



Programme Syllabus



Computer Networking Associate Apprenticeship

An innovative apprenticeship that combines computer, cloud networking, communications, and customer service skills with contemporary applications of generative AI tooling, security technologies, project management, and more.



Typical job roles in Computer Networking include: Network Engineer, Network Technician, Network Specialist, Systems Engineer, Network Administrator, Network Support, and Data Centre Technician.

1. Introduction

Apprenticeships are an exciting and proven way for employers to develop talent for their company and industry. They are designed by industry-led groups to support growth and competitiveness. Apprentices earn while they learn, and build valuable work-ready skills in a chosen occupation.

Completing the apprenticeship journey opens up exciting and rewarding careers for motivated learners with an interest in networking. Helping more people discover and develop their talents through training is at the heart of the national apprenticeship system. Our mission at Fastrack into Information Technology, then, is to assist people in finding opportunities through the acquisition of tech skills in the face of rapid technological changes. We warmly invite you to take part in this journey with our support and encouragement.

1.1 Programme Design

The Computer Networking Associate Apprenticeship is a two-year programme designed for those who have recently completed second-level education or mature learners seeking to retrain. It is a dual-education programme involving both college-based and workplace learning. This college-based learning is state-funded and apprentices receive a salary from their employer while on the programme. The programme provides apprentices with the theoretical and practical skills required to secure and retain employment in creating, managing, and modifying wide and local computer networks. Recently, FIT concluded the first formal large-scale review of this programme, culminating in a modified programme targeted toward meeting contemporary business needs.

In summary, the revised programme includes updated content in customer support training, extended periods for apprentices to build basic computer networking skills, and the opportunity to practice on various network topologies. In addition, the revised programme refocuses basic health and safety considerations towards a deeper appreciation of safe work systems while significantly enhancing the apprentices' understanding of contemporary/Agile project management approaches and methodologies such as Lean, SCRUM, and more. The programme will expose apprentices to popular virtualisation solutions and contemporary practices, as well as offering them the opportunity to complete CompTIA certifications, as noted in *Section 6*.

1.2 Impact of AI on Computer Networking

The functionality and usefulness of various generative AI-based tools have increasingly proved their worth to small businesses, public service providers, and large multi-national organisations alike. For network service providers, this has resulted in new ways to make their networks more efficient, resilient, and secure. A range of AI technologies can be harnessed to help run complex IT networks. These technologies include machine learning, generative AI, and natural language processing, assisting in areas related to network optimisation, troubleshooting, resilience, predictive maintenance, and user experience. Future apprentices will increasingly utilise these technologies in their day-to-day activities. Demystifying foundational AI concepts and awareness of the real-world application of generative AI tools is essential in providing a solid base for apprentices commencing this apprenticeship programme. All candidates who apply to this programme will be provided access to a self-paced, online learning path developed by IBM that provides an accessible and introductory understanding to AI ethics and practical prompting strategies. In addition, during the completion of the programme, apprentices will utilise such tools within network environments during their off-the-job programme elements, providing insight into how generative AI tools enable IT teams to accurately identify issues, trends, anomalies, and root causes.

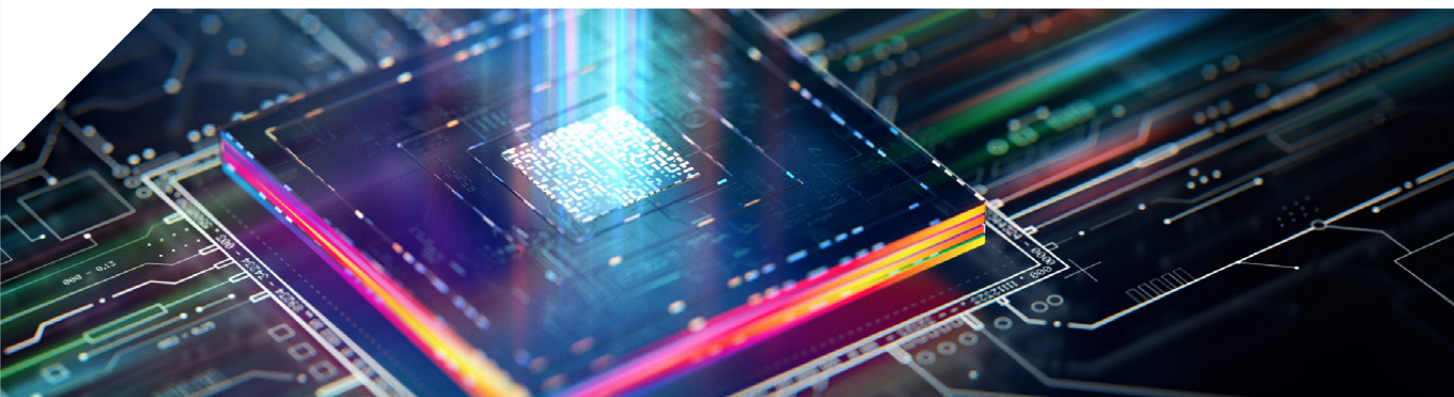
It is important to note that the design of this programme does not rely on a narrow variety of traditional manual networking skills. **This programme aims to holistically develop abilities crucial for networking specialists across various contemporary themes, which have increasing relevance and currency for employers offering ICT services as well as those who use, manage, and maintain large-scale ICT systems.**

1.3 Stakeholders and Roles

A computer networking associate designs, installs, maintains, and supports communication networks within and between organisations. Network specialists maintain high levels of network availability in order to provide maximum performance for their users (such as colleagues, clients, customers, suppliers, and other relevant stakeholders). They understand network topologies, cloud services, network administration, and monitoring tools. They are able to give technical advice and guidance. Typical job titles for graduates with this skillset include: **Network Engineer, Network Technician, Network Specialist, Systems Engineer, Network Administrator, Network Support, and Data Centre Technician.**

1.4 Governance

FIT is an industry-led, not-for-profit organisation that develops and provides innovative education and training programmes. As Coordinating Provider, FIT is responsible for the operational and quality assurance aspects of the programme. FIT works closely with its training delivery partners (ETBs), employers, and regulators (namely: Quality and Qualifications Ireland, SOLAS, and the National Apprenticeship Office) to ensure that the ICT Apprenticeships meet the needs of all stakeholders.



2. Award Title, Level, and QQI Certification

Successful completion of all modules on this programme results in the attainment of a Quality and Qualifications Ireland-accredited **Advanced Certificate in Computer Networking**, which is placed at Level Six on the National Framework of Qualifications.



2.1 Modular Components

Based on the allocation of 200 FET Credits, this programme is split into fourteen modules, beginning with NE-TA-001 and concluding with NE-TA-014. Modules NE-TA-001–NE-TA-012 are completed by apprentices in off-the-job training mode under the guidance and direction of an off-the-job tutor. Key ideas introduced in these modules are then reinforced by way of practical experiences in the workplace, as well as self-directed learning activities conducted throughout the two-year programme. Modules NE-TA-013 and NE-TA-014 are based on these on-the-job activities, as apprentices complete reflective logbook entries to demonstrate their application of learning in the workplace.

Module	Course Type	FET Credits	Directed	Self-Directed	
Programme Induction	N/A	0	31.5	0	
NE-TA-001	Networking Fundamentals I	Off-the-Job	15	94.5	55.5
NE-TA-002	Customer Support Provision for the ICT Professional	Off-the-Job	05	31.5	18.5
NE-TA-003	Configuring and Testing ICT Systems	Off-the-Job	10	63	37
NE-TA-004	Cloud Technology Implementation & Maintenance	Off-the-Job	15	94.5	55.5
NE-TA-005	Data & Cybersecurity: Essentials for Computer Networking	Off-the-Job	5	31.5	18.5
NE-TA-006	Safe Systems of Work	Off-the-Job	5	31.5	18.5
NE-TA-007	Virtualisation Management	Off-the-Job	15	94.5	55.5
NE-TA-008	Project Management & Agile Systems of Work	Off-the-Job	10	63	37
NE-TA-009	ICT System Security Policies	Off-the-Job	10	63	37
NE-TA-010	Networking Fundamentals II	Off-the-Job	20	126	74
NE-TA-011	Intermediate IT Support	Off-the-Job	10	63	37
NE-TA-012	Intermediate Network Management	Off-the-Job	15	94.5	55.5
NE-TA-013	Applied Learning in the Workplace: Year 1	On-the-Job	25	525	0
NE-TA-014	Applied Learning in the Workplace: Year 2	On-the-Job	40	1672	0

3. Programme Access and Entry Requirements

FIT recruits candidates who express an interest in joining the programme by completing an online application form, available at www.fit.ie. Initially, the application is screened with respect to basic eligibility requirements noted below. Successful candidates will also be registered with SOLAS as the regulatory authority for the registration of apprentices in Ireland.

All candidates will be required to meet the specific entry requirements. Once the screening process has been completed, FIT will organise interviews between candidates and prospective host employers who will then provide the mentored work placement environment. The employer will select the applicant(s) to whom they will offer a role in their organisation as full time employee for the duration of the programme. This decision is made exclusively by the employer and FIT has no role in this candidate selection process.

Since 2018, FIT has made available several supports for candidates who may have additional learning needs. Candidates with such requirements or disabilities are given the opportunity to make this known to FIT from the start of the application process. These supports range from assistance in navigating the candidate application process to ongoing support during participation in the programme, including advice on reasonable accommodations.

3.1 Specific Entry Requirements

Minimum candidate entry requirements are as follows. A successful candidate:

- Must be 18 years or older;
- Will be required to complete an initial aptitude test;
- Must have achieved a passing grade (or O6/H7) in 5 or more subjects, including Mathematics and English (both at Ordinary Level or above), in the Irish Leaving Certificate;
- Must be eligible to participate in Further Education and Training programmes; and
- Must be entitled to study and work in Ireland.

The Recognition of Prior Learning procedure may be employed in determining equivalence to the above requirements for those candidates without a suitable Leaving Certificate qualification. Alternatively, those who have completed a FIT-recognised Pre-Tech Apprenticeship programme will be able to furnish evidence of the same along with a copy of their Junior Certificate transcript as part of this process.

Key candidate skills and attributes are as follows. A successful candidate must:

- Be numerate and literate;
- Have good learning skills;
- Be interested in technology and customer service;
- Have the ability to absorb product knowledge;
- Be motivated and analytical;
- Possess good communication skills, a pleasant personality, and be determined to succeed;
- Have excellent interpersonal skills;
- Be able to work as a team member; and
- Be adaptable and flexible.

4. Programme Aims and Objectives

The Computer Networking Associate Apprenticeship programme aims to enable participants to secure and retain employment in a computer networking role. Candidates accepted into the programme will be able to combine technical, communications, project management, and personal development skills to meet their employer's requirements and should be able to act autonomously or as part of a team, as the occasion demands.

4.1 Specific Programme Objectives

The expected outcome is that the apprentice will be able to:

- Install, configure, troubleshoot, and maintain a network operating system;
- Understand the principles and components involved in computer networking;
- Design, implement, and support new and existing computer network installations;
- Manage and secure internet servers;
- Understand virtual environments as an addition to more traditional computing arrangements;
- Implement and manage virtualisation environments (for both desktops and servers);
- Use the principles of project management to set up new projects;
- Mitigate risks and develop skills in using management tools to monitor and review projects;
- Understand the importance of effective communication, such as written, verbal, and non-verbal, in a business environment;
- Understand why effective communication is critical for businesses and use appropriate communication methods for specific purposes;
- Understand the systems development life cycle. Using a project approach, apprentices will explore the stages in detail, gathering and analysing customer requirements, designing an IT solution, and planning its testing and implementation;
- Identify various relevant stakeholder perspectives to ensure that a solution meets requirements and that broader implications are considered;
- Use different methods and resources available to them to help them plan for their personal and professional development;
- Learn how to identify factors that may affect targets or goals, prioritise actions, and how feedback from others can be utilised to aid personal development and career progression; and
- Demonstrate the advanced learning associated with industry-recognised certifications, such as CompTIA A+ and CompTIA Network+.

5. Programme Structure

The Computer Networking Associate Apprenticeship programme is delivered across four semesters. The titles of these semesters correspond with specific milestones necessary for meaningful apprentice progress.

- **Semester 1:** Laying the Foundation.
- **Semester 2:** Introducing the Workplace.
- **Semester 3:** Consolidation.
- **Semester 4:** Preparation for Autonomy.

The table on Page 8 details typical on-the-job (WORKPLACE) and off-the-job (COLLEGE) timings for this two-year full-time apprenticeship programme. Attendance for the duration of each full day of training, either in college or the workplace, is mandatory.

The college-based training aspect of this programme is usually delivered in person. Candidates are notified of specific arrangements once they prepare to commence employment with their apprenticeship employer. In practice, apprentices attend an Education and Training Board facility for college-based training. These facilities are based throughout the Republic of Ireland and offer apprentices a high-quality training experience. FIT endeavours, where feasible, to align the geographic location of college-based training with the location of an employer's business operations. However, this is not possible in all instances, and so candidates must be willing to make arrangements to travel in order to attend specified training locations.

Subject to accreditor approval, in a small number of intake instances each year college-based training elements may be delivered via a blended approach to instruction. In such cases, apprentices conduct training sessions from home, or their place of work, via a virtual classroom. However, some in-person attendance will still be required.



5. Programme Structure (continued)

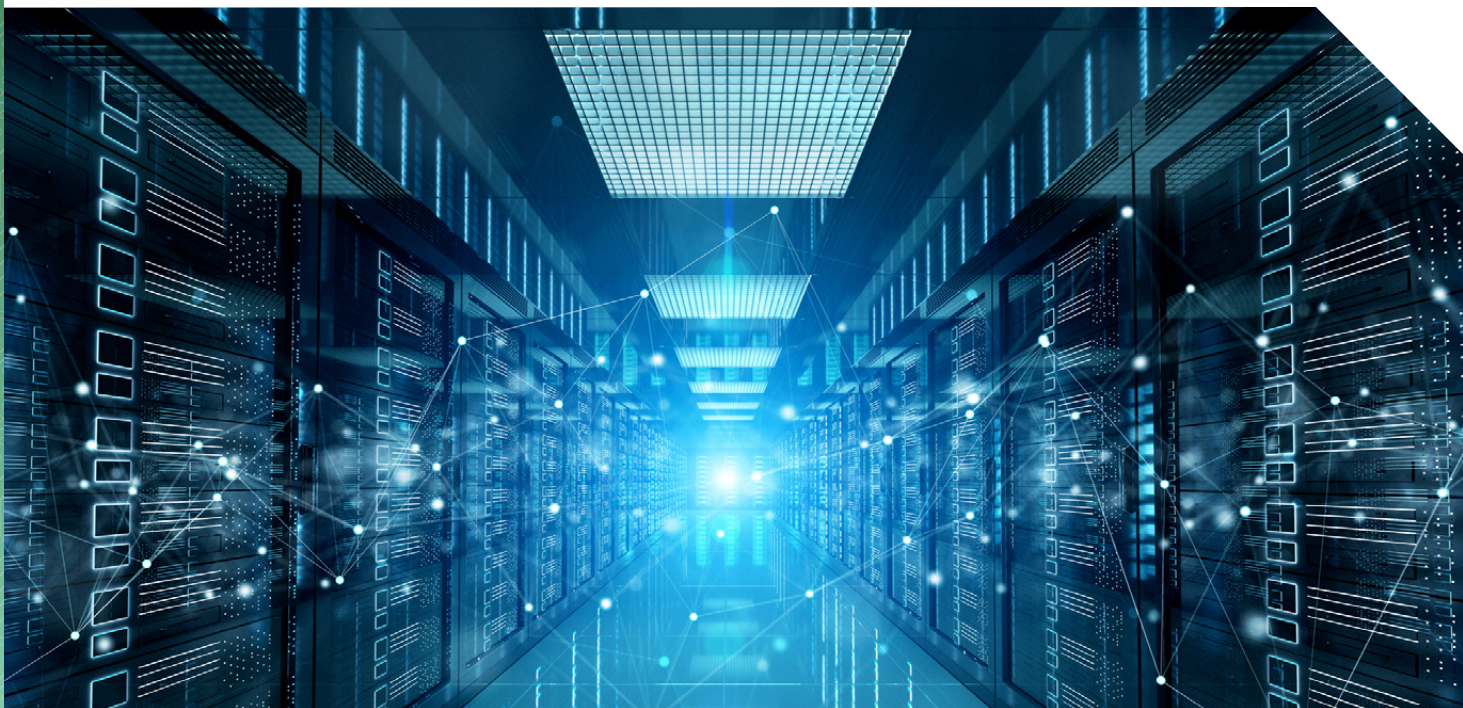
Typical Weekly Delivery Schedule Year 1 (Semesters 1 & 2)

<i>Week Numbers</i>	<i>Location</i>	<i>Days</i>
1 – 3	Workplace	Monday – Friday
4 – 17	College	Monday – Friday
18 – 33	Workplace	Monday – Friday
34 – 43	College	Monday – Friday
44 – 52	Workplace	Monday – Friday

Typical Weekly Delivery Schedule Year 2 (Semesters 3 & 4)

<i>Week Numbers</i>	<i>Location</i>	<i>Days</i>
53 – 62	College	Monday
53 – 62	Workplace	Tuesday – Friday
63 – 78	Workplace	Monday – Friday
79 – 93	College	Monday
79 – 93	Workplace	Tuesday – Friday
94 – 104	Workplace	Monday – Friday

Occasionally, where a single employer may aim to recruit an entire participating cohort of 14+ apprentices, there is the possibility of modifying these timings in accordance with employer preferences and requirements. All programmes, regardless of specific scheduling adjustments, will complete the total required learning hours for on- and off-the-job training periods.



6. Indicative Programme Content Summary

The indicative content that forms this programme is designed to increase complexity from the first to final modules. Early programme modules are targeted towards an NFQ Level 5 standard, with later modules aligning with an NFQ Level 6 standard. This approach allows for an accessible learning experience in understanding fundamental topics, technologies, and their application in the world of ICT and is especially suited to those little prior relevant experience. Learners of all backgrounds will acquire knowledge and specific skills throughout the duration of the programme. The indicative content noted below comprises a brief snapshot of key subject matter covered in the programme's constituent modules. A complete outline of module-specific learning outcomes and aligned indicative content is available on request. As part of FIT's commitment to transparency and dynamic service provision, feedback relating to specific aspects of the programme—including possibilities for future enhancements—is always welcome.

NE-TA-001 **Networking Fundamentals I**

Utilising a variety of computer networking approaches, this module includes instruction in the fundamental principles of computer networking and the application of techniques used in the field. Apprentices will be able to maintain physical and logical networks based on a comprehensive knowledge of data transmission in terms of network models, protocols, and services.

NE-TA-002 **Customer Support Provision for the ICT Professional**

In the early phase of apprentice training, employers often task apprentices with discharging technical support activities. This module will prepare the apprentice to provide technical customer support and understand the processes involved in improving customer interaction with ICT systems. In addition, this module will equip apprentices with knowledge of Level 1, Level 2, and Level 3 support activities and their relevance to specific case studies. Finally, apprentices will understand the importance of Customer Relationship Management systems in order to enhance technical support provision.

NE-TA-003 **Configuring and Testing ICT Systems**

This module aims to provide apprentices with the principles of ICT systems testing and an appreciation for implementing aligned procedures. Apprentices will devise standard testing procedures for stand-alone and networked systems, using existing test hardware and software. Apprentices will learn to select and apply test procedures for particular situations, compare the results with benchmarks, and recommend further actions.

NE-TA-004 **Cloud Technology Implementation and Maintenance**

This module aims to provide apprentices with the knowledge and skills required to understand standard cloud terminologies and methodologies and to implement, maintain, and deliver cloud technologies and infrastructures.

NE-TA-005 **Data and Cybersecurity: Essentials for Computer Networking**

This module provides an understanding of the threats to modern ICT systems and best practices for minimising their impact.

NE-TA-006 **Safe Systems of Work**

Safe systems of work ensure that employees, in a computer networking environment, can safely carry out their work duties while maintaining their good health. This module will assist apprentices in gaining an understanding of contemporary 'safe' work practices and the control of hazards, including broad legislative requirements. In addition, apprentices will learn how to report personal injuries and accidents as well as how to complete basic risk assessments pertinent to their ICT work environments.

NE-TA-007 **Virtualisation Management**

This module aims to provide apprentices with the knowledge and skills related to virtual server management. To that end, apprentices will learn how virtual services rely on physical infrastructure and will develop skills to design, manage, implement, and manage virtual environments.

NE-TA-008 **Project Management and Agile Systems of Work**

This module aims to provide apprentices with an understanding of project management principles and how projects are set up and delivered in the contemporary ICT workplace. Apprentices will understand how to mitigate risks and will gain experience in employing management tools to monitor and review projects using the Agile framework. In addition, apprentices will develop essential skills to communicate through written, verbal, and non-verbal means and clearly present technical information to non-technical audiences.

NE-TA-009 **ICT System Security Policies**

This module aims to provide apprentices with user awareness and knowledge of ICT system security policies to effectively protect organisational assets. Apprentices will learn how such policies establish a solid foundation for threat mitigation procedures while also improving provision of ICT services on the whole.

NE-TA-010 **Networking Fundamentals II**

Building on the initial Networking Fundamentals I module, this module will assist apprentices in developing a broader understanding of networking technologies and operating systems across a range of systems considerations, including topologies, communication bandwidth, throughput, standards, and protocols.

NE-TA-011 **Intermediate Level IT Support**

Building on all prior modules, this module aims to provide apprentices with the knowledge of intermediate-level IT support activities in areas including, but not limited to, security, troubleshooting, operating systems diagnostics, virtualisation, cloud options, and hardware. Apprentices who have evidenced that they have completed the CompTIA A+ (Core 1 & 2) certification are exempt from completing the FIT-devised assessment tasks relating to this module. The FIT Registrar will assess all certificates and transcripts furnished and notify the tutor of the exemption. Apprentices must achieve a score of at least 50% in both portions of the CompTIA A+ certification examination in order to demonstrate fulfillment of the stated module learning outcomes. The delivery of this module will provide a facility for those wishing to sit the above vendor exams to do so within the active period of apprentice study.

NE-TA-012 **Intermediate Network Management**

Building on the Networking Fundamentals modules I and II, this module aims to provide apprentices with the knowledge of intermediate-level network management in areas including, but not limited to, network management, security, implementation, troubleshooting, and support. Apprentices who have evidenced that they have completed the CompTIA Network+ certification are exempt from completing the FIT-devised assessment tasks. The FIT Registrar will assess all certificates and transcripts furnished and notify the tutor of the exemption. Apprentices must achieve a score of at least 50% in the CompTIA Network+ certification examination in order to demonstrate fulfillment of the stated module learning outcomes. The delivery of this module will provide a facility for those wishing to sit the above vendor exams to do so within the active period of apprentice study.

NE-TA-013 & NE-TA-014 **Applied Learning in the Workplace Year 1 & 2**

Within the context of a supported work environment, modules 013 & 014 aim to provide apprentices with an opportunity to demonstrate and document their application of learning in a workplace setting, relating to both occupationally specific technical and transversal skills acquisition. During the completion of these modules, apprentices will utilise an online learning logbook to document their learning journey. Workplace Mentors and the Assessor will access this platform at regular intervals. In summary, consistent with the module learning outcomes, apprentices will upload documentary evidence of completing the required technical tasks. In addition to these technical tasks, apprentices will complete and upload a transversal skills draft essay in year one. The final essay and a recorded presentation will be completed and uploaded by the end of the programme.

7. Assessment of Learning

Programme elements are assessed in different ways. During the completion of off-the-job modules, apprentices will undertake a series of assessment tasks for each module that demonstrate apprentice attainment of the required minimum standards. Apprentices complete assessments in a controlled, proctured environment that is time-bound against specific assignment briefs. Typically, assessment of a particular module is completed within the final days of delivery of that module. As apprentices progress through the programme, they will have the opportunity in modules NE-TA-011 and NE-TA-012 to complete CompTIA certifications, which typically necessitates attendance at a defined testing centre location. Workplace learning is monitored through the use of the logbook, where apprentices provide detailed written entries describing relevant workplace tasks of a technical nature. Entries demonstrating examples of apprentices employing transversal skills in the workplace are also required. These activities are monitored by the Workplace Learning Officer, reviewed by the Workplace Mentor, and assessed by a FIT-appointed Workplace ICT Assessor.

8. Contact Information / National Availability

The programme may commence at any point during the calendar year, depending on a wide range of factors affecting delivery and placement. Programmes typically comprise classes of 14+ apprentices. The frequency of programmes and the selected locations will be related to regional demand from employers for the Computer Networking Apprenticeship programme.

FIT Contact Information

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