Target Load %	Performance (ssj_ops)	Average Power (Watts)
100%	231,867	295
90%	211,282	286
80%	185,803	275
70%	163,427	265
60%	140,160	256
50%	118,324	246
40%	92,035	233
30%	70,500	222
20%	47,126	206
10%	23,066	180
0%	0	141
Overall Sum	1,283,590	2,605
Σssj_ops / Σpower =		493

FIGURE 1.21 SPECpower_ssj2008 running on dual socket 2.3 GHz AMD Opteron X4 2356 (Barcelona) with 16 GB Of DDR2-667 DRAM and one 500 GB disk.

system. Performance is measured in throughput, and the units are business operations per second. Once again, to simplify the marketing of computers, SPEC boils these numbers down to a single number, called "overall ssj_ops per Watt." The formula for this single summarizing metric is

$$\text{overall ssj\_ops per Watt} = \left(\sum_{i=0}^{10} \text{ssj\_ops}_i\right) \Big/ \left(\sum_{i=0}^{10} \text{power}_i\right)$$

where ssj_ops_i is performance at each 10% increment and power_i is power consumed at each performance level.

Check Yourself

A key factor in determining the cost of an integrated circuit is volume. Which of the following are reasons why a chip made in high volume should cost less?

1. With high volumes, the manufacturing process can be tuned to a particular design, increasing the yield.
2. It is less work to design a high-volume part than a low-volume part.
3. The masks used to make the chip are expensive, so the cost per chip is lower for higher volumes.
4. Engineering development costs are high and largely independent of volume; thus, the development cost per die is lower with high-volume parts.
5. High-volume parts usually have smaller die sizes than low-volume parts and therefore have higher yield per wafer.