Local Area Networks (LANs) - perimeter networks; addressing; reserved address ranges for local use (including local loopback ip), VLANs; wired LAN and wireless LAN
- Wide Area Networks (WANs) - leased lines, dial-up, ISDN, VPN, T1, T3, E1, E3, DSL, cable modem, and more, and their characteristics (speed, availability)
- Wireless networking - types of wireless networking standards and their characteristics (802.11A, B, G, N, AC including different Ghz ranges), types of network security (for example, WPA/WEP/802.1X ), point-to-point (P2P) wireless, ad hoc networks, wireless bridging
- Network topologies and access methods - star, mesh, ring, bus, logical and physical topologies
- Switches - transmission speed, number and type of ports, number of uplinks, speed of uplinks, managed or unmanaged switches, VLAN capabilities, Layer 2 and Layer 3 switches and security options, hardware redundancy, support, backplane speed, switching types and MAC table, understand capabilities of hubs versus switches, virtual switches
- Routers - transmission speed considerations, directly connected routes, static routing, dynamic routing (routing protocols), RIP vs. OSPF, default routes; routing table and how it selects best routes; routing table memory, NAT, software routing in Windows Server, installing and configuring routing; Quality of Service (QoS)
- Media types - cable types and their characteristics, including media segment length and speed; fiber optic; twisted pair shielded or unshielded; catxx cabling, wireless; susceptibility to external interference (machinery and power cables); susceptibility to electricity (lightning), susceptibility to interception
- OSI model - OSI model; TCP model; examples of devices, protocols, and applications and which OSI/ TCP layer they belong to; TCP and UDP; well-known ports for most-used purposes (not necessarily Internet); packets and frames
- IPv4 - addressing, subnetting; NAT, static IP, gateway; APIPA; network classes, classful/ classless IP addressing; reserved address ranges for local use (including local loopback ip)
- IPv6 - subnetting; IPconfig; why use IPv6; addressing; ipv4toipv6 tunneling protocols to ensure backwards compatibility; dual ip stack; subnetmask; gateway; ports; packets; reserved address ranges for local use (including local loopback ip)
- Names resolution - DNS, resource records, Windows Internet Name Service (WINS), steps in the name resolution process, HOSTS file, LMHOSTS file
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- TCP/IP - tools such as ping; tracert; pathping; Telnet; IPconfig; netstat, reserved address ranges for local use (including local loopback ip); protocols

### Practical activities include:

- Fix and report (STARRS)

### Apply activities include:

- Physically connecting devices
- Testing and evaluating network environments
- Monitoring performance and network related workloads
- Setting up storage and deploying applications on a network
- Applying necessary security in line with access
- Carrying out routine maintenance and basic upgrades

**Module duration:** 15 weeks

**Classroom attendance:** 5 days



**Module 4:**  
AWS, Azure & Advanced Networking Principles

This module will broaden your knowledge by further exploring Cloud technologies, virtualisation, DevOps methodologies and the fundamentals of databases & data migration.

**Discovery activities include:**

- API's and web services
- Database migration
- DevOps methodology and tools, such as Puppet, Chef, Git, Docker

**Practical activities include:**

- Introduction to GCP
- Introduction to AWS
- Introduction to Azure
- Focus on project report (STARRS)

**Apply activities include:**

- Physically connecting devices
- Testing and evaluating network environments
- Monitoring performance and network related workloads
- Setting up storage and deploying applications on a network
- Applying necessary security in line with access
- Carrying out routine maintenance and basic upgrades

**Module duration:** 15 weeks **Classroom attendance:** 2 days

**Gateway and end-point assessment**  
Consolidation, preparation and assessment (Online)

This final component will get learners ready to go through the 'gateway'.

The apprenticeship gateway is an internal QA process. It will ensure that your learner's work is ready to be assessed by BCS. This exists to increase their chances of success.

At this pre-gateway stage learners will:

- Consolidate and submit their portfolio
- Conduct a mock EPA

In addition to the items above, learners must have successfully completed all the Functional Skills exams (except exempt learners).

Once learners have met all the above criteria, they will go through the gateway. When approved, it takes up to 4 months from gateway to achievement.

During this time, learners will:

- Complete their simulation assessment and questioning
- Complete their interview

**Qualifications earned**



When they achieve this apprenticeship, learners will earn the following qualifications:

- Information Communications Technician Level 3 Apprenticeship

**OPTIONAL QUALIFICATIONS:**

As part of module four in this routeway apprentices will cover the syllabi of the following exams:

- Microsoft Azure Fundamentals (AZ-900)\*
- Amazon Cloud Practitioner\*

\*QA will provide free of charge exam vouchers for a first attempt for each of these certifications. Subsequent attempts will be funded by the learner/employer.

# LEARNING OUTCOMES

Apprentices will be assessed on 3 key areas; their ability to convey knowledge, their ability to demonstrate practical skills and their capability of displaying professional workplace behaviour. These will be developed during an apprentice's learning journey, with the goal of displaying all of these competencies during their assessment.

These knowledge, skills and behaviour points ensure rounded development, as the standards provide a greater emphasis on the importance of both technical and soft skills in the workplace.

## KNOWLEDGE

- K1: Approaches to back up and storage solutions
- K2: Basic elements of technical documentation and its interpretation
- K3: Principles of root cause problem solving using fault diagnostics for troubleshooting
- K4: Principles of basic network addressing for example binary
- K5: Basic awareness of the principles of cloud and cloud-based services
- K6: Fundamental principles of virtual networks and components
- K7: Principles of cultural awareness and how diversity impacts on delivery of support tasks.
- K8: Methods of communication including level of technical terminology to use to technical and non-technical stakeholders
- K9: Different types of maintenance and preventative measures to reduce the incidence of faults
- K10: Key principles of security including the role of People, Product and Process in secure systems for example access and encryption requirements
- K11: Fundamentals of physical networks and components
- K12: Approaches to documenting tasks, findings, actions taken and outcome for example, use of task tracking and ticketing systems
- K13: Basic awareness of legislation in relation to disposal of waste materials for example Waste Electronic and Electrical regulations (WEEE)
- K23: Basic elements of network infrastructure architectures including WiFi and wired networks
- K24: Principles of OSI layers
- K25: Principles of cloud and network architecture (including Wi-Fi)
- K26: Principles of DNS / DHCP
- K27: Awareness of Cloud platforms, such as AWS, Azure, or GCP
- K28: Principles of LANs and WANs
- K29: Approaches to virtualisation of servers, applications, and networks
- K30: Principles of network protocols
- K31: Principles of API's and Web Services
- K32: The different types of cloud storage
- K33: Back up procedures and their importance
- K34: Principles of databases and migration
- K35: Key principles of Cloud Security and firewalls
- K36: Awareness of DevOps methodology and tools, such as Puppet, Chef, Git

## SKILLS

- S1: Interpret and prioritise internal or external customer's requirements in line with organisation's policy
- S2: Apply the appropriate tools and techniques to undertake fault finding and rectification
- S3: Apply Continuous Professional Development to support necessary business output and technical developments
- S4: Operate safely and securely across platforms and responsibilities maintaining the security of personal data of internal and external stakeholders
- S5: Communicate with all levels of stakeholders, keeping them informed of progress and managing escalation where appropriate
- S6: Develop and maintain effective working relationships with colleagues, customers and other relevant stakeholders
- S7: Manage and prioritise the allocated workload effectively making best use of time and resources
- S8: Complete documentation relevant to the task and escalate where appropriate
- S9: Install or undertake basic software upgrades, either physically or remotely
- S10: Establish and diagnose the extent of the IT support task, in line with the organisation's policies and Service Level Agreements
- S11: Provide remote/F2F support to resolve customer requirements
- S12: Maintain a safe working environment for own personal safety and others in line with Health & Safety appropriate to the task
- S19: Use a range of Cabling or Connectors equipment in line with technical requirements
- S20: Test and evaluate network environments
- S21: Monitor performance and usage of a network
- S22: Deploy applications on a network
- S23: Set up storage and data access for staff
- S24: Apply necessary security measures, in line with access requirements to a network
- S25: Carry out routine maintenance across network systems, ensuring organisational compliance
- S26: Monitor network-related workloads including DNS and firewalls
- S27: Install or undertake basic upgrades, either physically or remotely

## BEHAVIOUR

- B1: Works professionally, taking initiative as appropriate and acting with an ethical approach
- B2: Communicates technical and non-technical information in a variety of situations to support effective working with internal or external stakeholders
- B3: Demonstrates a productive and organised approach to their work
- B4: Self-motivated, for example takes responsibility to complete the job.

## HOW TO GET READY FOR THE END-POINT ASSESSMENT

We want to deliver memorable learning experiences, whilst developing learners with well-rounded skillsets, ready to meet their professional requirements.

To ensure we are achieving this goal consistently, it is important for learners, digital learning consultants and employers to work together to ensure learners are supported to succeed in their apprenticeship's end-point assessment (EPA).

In this section we outline a number of guidelines which intend to provide a framework so that this can be achieved in a consistent way.

**Preparation for the end-point assessment starts from day one.**

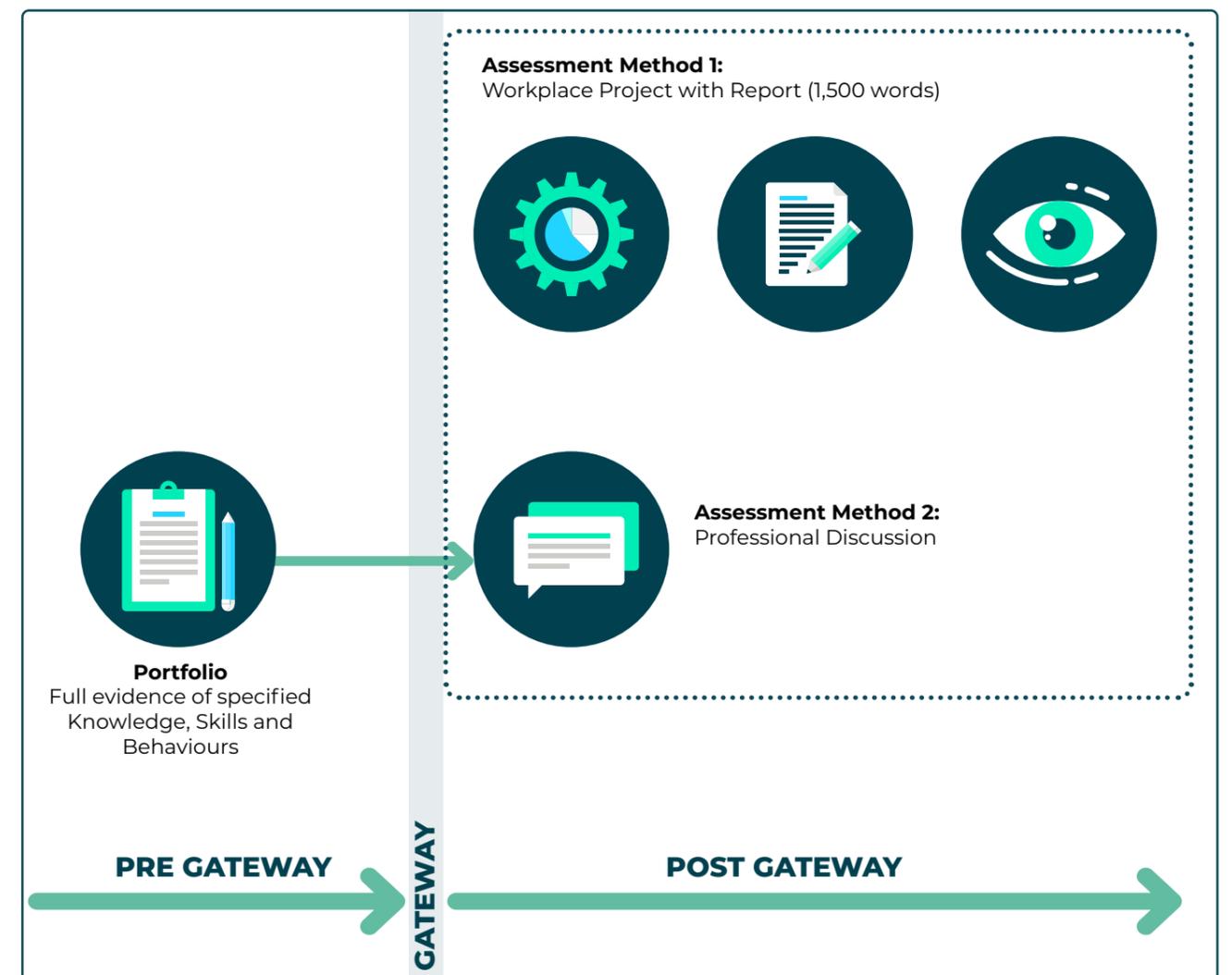
### STAYING ON-TRACK THROUGHOUT THE PROGRAMME

Learners and employers should start preparing for EPA from the start of the programme. Employers will need to ensure that learners are given the right opportunities at work to develop and prove the knowledge, skills and behaviours in the standard.

For this reason, it is very important to keep learners, digital learning consultants and employers informed about the programme progress. It is critical to the success of the apprenticeship programme that all of the above work together to ensure that each learning journey is kept on-track avoiding further interventions (and time commitment) whenever possible.

To help learners with this, we have created two guiding documents – a programme timeline, and a progress review map – so progress can be checked against it, at any time. Any progress deviations above 15% will be reviewed on a case-by-case basis. This is to ensure the apprenticeship is progressing in a timely manner.

## HOW THE EPA IS GRADED



# EXPANDING YOUR TECHNICAL SKILLS WITH cloud academy A QA COMPANY

Our apprentices are given full access to our proprietary Cloud Academy platform for the duration of their programme.

Cloud Academy brings the very latest and up-to-date content to our apprentices through single units, courses and comprehensive learning paths to really build on the core learning outcomes defined within the programme. Furthermore, apprentices are able to prepare for the full suite of vendor qualifications across AWS, GCP and Azure and much more.

Cloud Academy users also benefit from Hands-On Labs, Lab Challenges and Lab Playgrounds providing a safe, sandbox environment in which our learners are able to practise in real time through guided walkthroughs or through their own exploration.

Check out the [Training Library - Cloud Academy](#).



Funded by



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Apprenticeships

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