Next Generation Higher National Unit Grading Pack

Higher National Diploma Networking and Cloud Infrastructure

Qualification code: GV21 48

Valid from: session 2024 to 2025

Prototype for pilot delivery only

This grading pack provides information about the process of grading the Higher National Diploma (HND) Networking and Cloud Infrastructure. It is for lecturers and assessors, and contains all the mandatory information you need to grade the HND.

You must read it alongside the Educator Guide.

Contents

Draft

Approach to grading

Grading in Next Generation: Higher National (NextGen: HN) Qualifications produces a valid and reliable record of a learner's level of achievement across the breadth of the qualification content.

As well as grading the whole qualification, you assess individual units on a pass or fail basis. Each unit has evidence requirements that learners must achieve before you can consider them for whole-qualification grading.

Whole-qualification grade outcomes

Learners who pass NextGen: HN Qualifications receive one of the following grade outcomes for the qualification as a whole:

- Achieved with Distinction
- Achieved with Merit
- Achieved

To determine a learner's whole-qualification grade, you use the grading matrix to assess and judge their performance across the key aspects of the HND. You must align your judgements with the following whole-qualification grade descriptors.

Whole-qualification grade descriptors

Achieved with Distinction

The learner has achieved an excellent standard across the course content, going significantly beyond meeting the qualification requirements. They showed a comprehensive knowledge and understanding of course concepts and principles, and consistently used them to apply skills to complete high-quality work. They engaged

significantly with the process of developing their meta-skills in the context of their HN Qualification.

Achieved with Merit

The learner has achieved a very good standard across the course content, going beyond meeting the qualification requirements. They showed a very good knowledge and understanding of course concepts and principles, and consistently used them to apply skills to complete work of a standard above that expected for an Achieved grade. They actively engaged with the process of developing their meta-skills in the context of their HN Qualification.

Achieved

The learner has achieved a good standard across the course content, credibly meeting the qualification requirements. They showed a good knowledge and understanding of course concepts and principles, and used them to apply skills to complete work of the required standard. They engaged with the process of developing their meta-skills in the context of their HN Qualification.

What the whole-qualification grade descriptors do and how they are used

The whole-qualification grade descriptors outline the skills, knowledge and understanding a learner needs to show across the whole qualification to achieve that specific grade. They align with the Scottish Credit and Qualifications Framework (SCQF) level descriptors.

NextGen: HND qualifications are at SCQF level 8. Learners who complete a NextGen: HND can:

- convey an insightful understanding of the subject's core theories, concepts and principles, along with its scope and defining features
- apply skills, knowledge and understanding of the subject in relevant practical and professional contexts, showing some specialist knowledge and using a range of relevant techniques and materials
- describe and explain significant topical issues and specific areas of interest
- exercise autonomy and initiative in carrying out activities, and have developed their professional practice and behaviours relevant to the context of the qualification
- formulate and critically evaluate evidence-based responses to issues in the context of the subject area, appropriately applying research and academic processes

Please use this information, as well as the whole-qualification grade descriptors, to help you understand the standard at which learners should be assessed and graded.

Higher education institutes (HEIs) can use the grade descriptors to set admissions requirements, and employers can use them to help make decisions during a recruitment process.

SQA's quality assurance teams use the grade descriptors and the grading matrix to ensure that grades awarded in a particular NextGen: HN Qualification are at a consistent national standard, regardless of the setting in which they are achieved.

Successful learners receive their grade, along with the grade descriptor, on their certificate.

Using the grading matrix

You must use the grading matrix to judge the learner's whole-qualification grade. You can use the grading matrix at any time, but you only make a whole-qualification grading judgement when you are confident the learner has met all the evidence requirements of all the required units.

The criteria in the grading matrix reflect the knowledge, skills and qualities HEIs and employers can expect of a learner who has completed the qualification. These criteria align with the overall purpose of the qualification, and remain the same for its duration.

Each criterion has sector-specific descriptors of a typical learner's performance standard, aligned to the whole-qualification grade outcomes of Achieved, Achieved with Merit and Achieved with Distinction. These descriptors describe the standard a learner of that whole-qualification grade is expected to show.

The guidance accompanying each criterion can include, but is not limited to, information on:

- relevant types of assessment that may produce useful or meaningful evidence for judging that criterion
- mapping to content that is particularly relevant to that criterion
- mapping to meta-skills

This guidance may be updated over time.

When you make your final grading judgement, you must use a 'best fit' approach based on the learner's achievement across the grading matrix. This may be straightforward — for example, if the learner's evidence shows a consistent standard across the grading matrix criteria. If it is not straightforward, you must make a 'best fit' judgement — for example, if a learner shows a mix of standards across the grading matrix criteria, with no clear pattern. The criteria may not always have equal value. You can decide some are more important to the final grade than others.

Meta-skills

Meta-skills are a key part of NextGen: HN Qualifications and learners can develop them throughout the qualification. A learner's engagement with developing their own meta-skills contributes to their qualification grade. You do not assess or grade competence or progress in individual meta-skills — for example, by judging the quality of a learner's feeling or creativity. Instead, you look at the process of development learners go through. This means learners need to provide evidence of planning, developing and reflecting on their meta-skills.

If qualification content also contributes to meta-skills development, it contributes to a learner's whole-qualification grading through the grading matrix approach.

Learning for Sustainability

Learning for Sustainability does not contribute to a learner's qualification grade.

If qualification content is also Learning for Sustainability content, it does contribute to a learner's whole-qualification grade through the grading matrix approach.

Grading matrix

Criterion 1	Achieved	Merit	Distinction
Demonstrate knowledge of enterprise infrastructure concepts and technologies	The learner: • explains in basic terms the types, benefits, and challenges of enterprise networks, such as local area networks (LANs), wide area networks (WANs), and cloud networks • describes in basic terms the components of enterprise networks, such as routers, switches, firewalls, and wireless access points • explains in basic terms the protocols and standards of enterprise networks, such as ethernet, transmission control protocol/internet protocol (TCP/IP), virtual private network (VPN), and software-defined wide area network (SD-WAN)	The learner: • provides clear explanations of the types, benefits, and challenges of enterprise networks, such as LANs, WANs, and cloud networks • provides clear descriptions of the function of components of enterprise networks, such as routers, switches, firewalls, and wireless access points • provides clear explanations of the protocols, and standards of enterprise networks, such as ethernet, TCP/IP, VPN, and SD-WAN	The learner: • provides detailed, clear explanations of the types, benefits, and challenges of enterprise networks, such as LANs, WANs, and cloud networks • provides detailed, clear explanations of the role of components of enterprise networks, such as routers, switches, firewalls, and wireless access points • provides detailed, clear explanations of the protocols, and standards of enterprise networks, such as ethernet, TCP/IP, VPN, and SD-WAN

Criterion 1	Achieved	Merit	Distinction
Demonstrate knowledge of enterprise infrastructure concepts and technologies (continued)	The learner describes, in basic terms: • security and performance issues of enterprise networks, such as encryption, authentication and firewall configuration • cloud computing models and services like infrastructure as a service (IaaS), platform as a service (PaaS), and software as a service (SaaS) • the practices of successful enterprise networking, such as network design, optimisation and automation • the concepts and principles of security, reliability, scalability, and maintainability in the context of infrastructure design and implementation	The learner provides clear explanations of: • security and performance issues of enterprise networks, such as encryption, authentication and firewall configuration • cloud computing models and services like IaaS, PaaS, SaaS • the practices of successful enterprise networking, such as network design, optimisation and automation • the concepts and principles of security, reliability, scalability, and maintainability in the context of infrastructure design and implementation	The learner provides detailed, clear explanations of: • security and performance issues of enterprise networks, such as encryption, authentication and firewall configuration • cloud computing models and services like IaaS, PaaS, SaaS • the practices of successful enterprise networking, such as network design, optimisation and automation • the concepts and principles of security, reliability, scalability, and maintainability in the context of infrastructure design and implementation

Guidance

This criterion relates to the professional knowledge and skills an infrastructure engineer needs:

- In the Professional Practice in Networking and Cloud Infrastructure unit, learners tackle a real-life infrastructure problem and draw on in-depth knowledge across multiple areas, such as networking, cloud computing, systems administration, and security.
- In the Networking and Infrastructure unit, fundamental knowledge sets the groundwork for learners.
- The Advanced Network Technology unit deepens learners' knowledge on specialised networking technologies.
- The Firewall Technology unit provides insights into security tools.
- The Cloud Virtualisation Infrastructure unit imparts core knowledge in cloud computing, including hypervisors.
- The Network Server Operating Systems unit highlights systems administration for learners.

Criterion 2	Achieved	Merit	Distinction
Design an infrastructure technology solution to meet client requirements	The learner: • produces basic documentation of the network design, that shows understanding of the client's requirements • demonstrates a valid approach to designing a solution that meets the client's needs and aligns with the project scope and duration • selects appropriate technologies, tools, and methods to implement a networking solution, including network devices, protocols, and standards	The learner: • produces accurate documentation of the network design that shows good understanding of the client's requirements • demonstrates a logical approach to designing a solution that meets the client's needs and aligns with the project scope and duration • selects and justifies technologies, tools, and methods appropriate to implementing a networking solution, including network devices, protocols, and standards	The learner: • produces a detailed and accurate documentation of the network design that shows sound understanding of the client's requirements • demonstrates a logical and creative approach to designing a solution that meets the client's needs and aligns fully with the project scope and duration • selects and justifies technologies, tools, and methods highly appropriate to implementing a networking solution, including network devices, protocols, standards and security measures

9

Guidance

This criterion relates to the professional knowledge and skills that an infrastructure engineer needs:

- The Professional Practice in Networking and Cloud Infrastructure unit requires actual implementation, which involves practical skills like routing, switching, firewall setup, virtualisation, and potentially automation and monitoring. The unit covers the basics of routing and switching.
- The Advanced Network Technology unit introduces advanced routing and switching concepts.
- The Firewall Technology unit covers practical skills in configuring firewalls.
- The Cloud Virtualisation Infrastructure unit covers practical skills in virtualisation and potentially some automation.
- The Infrastructure Maintenance and Support unit covers disaster recovery and monitoring.
- Evidence can also come from networking lab exercises configuring basic network setups and firewalls, and setting up cloud virtualisations.

Criterion 3	Achieved	Merit	Distinction
Demonstrate practical competence in the implementation of an infrastructure technology solution	The learner: • demonstrates basic technical skills and competencies required to configure and test the network design, including routing, troubleshooting, and debugging • implements basic server configurations and virtual machines (VMs) in a cloud environment • follows defined procedures for system backup and recovery	The learner: • demonstrates a range of technical skills and competencies to configure and test the network design, including routing, troubleshooting, coding and debugging • manages VMs using a virtualisation platform • automates system backup tasks using scripts or playbooks	The learner: • demonstrates a full range of high-level technical skills and competencies to configure and test the network design, such as routing, troubleshooting, coding and debugging • manages VMs and configures load balancing using a virtualisation platform • architects a backup and disaster recovery system

11

Guidance

This criterion relates to the professional knowledge and skills that an infrastructure engineer needs:

- The Professional Practice in Networking and Cloud Infrastructure unit requires the correct deployment and configuration of technologies. Learners naturally troubleshoot and optimise during the implementation phase.
- The Professional Practice in Networking and Cloud Infrastructure unit covers the basics of deployment and configuration.
- The Advanced Network Technology unit covers troubleshooting and optimisation techniques.
- The Infrastructure Maintenance and Support unit is directly related to troubleshooting.
- The Managing a Web Server unit covers deployment and optimisation of web services.

Criterion 4	Achieved	Merit	Distinction
Implement systematic approaches to plan, test, validate, monitor and manage infrastructure solutions	The learner: • provides a project plan that outlines the objectives, scope, deliverables, timeline, budget, and risks of their infrastructure solution • performs basic testing on individual network components • validates that network functionality meets minimum requirements • selects appropriate tools and methods to monitor and troubleshoot network performance and availability • selects appropriate tools and methods to optimise the network performance, availability, and security	The learner: • provides a clear project plan that describes the objectives, scope, deliverables, timeline, and budget of their infrastructure solution • executes integration and system testing based on test plans • uses tools to validate network performance under load • selects and justifies appropriate tools and methods to monitor and troubleshoot network performance and availability • selects appropriate tools and methods to optimise the network performance, availability, and security	The learner: • provides a clear and detailed project plan that outlines the objectives, scope, deliverables, timeline, budget, and risks of their infrastructure solution • automates integration and system testing • models network system behaviour under varied conditions through simulation • selects and justifies the most appropriate tools and methods to monitor and troubleshoot network performance and availability • selects appropriate tools and methods to optimise the network performance, availability, and security

Criterion 4	Achieved	Merit	Distinction
Implement systematic approaches to plan, test, validate, monitor and manage infrastructure solutions (continued)	The learner: • documents and communicates their network evaluation processes and outcomes, using diagrams, specifications, and reports • checks system logs and event data on a regular schedule • monitors basic infrastructure metrics like uptime, resource usage	The learner: • documents and communicates their network evaluation processes and outcomes, using clear diagrams, specifications, and reports • queries log data to investigate user activities and system events • correlates metrics with issues to diagnose problems	The learner: • documents and communicates their network evaluation processes and outcomes, using clear and accurate diagrams, specifications, and reports • aggregates data from across systems to discover operational trends and anomalies • develops custom analytics dashboards and insightful visualisations

Criterion 5	Achieved	Merit	Distinction
Demonstrate understanding of security, reliability, scalability, and maintainability concerns in creating infrastructure solutions	The learner: • identifies potential threats, risks, and challenges that affect the security, reliability, scalability, and maintainability of infrastructure solutions • selects and applies appropriate techniques and tools to address security, reliability, scalability, and maintainability concerns in their infrastructure solutions • provides a basic comparison of the trade-offs and benefits of different solutions in terms of security, reliability, scalability, and maintainability • implements basic hardening of a server to improve security	The learner: • identifies and analyses the potential threats, risks, and challenges that affect the security, reliability, scalability, and maintainability of infrastructure solutions • selects, justifies and applies appropriate techniques and tools to address the security, reliability, scalability, and maintainability concerns in their infrastructure solutions • evaluates the trade-offs and benefits of different solutions in terms of security, reliability, scalability, and maintainability • develops a layered security plan for a server that includes tools and policies	The learner: • identifies, analyses and documents the potential threats, risks, and challenges that affect the security, reliability, scalability, and maintainability of infrastructure solutions • selects, justifies and applies appropriate strategies, techniques and tools to address the security, reliability, scalability, and maintainability concerns in their infrastructure solutions • evaluates the trade-offs and benefits of different solutions in terms of security, reliability, scalability, and maintainability and compares their performance

Criterion 5	Achieved	Merit	Distinction
Demonstrate understanding of security, reliability, scalability, and maintainability concerns in creating infrastructure solutions (continued)	The learner: • provides extra capacity in their network solution to allow for some scalability • performs routine maintenance based on schedules	The learner: • designs a modular, distributed system that could scale horizontally • automates routine maintenance tasks to improve maintainability	The learner: • develops a zero-trust and defence-in-depth security plan for a server • engineers a fault-tolerant network solution with redundancy at all layers • plans ongoing maintenance and lifecycle management

Guidance

This competence relates to the professional knowledge and skills that an infrastructure engineer needs:

- The Professional Practice in Networking and Cloud Infrastructure unit covers design and implementation. Learners consider qualities like security, reliability, scalability, and maintainability, both in the planning phase and during review.
- The Firewall Technology unit focuses on security.
- The Cloud Virtualisation Infrastructure unit covers scalability and reliability aspects.
- The Infrastructure Maintenance and Support unit covers maintenance and reliability.

Criterion 6	Achieved	Merit	Distinction
Demonstrate teamworking by collaborating with others to produce a solution to a problem, sharing findings and insights and contributing to a shared goal	The learner: • communicates effectively with team members, using appropriate channels, tools, and language • contributes actively to the team's tasks and decisions, by sharing ideas, knowledge, and skills • collaborates with team members, by giving and receiving feedback, and contributing to solutions • reflects on their own and their team's performance, strengths, and weaknesses, and identifies areas for improvement	The learner: • communicates effectively and respectfully with team members, using appropriate channels, tools, and language • contributes actively and constructively to the team's tasks, goals, and decisions, freely sharing ideas, knowledge, and skills • collaborates creatively with team members, by giving and receiving feedback and generating solutions • reflects on their own and their team's performance, strengths, and weaknesses, and identifies actions for improvement	The learner: • communicates very effectively and respectfully with their team members, using appropriate channels, tools, and language • demonstrates leadership in contributing actively and constructively to the team's tasks, goals, and decisions, by sharing ideas, knowledge, and skills • collaborates creatively and critically with team members, by giving and receiving feedback, resolving conflicts, and generating solutions • reflects critically on their own and their team's performance, strengths and weaknesses, and identifies and initiates actions for improvement

Guidance

This competence relates to the professional knowledge and skills that an infrastructure engineer needs:

- The team project in the Professional Practice in Networking and Cloud Infrastructure unit requires skills in documenting, communicating, and collaborating. Ethical and sustainability considerations could also be part of this unit's constraints or goals.
- The Infrastructure Maintenance and Support unit may require learners to document procedures.
- The Managing a Web Server unit could involve documentation and communication tasks.

Criterion 7	Achieved	Merit	Distinction
Demonstrate regard for legal requirements and consideration of ethical and sustainability issues	The learner: • complies with organisational policies and guidelines in their work • identifies and complies with the relevant laws, regulations, and standards, such as data protection, intellectual property, and cyber security • respects the rights, interests, and perspectives of different stakeholders, such as college staff, peers and other learners and seeks to balance them in a fair and inclusive manner • reflects on the ethical and social implications of their actions and decisions, and considers the potential benefits and harms for themselves, others, and the environment	The learner: • evaluates the ethical implications of professional activities • identifies and complies with the relevant laws, regulations, and standards, such as data protection, intellectual property, and cyber security • recognises and respects the rights, interests, and perspectives of different stakeholders, such as college staff, peers and other learners, and seeks to balance them • evaluates and reflects on the ethical and social implications of their actions and decisions, and considers the potential benefits and harms for themselves, others, and the environment	The learner: • evaluates the ethical implications of professional activities and promotes ethical behaviour • identifies and complies with the relevant laws, regulations, and standards that apply to their field of networking infrastructure, such as data protection, intellectual property, and cyber security • recognises and fully respects the rights, interests, and perspectives of different stakeholders, such as college staff, peers and other learners, and seeks to balance them in a fair and inclusive manner

Criterion 7	Achieved	Merit	Distinction
Demonstrate regard for legal requirements and consideration of ethical and sustainability issues (continued)	The learner: • applies the basic principles and practices of sustainability in their work, including reducing waste and saving energy	The learner: • applies the principles and a range of practices of sustainability in their work, including reducing waste and saving energy	The learner: • evaluates and critically reflects on the ethical and social implications of the actions and decisions taken by themselves and the team, and considers the potential benefits and harms for themselves, others, and the environment • effectively applies the principles and a range of practices of sustainability in their work, including reducing waste, saving energy, and promoting innovation

Criterion 8	Achieved	Merit	Distinction
Develop meta-skills	The learner adequately engages with the process of meta-skills development in the context of the qualification by: • carrying out self-assessment of meta-skills, giving reasons for ratings or judgements made • setting clear and measurable goals, plus action strategies to develop meta-skills in all three categories • using reflective practice strategies to track progress and analyse the links between course activities, experiences and meta-skills development	The learner demonstrates a clear commitment to the process of meta-skills development in the context of the qualification by: • carrying out self-assessment of meta-skills, giving some insightful reasons for ratings or judgements made • setting clear and measurable goals, plus action strategies to develop meta-skills in all three categories • using reflective practice strategies to track progress and demonstrate some insight into the impact of their course activities and experiences on their meta-skills development	The learner demonstrates strong commitment to the process of meta-skills development in the context of the qualification by: • carrying out self-assessment of meta-skills, giving some insightful reasons for ratings or judgements made • setting clear and measurable goals, plus action strategies to develop meta-skills in all three categories, and updating these as required • using reflective practice strategies very effectively to track progress and demonstrate insight into the impact of their course activities and experiences on their meta-skills development

Guidance

Practitioners must make this judgement alongside the separate meta-skills assessment guidance. This guidance details the expectations of the learner's engagement with meta-skills in the context of their particular qualification.

Competence in individual meta-skills is not being judged here, for example the quality of a learner's feeling or creativity. Rather, it is the process of development the learner goes through — planning, developing, and reflecting — that should be evidenced and assessed.

Although a meta-skills outcome is located in one unit, evidence of meta-skills development can be gathered from any activity at any time during the course. For meaningful reflection to take place, the process of meta-skills development should happen continually throughout the course. The range of contexts in which this can happen is very wide, and dependent on the sector, as well as individual preferences. Each unit signposts opportunities for meta-skills development.

Administrative information

Published: December 2024 (version 0.1)

History of changes

Version	Description of change	Date

Please check [SQA's website](#) to ensure you are using the most up-to-date version of this guide.

If a unit is revised:

- no new centres can be approved to offer the previous version of the unit
- centres should only enter learners for the previous version of the unit if they can complete it before its finish date

For more information on NextGen: HN Qualifications please email nextgen@sqa.org.uk.