13.1 Introduction

A *daemon* is a process that runs in the background and is not associated with a controlling terminal. Unix systems typically have many processes that are daemons (on the order of 20 to 50), running in the background, performing different administrative tasks.

The lack of a controlling terminal is typically a side effect of being started by a system initialization script (e.g., at boot-time). But if a daemon is started by a user typing to a shell prompt, it is important for the daemon to disassociate itself from the controlling terminal to avoid any unwanted interraction with job control, terminal session management, or simply to avoid unexpected output to the terminal from the daemon as it runs in the background.

There are numerous ways to start a daemon:

1. During system startup, many daemons are started by the system initialization scripts. These scripts are often in the directory `/etc` or in a directory whose name begins with `/etc/rc`, but their location and contents are implementation-dependent. Daemons started by these scripts begin with superuser privileges.

   A few network servers are often started from these scripts: the `inetd` superserver (covered later in this chapter), a Web server, and a mail server (often `sendmail`). The `syslogd` daemon that we will describe in Section 13.2 is normally started by one of these scripts.

2. Many network servers are started by the `inetd` superserver. `inetd` itself is started from one of the scripts in Step 1. `inetd` listens for network requests (Telnet, FTP, etc.), and when a request arrives, it invokes the actual server (Telnet server, FTP server, etc.).

3. The execution of programs on a regular basis is performed by the `cron` daemon, and programs that it invokes run as daemons. The `cron` daemon itself is started in Step 1 during system startup.

4. The execution of a program at one time in the future is specified by the `at` command. The `cron` daemon normally initiates these programs when their time arrives, so these programs run as daemons.

5. Daemons can be started from user terminals, either in the foreground or in the background. This is often done when testing a daemon, or restarting a daemon that was terminated for some reason.

Since a daemon does not have a controlling terminal, it needs some way to output messages when something happens, either normal informational messages or emergency messages that need to be handled by an administrator. The `syslog` function is the standard way to output these messages, and it sends the messages to the `syslogd` daemon.