City of Merced

**Bargaining Unit:** 

MC

FLSA:

Covered

Position Number: 06994/066995

#### SYSTEMS ENGINEER I/II

#### **DEFINITION**

Under general direction and supervision, to manage a variety of network operating systems or Local Area Networks/Wide Area Networks (LAN/WANs), telecommunications networks and/or mid to high-end computing platforms, Network Operating Systems (NOS). While this position will require basic knowledge in all the above areas, the incumbent(s) may be required to specialize in one or more of the areas. To analyze, plan, install, evaluate, monitor, test and maintain systems and application software in a personal computer, network, client/server, or web environment, and to perform other related duties as required. Duties assigned to this class may provide direction and guidance to other staff as needed. This position may be assigned to work on City owned computers and mobile systems when in the field.

# **DISTINGUISHING CHARACTERISTICS**

The Systems Engineer I is the fully qualified, professional-level class in this series. Competent to perform a variety of analytical/technical duties, positions are characterized by the presence of general guidelines from which to make decisions. Incumbents work with complex and highly sophisticated network operating systems, LAN/WAN projects, or telecommunications projects. Positions in this class are flexibly staffed.

The Systems Engineer II is the highly qualified, senior-level class in this series. Competent to perform a variety of analytical/technical duties, this position requires an in-depth knowledge of one or more of the specialty areas. Incumbents manage complex and highly sophisticated network operating systems or LAN/WAN projects. Generally, duties assigned at the Systems Engineer II level may provide guidance and direction to other staff members as needed.

### REPORTS TO

Information Technology Manager.

# **CLASSIFICATIONS SUPERVISED**

This is not a supervisory classification.

**EXAMPLES OF IMPORTANT AND ESSENTIAL DUTIES** (The following is used as a partial description and is not restrictive as to duties required.)

# **System Engineer I:**

- Assist with establishing standards and procedures relating to operating systems software products.
- Assist with planning, installing, evaluating, monitoring and maintaining client/server operating system releases, enhancements and/or application software that resides on personal computers or on the City's network systems.
- Assist with planning, installation and configuration of server side software distribution, patch management and asset management technology.
- Provide direction or technical guidance.
- Utilize current and emerging networking, communications or operating system technologies.
- Monitor the overall performance of operating systems and communications software, and resolve problems as required.
- May perform project cost estimates and ensure billing procedures and costs are correct, timely, and within applicable accounting principles.
- Assist with the development and implementation of project plans.
- Keep current and aware of "state-of-the-art" information technology.
- Perform minor data base administration on the City's server environment.
- Manage server/network based application software products installed throughout the City including connectivity with multiple remote sites.

- Work with the organizational team and vendor personnel as appropriate regarding changes to existing systems or to resolve technical questions related to the operating system.
- Assist with establishing operational and technical procedures for the utilization of client/server, web based systems and program products.
- Monitor system performance and evaluate system status and resources; develop and write scripts to address the monitoring and evaluation as needed.
- Coordinate hardware installation, configuration and maintenance.
- Prepare budget recommendations for supervisor review.
- Provide resolution to systems errors and/or problems as they occur; apply "fixes" to system and program product software.
- Assist department management, internal customers, and information technology professionals to define automated solutions to short and long-range computer services and integrated network needs.

## System Engineer II: (In addition to requirements of the I)

- Establish standards and procedures relating to operating systems software products.
- Plan, install, evaluate, monitor and maintain client/server operating system releases, enhancements and/or application software.
- Plan, install and configure server side software distribution, patch management and asset management technology.
- Establish operational and technical procedures for the utilization of client/server or web based systems and program products.

# When Assigned to LAN/WAN System Engineering:

# <u>System Engineer I:</u>

- Assist with the execution of Networking/Communications (LAN/WAN) projects.
- Assist in developing LAN/WAN system requirement definitions.
- Assist in developing functional and technical specifications.
- Participate in LAN/WAN installations and configurations.
- Assist with the quality execution of LAN/WAN task(s), within budget while maintaining the schedule integrity.

- Assist in resolving LAN connectivity issues and maintaining LAN and Internet connections.
- Assist with LAN/WAN upgrades, support, and maintenance.
- Resolve LAN connectivity issues and maintain LAN and Internet connections.
- Stay current on emerging networking/communications technologies.
- Assist with developing cost data used for LAN/WAN project cost estimating.

# System Engineer II: (In addition to requirements of the I)

- Carry out the execution of Networking/Communications (LAN/WAN) projects that are larger in scale and complexity.
- Develop LAN/WAN system requirement definitions and functional and technical specifications.
- Assume responsibility for the quality execution of LAN/WAN task(s), within budget while maintaining the schedule integrity.
- Play a key role with LAN/WAN upgrades, support, and maintenance.
- Develop cost data used for LAN/WAN project cost estimating.
- Carry out LAN/WAN system analysis, at the workgroup, department or enterprise level.
- Design and engineering of LAN/WAN installations.

# When Assigned to Network Operating Systems Engineering:

# **System Engineer I:**

- Assist with the installation and maintenance of Network Operating Systems (NOS) on small to medium projects.
- Participate in reviewing new network operating systems and enhancements.
- Resolve system errors and problems as they occur applying the appropriate fixes to those problems.
- Interface with IT staff and users as appropriate, regarding changes to existing system software or to resolve technical problems regarding changes to existing system software.
- Assist in documenting standards and procedures developed by senior staff as it relates to network operating systems.

- Monitor the overall performance of the network operating systems and communications software, and resolve problems as required.
- Participate in reviewing and evaluating new network operating systems and enhancements and assist in planning their installation.

# System Engineer II: (In addition to requirements of the I)

- Carry out the installation and maintenance of Network Operating Systems (NOS) projects that are larger in scale and complexity.
- Lead teams in reviewing and evaluating new network operating systems and enhancements and assist in planning their installation.

# When Assigned to Telecommunications:

### **System Engineer I:**

- Assist with the installation, repair, and maintenance of Voice over Internet Protocol (VOIP) telecommunications systems and equipment.
- Evaluate projects and estimate costs as required.
- Assist with the design of VOIP telephone systems and networks to meet departmental needs, including telephone system and network traffic analysis.
- Assure that Federal Communication Commission requirements are met in regard to licensing, operating, and the technical performance of wireless communications equipment.
- Prepare Federal Communication Commission license applications.

# System Engineer II: (In addition to requirements of the)

- Perform the installation, repair, and maintenance of VOIP telecommunications systems that are larger in scale and complexity.
- Participate in reviewing and evaluating new VOIP telecommunications systems and enhancements and assist in planning their installation.
- Prepare and review detailed final construction plans for specifications, special conditions, agreements, and instructions.
- Design and prepare plans and develop specifications for current and future city communications systems and networks,

including computer-assisted communications systems and control systems.

### **TYPICAL WORKING CONDITIONS**

**Environmental Conditions** – Assignments may include office and field environment including assignments to public safety locations; positions may require working evenings including weekend and holiday assignments, and traveling to and from site to site.

**Physical Conditions** – Essential functions may require maintaining physical condition necessary for sitting, standing, bending and stooping for prolonged periods of time; using various office equipment including a computer screen and keyboard; requires occasional medium lifting (up to 50 pounds).

## **DESIRABLE QUALIFICATIONS**

# **Knowledge of:**

### **Systems Engineer I:**

- E-mail systems.
- Systems Engineering problem solving and solution development.
- Trends in data processing and/or telecommunications.
- Data base administration concepts.
- Analyzing problems and developing solutions.
- Computer operating environments such as UNIX, Microsoft Windows, and the AS/400 Platform.
- Telecommunications including WAN and LAN topologies, hubs, routers, bridges, modems and high-speed data communication technology.
- TCP/IP communications protocols.
- Systems documentation procedures and methods; systems and network security administration.
- Industry standard storage equipment and techniques.
- Internet/Intranet/Extranet web servers.
- Multiple Server LANs.

#### LAN/WAN

Ethernet.

- Installation of routers, hubs and switches.
- Industry standard LAN/WAN, communications protocols, and network speeds.
- Network remote dial-up technologies.
- Local Area Networks, configuration, and topologies with departmental LANs.
- LAN/WAN maintenance and support.
- Web Internet/Intranet servers.
- Wide Area Networks, configuration, and topologies.

# **Network Operating Systems**

- Implementation and administration of network operating systems such as Unix, IBM OS/400 and Microsoft platforms.
- Researching and evaluating micro and mini hardware, operating systems, and communications software.
- Analyzing Systems Engineering problems and developing solutions.
- Network Printing and Print Servers.

#### Telecom

- VOIP, Data communications and telecommunications.
- Telephone network design, configuration, and provisioning.
- PBX and carrier network technologies and protocols.
- Radio frequency coordination and Federal Communication Commission licensing process.
- Voice messaging systems.
- Local and long distance carrier providers and rates.
- Automated Call Distribution (ACD) systems.
- Interactive Voice Response (IVR) systems.
- Principles and practices of current trends in telecommunications engineering: wireless and wired networks, systems, and equipment.

# Systems Engineer II: (In addition to requirements of the I)

- Principles, practices and techniques of information systems management including applications, design, hardware and software options for administrative and business-oriented application.
- Methods and techniques for project management including identifying project task, scope, team building, resource allocation, scheduling/timelines, and communicating the deliverables/results.

- Business administration principles and organization techniques.
- Principles and techniques of budgeting.

#### LAN/WAN

- Installation and configuration of routers, hubs, bridges, switch routers, and switches.
- Designing and deploying network architecture and infrastructure.
- Local Area Networks, configuration, and topologies.
- Cross platform communications.

### **Network Operating Systems**

- Research and evaluation methods associated with micro and mini hardware, operating systems, and communications software.
- Analyzing Systems Engineering problems and developing solutions.
- Network Printing such as HP JetDirect and UNIX print daemons.
- Capabilities and limitations of current micro and mini hardware, operating systems, and communications software.
- Implementing and managing network operating systems such as Unix Microsoft, the AS/400 and administering network security.

#### Telecom

- Advanced knowledge of VOIP, data communications, telecommunications and integration with networks.
- Advanced knowledge of telephone network design, configuration, and provisioning.
- Extensive knowledge of carrier network access technologies and protocols.
- Modern methods and techniques used in the design and construction of a wide variety of telecommunications engineering projects.
- Applicable laws and regulatory codes relevant to design and construction.
- Advanced knowledge of voice messaging systems.
- Extensive knowledge of local and long distance carrier providers and rates.
- In-depth knowledge of Automated Call Distribution (ACD) systems.

 In-depth knowledge of Interactive Voice Response (IVR) systems.

### Skill in:

#### **Systems Engineer I:**

- Organizing work, establishing priorities, and meeting deadlines.
- Following verbal and written instructions.
- Communicating effectively in English, both verbally and in writing.
- Understanding technical materials.
- Developing and maintaining effective working relationships.
- Working well in a team environment as well as independently.
- Working under the direction of immediate supervisor.
- Prioritizing tasks based on importance to the business.
- · Carrying out multiple tasks simultaneously.
- Assisting in the preparation of written reports.
- Working with, control, and maintain sensitive, confidential information according to legal standards and/or City regulations as required.
- Preparing required documentation, including both program-level and user-level documentation.
- Analyzing and develop logical solutions and alternatives to problems.
- Providing excellent customer service and technical direction to internal and external customers.
- Remaining current in software development techniques, technology, and tools.

# LAN/WAN

• Carrying out networking/communications projects.

### **Network Operating Systems**

- Assisting in installing, implementing, and monitoring nonapplication software associated with Intel based and mid-range system computer operating systems including but not limited to Unix, IBM AS/400 or Microsoft Windows platforms.
- Installing and supporting network operating systems such as Unix, IBM OS/400 and Microsoft Windows.
- Installing and supporting Web servers: Internet, Intranet, and Extranet.
- Installing and supporting servers and coordinating network security.

#### Telecom

- Preparing and evaluating engineering plans, programs and specifications for communications systems
- Investigating and analyzing communications operations and problems, and effect improved procedures and solutions
- Assisting in designing, planning, installing, and maintaining complex wireless and wired networks, and related electronics equipment.

# Systems Engineer II: (In addition to requirements of the I)

- Preparing and presenting oral and written reports effectively.
- Analyzing complex procedures and instructions, and developing logical conclusions.
- Carrying out positive time management strategy.
- Carrying out networking/communication/telecommunications project life cycle from analysis through deployment.
- Solving complex hardware and software problems given minimal diagnosis.
- Understanding technical material and presenting it in a clear and concise manner to technical and non-technical persons.

#### LAN/WAN

- Installing, configuring, and supporting complex router configurations, switches and switch routers including VLANs, Internet/Intranet routers in complex TCP/IP configurations, and securing communication solutions.
- Installing, configuring, and supporting security devices such as firewalls and intrusion analysis systems.

# **Network Operating Systems**

- Configuring network operating systems such as Unix, IBM OS/400 and Microsoft Windows.
- Configuring Web servers: Internet, Intranet, and Extranet.

#### **Telecom**

Conducting and obtaining approval of feasibility study reports for telecommunications projects

# **Ability to (all levels):**

Reason logically, draw valid conclusions, and make appropriate recommendations.

**TRAINING AND EXPERIENCE:** -- Any combination of experience and training that would likely provide the required knowledge and abilities is qualifying. A typical way to obtain the knowledge and abilities would be:

# System Engineer I

Equivalent to an AA or AS degree from an accredited college in a computer related field including: computers, business information systems or other related field, or a professionally recognized computer systems certification acceptable to the City of Merced and equivalent to two (2) years of relevant experience performing network administration, installing, implementing and monitoring communications or operating system software and hardware, and/or maintaining high-end computing platforms.

# System Engineer II

Equivalent to a BA or BS degree from an accredited four-year college or university in a computer related field including: business information systems, public/business administration, or other related field or a professionally recognized systems certification(s) recognized by the City of Merced; and three (3) years of relevant, increasingly responsible experience performing network administration, installing, implementing and monitoring communications or operating system software and hardware, and/or maintaining high-end computing platforms; automated business systems, including technological project management, and the implementation of new systems using client server or web based technology.

# **Special Requirements:**

Possession of a current and valid California Class C driver's license issued by the Department of Motor Vehicles; and be able to pass a POST level background investigation.

Reference: City of Merced Personnel Rules and Regulations, Sections 5.05 and 5.07.

The contents of this class specification shall not be construed to constitute any expressed or implied warranty or guarantee, nor shall it constitute a contract of employment. The City of Merced assumes no responsibility beyond the general accuracy of the document, nor does it assume responsibility for any errors or omissions in the information contained herein. The contents of this specification may be modified or revoked without notice. Terms and conditions of employment are determined by City Management.

DATE: 7/10/0 (

**APPROVED** 

Chairperson, Personnel Board