



NETWORK ENGINEER  
(Competency-Based)

APPENDIX A

D.O.T. CODE 033.162-010

O\*NET CODE 15-1122.00

**Competency/performance-based apprenticeship occupations are premised on attainment of demonstrated, observable and measurable competencies in lieu of meeting time-based work experience and on-the-job learning requirements. In competency/performance-based occupations apprentices may accelerate the rate of competency achievement or take additional time beyond the approximate time of completion.**

This training outline is the current standard for Work Processes and Related Instruction. Changes in technology, regulations, and safety/health issues may result in the need for additional on-the-job or classroom learning.

Potential Job Titles: Network Specialist, Network Architect

WORK PROCESSES

A. Workplace Orientation

1. Learn and follow employer-specific administrative policies, procedures, safety protocols.
2. Demonstrate familiarity with network solutions consultant's operational role.
3. Articulate and practice employer-specific "work culture" models (if applicable).
4. Complete tutorials (e.g., DataCamp, Codecademy) to attain basic knowledge and skills common to cyber security, information, management, and computer operations systems (e.g. firewall deployments, knowledge of Windows/Linux).

B. Network Design

1. Design network topologies and architectures.
2. Review firewall design to verify no cyber vulnerability exists in the current design before implementation.
3. Deploy next gen Firewall and network architecture design.
4. Help end users understand their own requirements and design solutions around their needs.

5. Administer wireless networks and utilize tools for wireless assessments.

#### C. Network Security Operation and Troubleshooting

1. Install, provision, and maintain network switches, routers, and firewalls.
2. Practice developing firewall rules for test networks.
3. Configure VPNs (virtual private networks) on firewalls and routers.
4. Identify and troubleshoot network issues, in both Local Area Networks (LAN) and Wide Area Networks (WAN).

#### D. Network Maintenance and Administration

1. Establish competence working with end users to determine their needs and propose solutions.
2. Demonstrate ability to upgrade, maintain, and troubleshoot any end user issues that arise including network issues in both LAN (local area network) and WAN (wide area network).
3. Assist end users with setup of network firewalls to ensure the equipment passes all security tests and network traffic.
4. Track all required licenses and firewalls and key network deliverables.
5. Keep records of compliance documentation and participate in compliance audits and Patch Management programs.

#### E. Miscellaneous

1. Gain proficiency in complementary skills of VoIP (voice over internet protocol) and Windows/Linux systems experience.
2. Reevaluate new technologies as means to improve existing network resources and test new technologies.
3. Participate in ongoing trainings.

Approximate Total Hours 1000-2000

**Apprentices in Competency-Based Programs shall participate in no fewer than 1,000 documented hours of on-the-job training, and until they have demonstrated a competency for each skill in the Work Processes.**

*Apprenticeship work processes are applicable only to training curricula for apprentices in approved programs. Apprenticeship work processes have no impact on classification determinations under Article 8 or 9 of the Labor Law. For guidance regarding classification for purposes of Article 8 or 9 of the Labor Law, please refer to <http://www.labor.state.ny.us/workerprotection/publicwork/PDFs/Article8FAQS.pdf>*

NETWORK ENGINEER  
(Competency-Based)

APPENDIX B  
RELATED INSTRUCTION

Safety and the Workplace

Sexual Harassment Prevention Training – must comply with Section 201-g of the Labor Law  
Employer Onboarding (if applicable)

Trade Skills

Firewall deployment  
Web platform development software—AJAX; Django; JavaScript  
Operating system software—Bash; Linux; Microsoft Windows  
Transaction security and virus protection software—HP WebInspect; Portswigger  
BurPSuite; Symantec Endpoint Protection; Tenable Nessus  
Network monitoring software—Nagios; Sniffer Investigator; Data Loss Prevention;  
Wireshark  
Switching and routing  
Use of both LAN's and WAN's (local area networks and wide area networks)  
Patch Management Programs  
Configure VPNs (virtual private networks) on firewalls and routers

Professional Development

Industry recognized credentials/certifications pertaining to the field  
Costing Principles for Network-setup and maintenance  
Supervisory skills and management principles  
Other courses as necessary

**At least 144 hours of Related Instruction per year must be available for the apprentice at the time of his/her indenture. However, the apprentice may test out earlier if able to demonstrate competence for each topic on the Related Instruction outline.**