HOSPITAL NETWORK AND SYSTEMS ENGINEER

DEFINITION
Under direction, anticipates, develops, designs, implements, operates, and maintains Natividad Medical Center’s (NMC) hospital-grade systems infrastructure and technology components to ensure the goal of 99.99% reliability. Performs complex trouble-shooting of the Hospital Computer Information Systems (HCIS) network, and systems, utilizing expert trouble-shooting tools; responsible for all aspects of medical data communications equipment and services, including biometrics equipment; evaluates and tests new technology related to hospital and clinical data communications. Performs above in accordance with the Patient Safety and Health Insurance Portability and Accountability (HIPAA) Acts, The Joint Commission (JCAHO) and other regulatory agencies.

DISTINGUISHING CHARACTERISTICS
Hospital Network and Systems Engineer is a fully experienced lead-level classification, responsible for the design, implementation and maintenance of NMC’s information systems infrastructure and all associated equipment, data, related software and applications. Incumbent engineers and anticipates bandwidth and security requirements. Performs complex trouble-shooting tasks utilizing such tools as Network Protocol Analyzers, PING and Trace routes utilities. Incumbents at this level are responsible for all aspects of multi-level data communications equipment and services, i.e. biometrics hardware, Routers, and LAN Switching configurations, communications with remote access including VPN, Frame Relay, T1, E1, DS-3 connectivity, technical training and network security. Incumbent works closely with vendors and technical personnel from other NMC departments and may act as the technical lead in IT-related project teams, and has the responsibility of evaluating and testing new technology related to hospital and clinical data communications and their associated IOS levels.

Hospital Network and Systems Engineer is a unique class within the County. The potentially high consequence of errors, along with the nature, focus, diversity, and scope of responsibilities require thorough knowledge of the Patient Safety Act and HIPAA as applied to data systems, clinical and hospital specific software and protocols, knowledge of best practices in the design, development, maintenance and administration of a medical grade hospital-based LAN’s and WAN’s, as well as statistical analysis and reporting, performance measures, performance improvement techniques, and the frequent use of discretion, initiative and independent judgment. Incumbent performs duties as individual contributor, as team leader and/or as project manager, as directed by the NMC Chief Information Officer (CIO) or designee.

EXAMPLES OF DUTIES
Nothing in this specification restricts management’s right to assign or reassign duties and responsibilities to this job at any time.

1. Designs and implements short and long-term strategic plans to ensure infrastructure capacity meets existing and future requirements; anticipates NMC’s networking and business system needs as new service lines are envisioned and implemented.

2. Designs, implements and maintains NMC’s medical grade network and server activities to ensure a secure and stable environment for all of its users; ensures the goal of 99.99% reliability is met.

3. Develops, implements, and maintains policies, procedures, and associated training plans for infrastructure administration and project management.

4. Engineers and anticipates bandwidth and security requirements; develops and conducts network traffic and capacity studies, and analysis.

5. Assists with the planning and deployment of infrastructure security measures.

6. Installs, configures and maintains NMC’s advanced medical grade Cisco-based networks Local and Wide Area Network systems.
7. Proactively manages and monitors the NMC’s LAN/WAN using performance monitoring tools and alerts, such as HP Open View, Solar Winds, Cisco Works, Multi Router Traffic Grapher, Network Protocol Analyzers and Fiber optic Network Diagnostic tools.

8. Conducts research and makes recommendations on products, services, protocols, and standards in support of all infrastructure development efforts. Interacts with vendors, outsourcers, and contractors to secure infrastructure-specific products and services. Conducts feasibility studies for various upgrade projects, improvements, and other conversions.

9. Provides highly skilled technical assistance in network and server planning, engineering, and architecture; provides resolution for network and/or server problems.

10. Creates and maintains troubleshooting guidelines and associated support documentation on problem identification, fault isolation, estimation of effort hours required to complete problem resolution, and systems restore in the event of a critical system failure. Assists in providing troubleshooting and/or disaster recovery services to client remote networks as needed.

11. Designs and maintains up-to-date documentation of network design, operations and procedure manuals and other technical documentation.

12. Practices Information Technology asset management, including maintenance of component inventory and related documentation.

13. Conducts portions of and/or assists other in preparing materials for technical presentations made to staff.

14. May assist in training less experienced personnel as assigned and required.

15. Performs other duties as assigned.

QUALIFICATIONS

A combination of experience, education, and/or training which substantially demonstrates the following knowledge, skills and abilities:

Knowledge and Skills:

Thorough knowledge of:
1. Principles and techniques of programming.
2. Business system applications and client needs.
4. Business application, program analysis and design.
5. Requirements analysis and documentation.
6. Public infrastructure connections and interconnections to LANs and WANs.
7. UNIX, LINUX, and Windows NT and 2000 hardware/software enterprise architectures, including Sun Microsystems, Blade Servers, SAN and NAS.
9. WAN Communications Protocols (Frame Relay, ISDN, ATM), IP Routing Protocols (IGRP, OSPF, EIGRP, BGP).

Working knowledge of:
2. Principles and practices of project management.
4. ATM and Voice Technologies, IP Telephony, DSL, VHDSL.
5. Medical terminology.
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6. Requirements of the Patient Safety Act and HIPAA regulations, as related to information networks in a clinical/hospital setting.
7. Standard Telecommunications Circuit designations such as DS-0, T-1, DS-3, OC-3, and OC-12.
8. Data Communications network design, integration, configuration principles and practices.
9. TCP/IP protocols RIP, BGP, OSPF, EIGRP, SNMP and RMON based network management and monitoring tools.
10. Use of data packet analyzers and network troubleshooting utilities, such as Sniffers, first level Protocol Analyzers, Trace Routes, PING (basic and extended) NBSTAT, ARP.
12. Wireless Technologies based on: IEEE 802.11a/b/c, 802.11g, and broadband 2.8/5.8 GHz bands.
13. In depth knowledge of personal computers, data communications and mid-range file servers running Windows 2000, XP, and 2003 operating systems on Active Directory (AD) structure.

Some knowledge of:
1. Team dynamics and team building

Skill and Ability to:
2. Incorporate security requirements into hospital network architecture.
3. Design and integrate multiple platforms and protocols including Intel, Solaris, HPUX, Linux, Voice Over IP, LAN and WAN networking environments, both for SNA and TCP/IP applications.
4. Work with applications development teams/vendors to identify and mitigate network impacts of application changes upgrades and implementations.
5. Work with clinical and management staff to understand business requirements and help them understand how technology tradeoffs influence strategy.
6. Communicate effectively with medical staff, both orally and in writing. Establish and maintain effective working relationships with internal support units and clients.
7. Learn and apply new technologies to NMC network infrastructure.
8. Utilize project management tools.
9. Maintain strict confidentiality of data and information processed.
10. Work under pressure, with tight deadlines, and minimal supervision.
11. Take initiative; work independently and in team environment.
12. Effectively analyze, identify, and diagnose data network and server related problems and take corrective measures, or make recommendations that lead to problem resolution.
13. Understand the functionality and mechanics of IPV4 sub-netting, route summarization and network protocols practical applications on a LAN/WAN environment.
14. Assemble technical documentation of network site surveys, project plans, Visio network diagrams depicting network physical layouts, and wiring schemes.
15. Define problems and recommend alternative solutions.
16. Understand information systems and methodologies.
17. Make oral presentations to technical and non-technical audience.
18. Read, interpret, and apply information from complex technical publications and documentation.
19. Promote and maintain a team environment.
20. Organize, prioritize, and schedule multi-activity workload.
21. Gather, analyze and present data. Evaluate information and reach viable conclusions.
22. Analyze, research and develop technical solutions to meet business requirements.
23. Develop and evaluate technology alternatives for resolving client business problems.

REQUIRED CONDITIONS OF EMPLOYMENT
As a condition of employment, the incumbent will be required to:

1. Successfully pass a background investigation.
2. Pass a pre-employment physical/medical assessment.
3. May be required to work overtime, irregular hours, variable shifts, evenings, weekends and holidays.
4. May come in contact with infectious organisms and other potentially hazardous substances.

EXAMPLES OF EXPERIENCE/EDUCATION/TRAINING
Any combination of training, education and/or experience which provides the knowledge, skills, abilities and required conditions of employment listed above is qualifying. An example of a way these requirements might be acquired is:

Education:
- Equivalent to possession of a bachelor’s degree in computer science, information systems, business, or a closely related field; or
- Equivalent to possession of a bachelor’s degree in any field and one (1) year of experience in business information technology performing requirements analysis and documentation, system design and implementation and/or application maintenance and management, plus two (2) additional years of experience in software development and maintenance; and

Experience:
- Three to five years of experience in a hospital or clinical setting; and
- Four (4) years experience delivering infrastructure design and operational excellence.
- Four (4) years working on general LAN support, desktop support, file server installation, administration and support which includes:
  - Three (3) years experience with installation, configuration and programming of routers and switches; and
  - Three (3) years of experience working with network management and monitoring tools, such as: HP Open View, Cisco Works, Network Observer, Solar Winds, Sniffer Protocol LAN/WAN Analyzer, and SNMP. Extensive experience in LAN/WAN integration, maintenance and troubleshooting, and extensive experience configuring and maintaining routing protocols, such as EIGRP, BGP, OSPF and RIP.
- Experience in supporting data communications environments including configuration and administration of Virtual Private Networks (VPNs), Firewalls, and security policy management; and

Licenses and Certifications:
- Two (2) or more certifications from Cisco, such as CCNA, CCDA, CCNP, CCDP and Microsoft (such as MCSE for Windows 2000).
- Certifications in UNIX or Linux.
- Certification in Network Architecture such as Cisco Certified Network Architect (CCNA) or Certified Wireless Network Architect (CWNA).

PHYSICAL AND SENSORY REQUIREMENTS
The physical and sensory abilities required for this classification include:

1. Sight sufficient to read computer screens and standard computer printouts.
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2. Strength to lift a 30-pound object, without assistance, and items weighing up to 150 pounds with assistance.
3. Manual and finger dexterity sufficient to work with hands in close tolerances and to work with small electronic components.
4. Speech adequate to project voice clearly and adequately to speak in public.
5. Mobility and agility sufficient to bend, stoop and crawl, in order to access computers and servers.
6. Ability to walk and/or stand for 4 hours, such as while conducting training sessions.
7. Ability to remain seated at computer station for extended periods.
8. Hearing adequate to distinguish and identify sounds and voices in a typical office environment.
9. Ability to work around infectious organisms and other potentially hazardous substances.

**CLASS HISTORY**

- Class Code: 41K01
- Established Date: February 2009
- Revised Date: (New)
- Former Title: (New)

**CLASS DATA**

- Job Group: 03
- EEO Category: P
- Work Comp. Code: 9043
- Bargaining/Employee Unit: J
- FLSA: E
- MOCO OT: N

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/s/ Janine Bouyea
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3/12/2009

Date