



Australian Government

**Assessment Requirements for MEM29007
Apply networking technology principles for
manufacturing and engineering
applications**

Assessment Requirements for MEM29007 Apply networking technology principles for manufacturing and engineering applications

Modification History

Release 1. New unit.

Performance Evidence

There must be evidence the candidate has demonstrated the ability to:

- research information and documentation from sources that include manufacturer's and provider's specifications for information relevant to installing traditional and cloud networks connections to a manufacturing or engineering workplace
- install, configure and test one OSI workplace network and ensure interoperability within the local network and between local services and the cloud including:
 - working collaboratively with others during network installation and troubleshooting activities to minimise downtime
 - problem-solving network installation and connectivity problems
 - selecting and preparing appropriate tools, equipment and network devices required for network installation and configuration
 - installing required access and cyber-security protocols
 - documenting OSI network installation and configuration according to workplace requirements
- apply network topologies, protocols and standards to at least two actual or simulated workplace cloud networking requests including:
 - preparing a verbal or written report on network installation and configuration requirements
 - preparing a network map showing sources of data to be connected, required network devices including any required edge devices, materials, and standards and protocols to be followed.

Note: Where a volume and/or frequency is not specified, demonstration must be provided at least once.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- the binary number system and hexadecimal number systems as used in OSI and TCP/IP
- the function and basic operation of key protocols of the TCP/IP layered communication model including:
 - Ipv4 addressing
 - Ipv6 addressing

- the function and basic operation of the OSI layered communication model including:
 - OSI Layer 1 standards and infrastructure
 - OSI Layer 2 protocols, standards and media access control (MAC) addresses for both local area networks (LANs) and wide area networks (WANs)
 - OSI Layer 3 routed and routing addressing protocols
 - OSI Layer 4 protocols for common ports
 - OSI Layer 5 to 7 protocols for networking applications
- differences and commonalities between the OSI and TCP/IP models and their implication for industry networks
- media access control (MAC) addresses
- web browser interfaces for connecting networks to the cloud
- edge computing as the placement of computing, storage and analytics close to the place where data is created
- integration of edge devices into cloud-based networks
- advantages of edge computing including:
 - reduction in bandwidth
 - greater suitability for applications requiring minimal latency,
 - greater capacity where there are a large number of data sources
- relationship between edge computing and 5G wireless
- cloud-based storage architectures (IaaS, PaaS, SaaS, CaaS, MaaS, XaaS)
- cloud deployment models (public cloud, private cloud, single hosted cloud, multi hosted cloud)
- cloud infrastructure (storage, network and computing)
- user datagram protocol (UDP)
- function and operation of network layer protocols
- function and operation of application layer protocols
- routers, switches, firewall fundamentals and wireless access points
- end-to-end test commands
- workplace safety requirements and work health and safety (WHS) legislation relevant to installing and configuring a basic network for manufacturing and engineering applications
- manufacturer's specifications and other relevant technical information relating to network technologies for manufacturing and engineering applications
- techniques used to install, configure and test the network elements to ensure interoperability within the network
- common network faults and fault-finding principles in troubleshooting a basic network
- processes and techniques relevant to end-to-end troubleshooting
- formats for documenting outcomes of a network installation and configuration.
-

Assessment Conditions

- Assessors must:

- have vocational competency in applying networking technology principles for manufacturing and engineering applications at least to the level being assessed with relevant industry knowledge and experience
- satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires.
- Where possible, assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions that cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills.
- There must be access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.
-

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>