Appendix C: Hardware and Software Used in Performance Tests

In Chapter 7, we evaluate performance of our *Free Data Objects* framework and its support for custom and adaptable process topologies. Specifications of hardware, software, and command line switches used for that evaluation are given below.

Network

All machines used in the evaluation are connected via a 100 Mbit Ethernet local area network. Typical ping times are below 0.3 milliseconds.

Machines

Seven types of machines are used in the evaluation:

M1   Intel Pentium III with 450 MHz, 512 KB cache, and 256 MB RAM. Linux with 2.4.19 kernel (Debian).

M2   Intel Pentium III with 1 GHz, 256 KB cache, and 256 MB RAM. Linux with 2.4.19 kernel (Debian).

M3   Dual CPU (Intel Pentium III with 1 GHz, 256 KB cache) machine with 2 GB RAM. IDE HDD with 7200 rpm. Linux with 2.4.19 kernel (Debian).

M4   Dual CPU (Intel Pentium III with 1 GHz, 256 KB cache) machine with 2 GB RAM. IDE HDD with 7200 rpm. MS Windows 2000 Server.

M5   Sun Ultra Enterprise 250 with two UltraSPARC-II 400 MHz CPUs and 1.4 GB RAM. SCSI HDD with 7200 rpm. Solaris 9.

M6   Sun Ultra Enterprise 450 with two UltraSPARC-II 300 MHz CPUs and 1.5 GB RAM. SCSI HDD with 7200 rpm. Solaris 9.

M7   Dual CPU (AMD Athlon MP 1900+ with 1.6 GHz, 256KB cache) machine with 2 GB RAM. IDE HDD with 7200 rpm. Linux with 2.4.19 kernel (Debian).

Multiple machines of types M1 and M2 are employed in various scenarios. In contrast to that, types M3 to M7 correspond to individual machines.

Java Virtual Machines

On machines of type M1, M2, and M3, Sun's reference implementation of the Java 2 Standard Edition (version 1.4.1) is used. The following JVM command line switches are defined:

For pure client processes: *-Xms64m*

For all other processes running on machines of type M1 or M2: *-server*

For all other processes running on machines of type M3 or M7: *-server -Xms512m -Xmx512m*

Datastores

Machines M4, M5, and M6 are database servers and run Oracle 9i RDBMS (versions 9.2.0.1.0, 9.0.1.0.0, and 9.0.1.0.0, respectively). These databases are accessed via Oracle's thin JDBC driver, version 9.2.0.3.