Advanced Operations Management
Fall 2005, Professor Eckstein
Homework 10
Due at final exam

This exercise involves using the *Process Model* simulation package. You may install it on your own computer in two possible ways:

- Install version 4 from the CD in your textbook.
- Download an evaluation copy of version 5 from [http://eckstein.rutgers.edu/aom/pm5](http://eckstein.rutgers.edu/aom/pm5). This is the same version that we have used in class and in my experience is more stable than version 4.

1. Suppose you operate a customer service facility as follows: calls arrive according to a Poisson process, with an average spacing of 3 minutes between calls. The calls are placed in a queue and answered by an operator who classifies them as either “sales/license” calls, or “technical” calls. This process takes time uniformly distributed between 10 and 50 seconds. In your experience, 45% of calls are sales- or license-related, and 55% are technical.

Sales/license calls are routed to a queue served by two sales representatives. The time to process these calls is well-described by a TRIANGULAR(3,4,8) distribution (in minutes).

Technical calls are routed to a queue served by four technical support representatives. The time to process each of these calls is described by TRIANGULAR(3,10,30) distribution (in minutes). 20% of technical calls must be subsequently routed to the sales/license queue to resolve a residual licensing problem; such calls are still considered “technical” calls in your statistics.

Simulate 1000 hours of operation of this system.

- What is the average initial wait to be classified as “sales/license” or technical?
- What is the average wait to speak to sales representative?
- What is the average wait to speak to a technical support representative?
- What is the average number of technical support representatives who are busy?
- What is the average time to complete processing of a sales/license call?
- What is the average time to complete processing of a technical call?

In addition to answering the above questions, hand in a printout of your graphical simulation model and of your simulation results.