



1. Core Job Descriptions

Definitions

These definitions are guidelines, not rigid categories. As any of the variables at a site increase—number of computers, number of users, types of hardware, variety of software, and operating systems supported—the site becomes more complex. Increased site complexity typically requires increased system administration resources and also requires more experienced system administrators to manage the more complex aspects of the site.

Small, uniform site: < 50 computers, all running the same operating system, and 20 or fewer users. (A computer used only by the administrator does not qualify as a site.)

Complex site: Up to 100 computers, running more than two different operating systems, and up to 100 users.

Large, complex site: >100 computers, potentially running more than one operating system, and > 100 users.

The titles proposed here may not be suitable for all sites. Senior System Administrator is a relatively standard title, but the titles in use for the lower levels vary widely from place to place. You should feel free to use whatever title is most appropriate for your situation.

Level I: Novice System Administrator

Required Skills

- Strong interpersonal and communication skills; capable of explaining simple procedures in writing or verbally; good phone skills.
- Familiar with an operating system and its commands/utilities at a user level; can edit files, issue commands, find users' home directories, navigate through the file system, and use I/O redirection.
- Able to follow instructions well.

Required Background

- Two years of college or equivalent post-high school education or experience.

Desirable Background and Skills

- A degree or certificate in computer science or a related field.

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- Previous experience in customer support, computer operations, system administration, or another related area.
- Motivated to advance in the profession.

Appropriate Responsibilities

- Performs routine tasks under the direct supervision of a more experienced administrator.
- Acts as a front-line interface to users, accepting trouble reports and dispatching them to appropriate system administrators.

Level II: Junior System Administrator

Required Skills

- Strong interpersonal and communication skills; capable of training users in applications and operating system fundamentals and writing basic documentation.
- High skill with most operating system commands/utilities.
- Familiarity with most basic system administration tools and processes; for example, can boot/shut down a machine, add and remove user accounts, use backup programs and fsck or chkdsk, maintain system database files (groups, hosts, aliases, usermanager).
- Fundamental understanding of an operating system; for example, understands job control, soft and hard links or shortcuts, distinctions between the kernel and the user environment.

Required Background

- One to three years of system administration experience.

Desirable Background and Skills

- A degree in computer science or a related field.
- Familiarity with networked/distributed computing environment concepts; for example, can use the route command or administer routing and remote access service, add a workstation to a network, and mount remote filesystems.
- Ability to write scripts in some administrative language (Tk, Perl, VBScript, a shell).
- Programming experience in any applicable language.

Appropriate Responsibilities

- Administers a small, uniform site alone or assists in the administration of a larger system.
- Works under the general supervision of a system administrator or computer systems manager.

Level III: Intermediate/Advanced System Administrator

Required Skills

- Strong interpersonal and communication skills; capable of writing purchase justifications, training users in complex topics, making presentations to an internal audience, and interacting positively with upper management.
- Independent problem-solving, self-direction.
- Comfortable with most aspects of operating system administration; for example, configuration of mail systems, system installation and configuration, printer systems, fundamentals of security, installing third-party software.
- Has a solid understanding of a UNIX-based operating system; understands paging and swapping, inter-process communication, devices and what device drivers do, filesystem concepts (inode, clustering, logical partitions).
- Familiarity with fundamental networking/distributed computing environment concepts; can configure NFS and NIS, NT domains; can use nslookup or dig to check information in the DNS; understands basic routing concepts.
- Ability to write scripts in some administrative language (Tk, Perl, VBScript, a shell).
- Ability to do minimal debugging and modification of C programs.

Required Background

- Three to five years of system administration experience.

Desirable Background and Skills

- A degree in computer science or a related field.
- Significant programming background in any applicable language.

Appropriate Responsibilities

- Receives general instructions for new responsibilities from supervisor.
- Administers a complex site alone or assists in the administration of a larger site.
- Initiates some new responsibilities and helps to plan for the future of the site/network.
- Manages novice system administrators or operators.
- Evaluates and/or recommends purchases; has strong influence on purchasing process.

Level IV: Senior System Administrator

Required Skills

- Strong interpersonal and communications skills; capable of writing proposals or papers, acting as a vendor liaison, making presentations to customers or client audiences or professional peers, and working closely with upper management.
- Ability to solve problems quickly and automate processes.
- A solid understanding of an operating system; understands paging and swapping, inter-process communications, devices and what device drivers do, filesystem concepts (inode, clustering, logical partitions), can use performance analysis to tune systems.
- A solid understanding of networking/distributed computing environment concepts; understands principles of routing, client/server programming, the design of consistent network-wide filesystem layouts.
- Ability to program in an administrative language (Tk, Perl, VBScript, a shell), to port C programs from one platform to another, and to write small C or C# programs.

Required Background

- More than five years of previous system administration experience.

Desirable Background and Skills

- A degree in computer science or a related field.
- Extensive programming background in any applicable language.
- Publications within the field of system administration.

Appropriate Responsibilities

- Designs/implements complex local and wide-area networks of machines.
- Manages a large, complex site or network.
- Works under general direction from senior management.
- Establishes/recommends policies on system use and services.
- Provides technical lead and/or supervises system administrators, system programmers, or others of equivalent seniority.
- Has purchasing authority and responsibility for purchase justification.