

**Competency Task List – Secondary Component**  
**Computer System Networking and Telecommunications CIP 11.0901**  
**High School Graduation Years 2025, 2026, 2027**

**100 Personal and Environmental Safety**

| Item | Task                                                                                                 | (X) Indicates Proficiency <sup>1</sup> | Secondary Course Crosswalk |
|------|------------------------------------------------------------------------------------------------------|----------------------------------------|----------------------------|
| 101  | List common causes of accidents and injuries in a computer facility.                                 |                                        |                            |
| 102  | Wear personal protective equipment.                                                                  |                                        |                            |
| 103  | List and identify safety hazard symbols.                                                             |                                        |                            |
| 104  | Review Safety Data Sheets (SDS) and explain their requirements in handling hazardous materials.      |                                        |                            |
| 105  | Describe types of fire extinguishers and explain which types to use for extinguishing various fires. |                                        |                            |
| 106  | Use safe procedures when lifting and carrying heavy objects.                                         |                                        |                            |
| 107  | Describe the importance of safety as it relates to environmental issues.                             |                                        |                            |
| 108  | Identify potential hazards with power supplies.                                                      |                                        |                            |
| 109  | Identify disposal procedures for batteries, display devices, and all other electronic equipment.     |                                        |                            |
| 110  | Identify disposal procedures for chemical solvents and pressurized cans.                             |                                        |                            |
| 111  | Prevent electrostatic discharge conditions.                                                          |                                        |                            |
|      | RESERVED (112)                                                                                       |                                        |                            |
| 113  | Configure a computer's power management settings.                                                    |                                        |                            |
| 114  | Maintain safe work area to avoid common accidents and injuries.                                      |                                        |                            |
| 115  | Demonstrate safe procedures when using ladders                                                       |                                        |                            |

## 200 Computer Hardware

| Item | Task                                                                                  | (X) Indicates Proficiency <sup>1</sup> | Secondary Course Crosswalk |
|------|---------------------------------------------------------------------------------------|----------------------------------------|----------------------------|
| 201  | Categorize storage devices, backup media, and RAID.                                   |                                        |                            |
| 202  | Categorize the different types of computer cases.                                     |                                        |                            |
| 203  | Explain motherboard components, types, and features.                                  |                                        |                            |
| 204  | Categorize power supply types and characteristics.                                    |                                        |                            |
| 205  | Explain the purpose and characteristics of CPUs and their features.                   |                                        |                            |
| 206  | Explain cooling methods and devices.                                                  |                                        |                            |
| 207  | Compare and contrast memory types, characteristics, and their purpose.                |                                        |                            |
| 208  | Distinguish among different display devices and their characteristics.                |                                        |                            |
| 209  | Summarize the function and types of adapter cards.                                    |                                        |                            |
| 210  | Install and configure peripherals and input devices.                                  |                                        |                            |
| 211  | Configure and optimize portable devices, such as laptops, tablets, and smart devices. |                                        |                            |
| 212  | Install and configure printers.                                                       |                                        |                            |
| 213  | Install configure and maintain personal computer components.                          |                                        |                            |
| 214  | Replace desktop and laptop computer components.                                       |                                        |                            |
|      | RESERVED (215-216)                                                                    |                                        |                            |

## 300 Troubleshooting, Repair and Maintenance

| Item | Task                                                                                      | (X) Indicates Proficiency <sup>1</sup> | Secondary Course Crosswalk |
|------|-------------------------------------------------------------------------------------------|----------------------------------------|----------------------------|
| 301  | Apply industry standard troubleshooting methods.                                          |                                        |                            |
| 302  | Troubleshoot common hardware and operating system symptoms and their causes.              |                                        |                            |
|      | RESERVED (303)                                                                            |                                        |                            |
| 304  | Identify common laptop issues and determine the appropriate basic troubleshooting method. |                                        |                            |
| 305  | Integrate common preventative maintenance techniques.                                     |                                        |                            |
|      | RESERVED (306)                                                                            |                                        |                            |

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|-----|--------------------------------------------|--|--|
| 307 | Diagnose and repair common printer issues. |  |  |
|-----|--------------------------------------------|--|--|

## 400 Operating Systems and Software

| Item | Task                                                                                  | (X) Indicates Proficiency <sup>1</sup> | Secondary Course Crosswalk |
|------|---------------------------------------------------------------------------------------|----------------------------------------|----------------------------|
| 401  | Identify different operating systems by their features.                               |                                        |                            |
| 402  | Use various user interfaces.                                                          |                                        |                            |
| 403  | Install and configure a workstation operating system.                                 |                                        |                            |
| 404  | Explain boot sequences, methods, and startup utilities for various operating systems. |                                        |                            |
|      | RESERVED (405)                                                                        |                                        |                            |
| 406  | Differentiate between various operating system directory structures.                  |                                        |                            |
| 407  | Use system utilities/tools and evaluate the results.                                  |                                        |                            |
| 408  | Troubleshoot common OS and software issues.                                           |                                        |                            |
| 409  | Manage local users, groups, and security policies.                                    |                                        |                            |
| 410  | Install and configure a network operating system.                                     |                                        |                            |

## 500 Network Technologies

| Item | Task                                                                                                                                                                                                                    | (X) Indicates Proficiency <sup>1</sup> | Secondary Course Crosswalk |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|----------------------------|
| 501  | Explain the function of the TCP/IP protocol suite, such as FTP, DHCP, DNS.                                                                                                                                              |                                        |                            |
| 502  | Identify commonly used TCP and UDP default ports, including TCP ports: FTP – 20, 21, SSH – 22, TELNET – 23, HTTP – 80.                                                                                                  |                                        |                            |
| 503  | Identify address formats, including IPv6, IPv4, MAC.                                                                                                                                                                    |                                        |                            |
| 504  | Evaluate the proper use of addressing technologies and addressing schemes, including: subnetting: classful vs. classless, NAT, PAT, SNAT, public vs. private, DHCP, addressing schemes (unicast, multicast, broadcast). |                                        |                            |
| 505  | Identify common IPv4 and IPv6 routing protocols, including link state, distance vector, and hybrid protocols.                                                                                                           |                                        |                            |
| 506  | Explain the purpose and properties of routing, including IGP vs. EGP, static vs. dynamic, next hop, interpret routing tables and how they pertain to path selection, convergence (steady state).                        |                                        |                            |

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|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| 507 | Identify the characteristics of wireless communication, including 802.11 and 802.15 standards: speeds, distance, channels, frequency, authentication, and encryption. |  |  |
| 508 | Identify the basic elements of unified communication technology, such as VoIP, video, real time services, POS, and UC devices                                         |  |  |
| 509 | Categorize technologies that support cloud computing.                                                                                                                 |  |  |
| 510 | Implement virtualization technologies.                                                                                                                                |  |  |

## 600 Network Media and Topologies

| Item | Task                                                                                                                                                                                      | (X) Indicates Proficiency <sup>1</sup> | Secondary Course Crosswalk |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|----------------------------|
| 601  | Categorize standard cable types and their properties, e.g., UTP, STP, coaxial, fiber; plenum vs. non-plenum properties: transmission speeds, distance, duplex, noise immunity, frequency. |                                        |                            |
| 602  | Identify common connector types, including UTP, STP, coaxial, and fiber.                                                                                                                  |                                        |                            |
| 603  | Identify common physical network topologies.                                                                                                                                              |                                        |                            |
| 604  | Fabricate cables according to TIA/EIA 568A and 568B standards, including patch, crossover, and rollover cables.                                                                           |                                        |                            |
| 605  | Categorize common WAN technology types and properties.                                                                                                                                    |                                        |                            |
| 606  | Categorize common LAN technology types and ethernet properties, e.g., CSMA/CD, broadcast, collision, bonding, speed, distance.                                                            |                                        |                            |
| 607  | Explain common logical network topologies and their characteristics, including peer to peer and client/server.                                                                            |                                        |                            |
| 608  | Install components of wiring distribution, including vertical and horizontal cross connects, verify installation and termination and environmental requirements.                          |                                        |                            |

## 700 Network Devices

| Item | Task                                                                               | (X) Indicates Proficiency <sup>1</sup> | Secondary Course Crosswalk |
|------|------------------------------------------------------------------------------------|----------------------------------------|----------------------------|
| 701  | Install, configure, and differentiate between common network connectivity devices. |                                        |                            |

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|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| 702 | Identify the functions of specialized network devices, such as multilayer switch, content switch, IDS/IPS, load balancer, multifunction network devices, DNS server, bandwidth shaper, proxy server, CSU/DSU. |  |  |
| 703 | Explain the advanced features of a switch, such as PoE, spanning tree, VLAN, trunking, port mirroring, port authentication.                                                                                   |  |  |
| 704 | Install a basic wireless network, including client configuration, access point placement and installation.                                                                                                    |  |  |
| 705 | Configure appropriate encryption, configure channels and frequencies, set ESSID and beacon, and verify installation.                                                                                          |  |  |

## 800 Network Management

| Item | Task                                                                                                                                                                                                                                                                                                                          | (X) Indicates Proficiency <sup>1</sup> | Secondary Course Crosswalk |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|----------------------------|
| 801  | Explain, compare, and contrast the layers of the TCP/IP and OSI models.                                                                                                                                                                                                                                                       |                                        |                            |
| 802  | Prepare physical and logical network diagrams, baselines, policies, procedures, and configurations and regulations.                                                                                                                                                                                                           |                                        |                            |
| 803  | Evaluate the network based on configuration management documentation, such as wiring schematics; physical and logical network diagrams; baselines; policies, procedures, and configurations to network devices and infrastructure; wiring schematics; physical and logical network diagrams; and configurations and job logs. |                                        |                            |
| 804  | Conduct network monitoring to identify performance and connectivity issues, such as packet sniffers, connectivity software, load testing, throughput testers, system logs, history logs, and event logs.                                                                                                                      |                                        |                            |
|      | RESERVED (805)                                                                                                                                                                                                                                                                                                                |                                        |                            |
| 806  | Implement remote management technologies.                                                                                                                                                                                                                                                                                     |                                        |                            |

## 900 Network Tools and Troubleshooting

| Item | Task                                                                                                                                       | (X) Indicates Proficiency <sup>1</sup> | Secondary Course Crosswalk |
|------|--------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|----------------------------|
| 901  | Utilize command line/graphical tools and interpret the output to verify functionality including, Traceroute, Ipconfig, Ifconfig, and Ping. |                                        |                            |
| 902  | Use network scanners, such as packet sniffers, intrusion detection software, Intrusion prevention software, and port scanners.             |                                        |                            |

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|-----|---------------------------------------------------------------------------------------------------------------------------------------|--|--|
| 903 | Utilize the appropriate hardware tools for cable fabrication and troubleshooting.                                                     |  |  |
| 904 | Implement network troubleshooting methodologies.                                                                                      |  |  |
|     | RESERVED (905)                                                                                                                        |  |  |
| 906 | Troubleshoot common wired and wireless connectivity issues and select an appropriate solution to include physical and logical issues. |  |  |
| 907 | Troubleshoot and resolve common WAN issues, such as loss of connectivity, DNS, router configurations, and default gateways.           |  |  |

### 1000 Security Fundamentals

| Item | Task                                                                                                                                                                                  | (X) Indicates Proficiency <sup>1</sup> | Secondary Course Crosswalk |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|----------------------------|
| 1001 | Configure hardware and software security devices, such as network-based firewall, host-based firewall, DMZ, IDS, IPS, VPN concentrator.                                               |                                        |                            |
| 1002 | Implement features of a network firewall, such as application layer vs. network layer, stateful vs. stateless, scanning services, content filtering, signature identification, zones. |                                        |                            |
| 1003 | Configure network access security, such as ACL: MAC filtering, IP filtering tunneling and encryption: SSL VPN, VPN, L2TP, PPTP and related others.                                    |                                        |                            |
| 1004 | Differentiate the principals of user authentication, such as PKI, Kerberos, AAA: RADIUS, TACACS+, network access control: 802.1x, CHAP, MS-CHAP, EAP.                                 |                                        |                            |
| 1005 | Evaluate issues that affect device security, such as physical security and network access.                                                                                            |                                        |                            |
| 1006 | Identify and mitigate common security threats.                                                                                                                                        |                                        |                            |
| 1007 | Implement security features, including such as BIOS security, password management, locking workstations, two-factor authentication, and biometrics.                                   |                                        |                            |
| 1008 | Demonstrate basic forensic concepts, such as incident response, chain of custody, evidence preservation, and documentation.                                                           |                                        |                            |
| 1009 | Explain disaster recovery best practices such as cold site, warm site, hot site, cloud site, UPS, system imaging, and redundancy                                                      |                                        |                            |

## 1100 Communication and Professionalism

| Item | Task                                                                                            | (X) Indicates Proficiency <sup>1</sup> | Secondary Course Crosswalk |
|------|-------------------------------------------------------------------------------------------------|----------------------------------------|----------------------------|
| 1101 | Use effective soft skills such as proper etiquette, active listening, and cultural sensitivity. |                                        |                            |
| 1102 | Solve customer problems.                                                                        |                                        |                            |
| 1103 | Implement and adhere to acceptable use policies.                                                |                                        |                            |
| 1104 | Maintain confidentiality.                                                                       |                                        |                            |
| 1105 | Maintain asset inventory.                                                                       |                                        |                            |
| 1106 | Evaluate the impact of new and emerging technologies.                                           |                                        |                            |

<sup>1</sup> Student Demonstrated Entry-Level Industry Proficiency as Indicated by (X)

Secondary CTE Instructor Signature \_\_\_\_\_ Date \_\_\_\_\_

Student Signature \_\_\_\_\_ Date \_\_\_\_\_