



## SENIOR NETWORK ENGINEER

**JOB SUMMARY:** Under general direction, performs highly complex duties in the planning and administration of the City's enterprise network and fiber-optic infrastructure and in the installation, configuration, maintenance and administration of network hardware, devices, software, and security systems; serves as technical expert on complex network infrastructure, systems, software, and security issues; performs other related work as necessary.

**DISTINGUISHING CHARACTERISTICS:** This classification is characterized by its responsibility for the overall integration of the enterprise-wide network and complex project management for residential, commercial and industrial projects. The Senior Network Engineer is distinguished by its lead responsibilities over the engineering, design, planning and management of the City's fiber-optic infrastructure and furthermore distinguished from the Broadband Operations Director by the latter's responsibility for the entire Information Technology Operations division.

### EXAMPLES OF ESSENTIAL FUNCTIONS:

1. Manages and maintains an extensive enterprise network consisting of local, wide, metropolitan, wireless, and passive optical networks.
2. Analyzes and evaluates existing network solutions; makes recommendations for improvements and enhancements to current network systems based on business requirements.
3. Evaluates and recommends professional consulting services for assigned project areas; prepares scopes of work, participates in the selection of and monitors the work of professional consultants retained for project-related studies, reports, and programs.
4. Conducts research on emerging products, services and protocols in support of network systems procurement and development efforts.
5. Designs and maintains communication facilities including intermediate data frame (IDF), main distribution frame (MDF), main point of entry (MPOE), data centers, computer/server rooms, and broadband point of presence (POP) facilities.
6. Designs Structured Communications Cabling Standards for new build-outs of voice, data and broadband communications facilities.
7. Designs, performs, and tests systems to identify system vulnerabilities.
8. Manages network hardware and equipment, including routers, switches, Virtual Private Network (VPN) bridges, fiber optics transport devices, network management and security appliances, channel service unit/data service unit (CSU/DSU), and patch panels.
9. Manages, maintains and designs communication assets, including fiber-optic network and construction of pathways for outside plant cabling.
10. Coordinates the design, implementation, and configuration of municipal fiber-optic network conduit, cabling and equipment.
11. Provides security access to the network, monitors firewall and intrusion detection logs, and network traffic for unusual or suspicious activity.
12. Manages configuration and connection security for all network systems and websites in accordance with department policies and guidelines.

13. Monitors the performance of network and software applications, troubleshoots and resolves network problems.
14. Assists in developing and implementing best-practice networking standards, configurations, documentation and procedures for broadband services, including policies and procedures for network administration, usage and disaster recovery.
15. Creates and maintains documentation including network mapping and processes, support contracts, service records, and inventory of communication equipment and fiber optic assets.
16. Supervises and directs the activities of staff including employee selection, work assignment, performance evaluations, employee training and development, disciplinary action, and complaint resolution.
17. Prepares presentations and agenda reports; may attend City Council and/or committee meetings; presents and explains information to the public.
18. Assists in developing the division's annual budget; forecasts the funds needed for equipment, materials and supplies; monitors and approves expenditures.
19. Collaborates with internal and external customers for network development projects.
20. As needed, provides after-hours technical assistance to ensure network connectivity of all servers and facilities.
21. Performs other related duties as necessary.

<b>QUALIFICATION GUIDELINES:</b>
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*ANY COMBINATION OF EDUCATION AND/OR EXPERIENCE THAT PROVIDES THE REQUIRED KNOWLEDGE, SKILLS, AND ABILITIES TO PERFORM THE ESSENTIAL FUNCTIONS OF THE POSITION. A TYPICAL COMBINATION INCLUDES:*

**EDUCATION:** Bachelor's degree from an accredited college or university in Information Systems, Computer Science, Telecommunications, Business Administration, or a closely related field.

**EXPERIENCE:** Five years of progressively responsible experience in network engineering, including two years of project lead or supervisory level experience.

**KNOWLEDGE OF:**

- Planning, design, installation, maintenance and operation of local and wide area network equipment and operating systems.
- Multi-platform operating systems such as Windows, Unix, Linux, Cisco IOS, next-gen firewall, Juniper, Brocade and all desktop operating systems.
- Current network hardware, protocols, and standards, including Ethernet, the 7 layers of the Open Systems Interconnection (OSI) model, Internet Protocol (IP) addressing, Wireless 802.11x (a,b,g,n) communications protocols, network infrastructure services including Domain Name Service (DNS), Windows Internet Name Service (WINS), Dynamic Host Configuration Protocol (DHCP), Virtual Local Area Network (VLAN), Virtual Private Network (VPN), Pre-boot Execution Environment (PXE), Wake On Lan (WOL) and Voice over Internet Protocol (VoIP).
- Standards and best practices in network security.
- Fiber-optic, copper media and implementation of structured communications cabling system (SCCS) using available and next-generation technologies.

- Network transport solutions using Digital Subscriber Line (DSL), Broadband Cable, Frame-Relay, T-1, GigE, Sonet, coarse wavelength division multiplexing (CWDM) and dense wavelength division multiplexing (DWDM).
- Applicable data privacy laws and practices.
- Effective customer service techniques.
- Principles and practices of municipal budget preparation, administration and control.
- Principles and practices of research and report preparation.
- Principles and practices of training, supervision and performance evaluation.
- Project management principles and practices.
- Safe driving principles and practices.

**ABILITY TO:**

- Plan, design, implement, operate, administer, and maintain large enterprise networks.
- Manage network security and network node management systems.
- Organize and implement outside plant projects in the public-right-of-way, from design to final restoration, including drawings, bidding, noticing, job-site monitoring, acceptance and documentation.
- Determine cost-effective methods to implement technologies throughout the City's network.
- Develop and support complex automated information systems, including SaaS platforms and GIS network documentation software.
- Read and interpret digital and paper engineering drawings, schematics, and maps.
- Analyze problems, identify alternative solutions, project consequences of proposed actions and implement recommendations in support of goals.
- Conduct research and prepare clear, concise, and comprehensive reports.
- Prepare and maintain accurate and complete records.
- Participate in the development and administration of division goals, objectives and procedures.
- Prepare and administer program budgets.
- Manage multiple assignments and time-sensitive situations effectively.
- Select, supervise, train, motivate, and evaluate staff.
- Work independently and exercise independent judgment.
- Communicate clearly and effectively, both orally and in writing.
- Provide effective customer service.
- Establish and maintain cooperative and effective working relationships with City employees and the general public.
- Operate a computer using relevant word processing, spreadsheet, database, and other software.

**LICENSES:**

- Valid Class C California driver license.
- An acceptable driving record at the time of appointment and throughout employment.

**CERTIFICATIONS:**

- N/A

**SPECIAL REQUIREMENTS:**

- N/A

**DESIRABLES:**

- Current experience working with Passive Optical Networks and active ethernet Fiber to the X (FTTX) technologies.
- Cisco Certified Internetwork Engineer (CCIE), Cisco Certified Network Associate (CCNA), Brocade Certified Network Engineer (BCNE), or Software Defined Network (SDN) certificates.
- Background in or working knowledge of government operations.
- A Master's Degree in Computer Science or a closely related field.

#### **WORK ENVIRONMENT**

This job operates primarily in a professional office environment. This role routinely uses standard office equipment such as computers, phones, photocopiers, filing cabinets and fax machines, and occasionally uses basic hand tools. The employee may travel to various work sites within the City. The employee, at times, works near moving mechanical parts, and works in confined spaces. The employee is occasionally exposed to uneven surfaces, risk of electrical shock and moving traffic. The noise level is occasionally loud.

Interaction involves frequent communication with City staff, consultants, citizen and community groups and various public agencies. The incumbent will serve as the primary technical representative and resource in a variety of meetings. The employee may be required to work various shifts and standby at night, on weekends and holidays as needed to resolve network issues,

#### **PHYSICAL DEMANDS**

- Mobility – frequent standing or sitting for extended periods; frequent walking; occasional driving may be required; occasional pushing/pulling; occasional bending at the waist, kneeling, squatting, crouching and crawling; reaching overhead, above the shoulders, and horizontally.
- Lifting – occasional lifting of telecommunications/broadband equipment and tools weighing up to 40 pounds.
- Vision – constant use of good overall vision for reading/close up work; frequent use of color perception and eye/hand coordination; occasional use of depth perception and peripheral vision.
- Dexterity – frequent repetitive motion from writing and using a computer keyboard; frequent grasping, holding and reaching.
- Hearing/Talking - frequent hearing/talking to others on the telephone and in-person; occasional hearing of faint sounds.
- Emotional/Psychological – frequent decision making and concentration, public contact and occasional working alone.

#### **Additional Information:**

<b>FLSA Exemption Status:</b>	Exempt
<b>Employee Unit:</b>	Unit #3, Management
<b>DOT Program Participant:</b>	No
<b>Job Family:</b>	Information Technology Manager
<b>Class Progression:</b>	Broadband Operations Manager

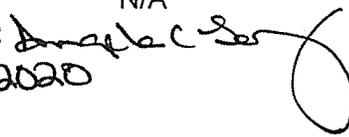
<b>Reports to:</b>	Broadband Operations Director
<b>Supervises:</b>	Varies

**Class History:**

Date Class Established: 07/01/2018

Revised Dates / Reason:

Previous Title(s): N/A

Approved By HR Director: 

Date Approved: 1/25/2020