Performance Evaluation of Middleware Bridging Technologies

R. Fatoohi, V. Gunwani, Q. Wang and C. Zheng
Computer Engineering,
San Jose State University,
San Jose, California 95192, USA
Email: rfatoohi@email.sjsu.edu

In today’s market, there are several middleware technologies, including: the Distributed Computing Environment (DCE), the Common Object Request Broker Architecture (CORBA), and the Distributed Component Object Model (DCOM). However, the underlying middleware components are incompatible; and therefore, a high-level heterogeneity problem has been created. Recently, software “bridges” have emerged that enable interoperability between different middleware environments. This paper presents the results of experiments to evaluate bridging technology using two DCOM-CORBA bridges and a DCE-CORBA bridge. Several configurations, depending on the number of machines and location of the bridge, are employed and two languages (C++ and Java) are used. The results show that the three bridges perform reasonably well for different configurations and language mappings.

Keywords: Middleware, CORBA, bridging, performance evaluation, interoperability.


1. INTRODUCTION
Many of today’s organisations have a wide variety of computing systems that run different operating systems and software tools and interconnected by different networks. Applications tend to be even more diverse than the computing systems and networks they use. Some applications can only run on a single platform, while others run on several platforms. Middleware technologies exist to mask the underlying differences that may exist in platforms and applications. Middleware is defined as a set of common services that enable applications and end users to exchange information across networks. These services reside in the middle above the operation system and networking software and below the distributed applications (Bernstein, 1996).

In today’s market, there are several middleware technologies, including: the Distributed Computing Environment (DCE) by The Open Group, the Common Object Request Broker Architecture (CORBA) by the Object Management Group (OMG), and the Distributed Component Object Model (DCOM) by Microsoft Corp. However, the underlying middleware components are incompatible; and therefore, a higher-level heterogeneity problem has been created.