Concurrent Programming

Session 15: Distributed Programming II

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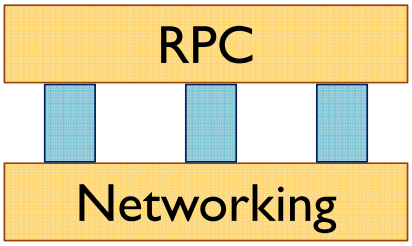
How to communicate?

- Sockets are the primitive way for communication.
  - Hard to program
  - Hard to debug
  - Hard to support shared memory programming concepts

A more abstract viewpoint

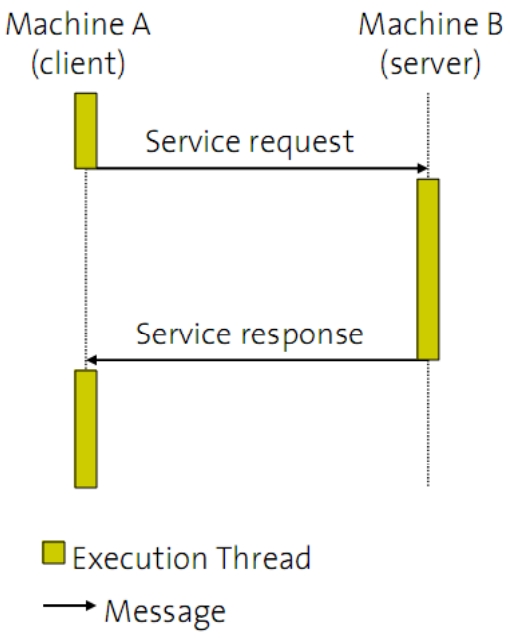
- Remote Procedure Call (RPC)



Sockets

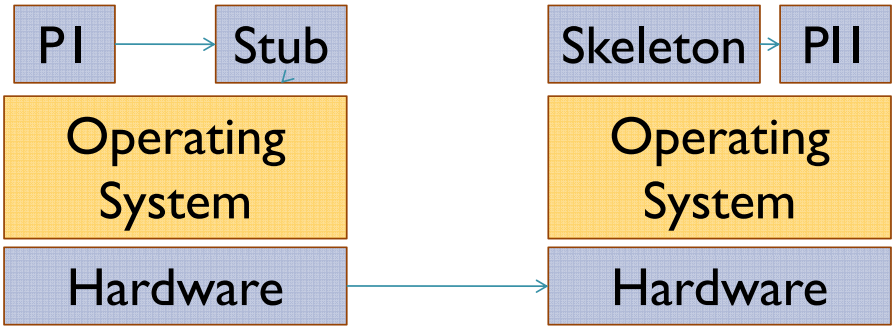
RPC

In this case, the request occurs in the form of a method call, not using a socket.



RPC (Cont.)

- How it happens?



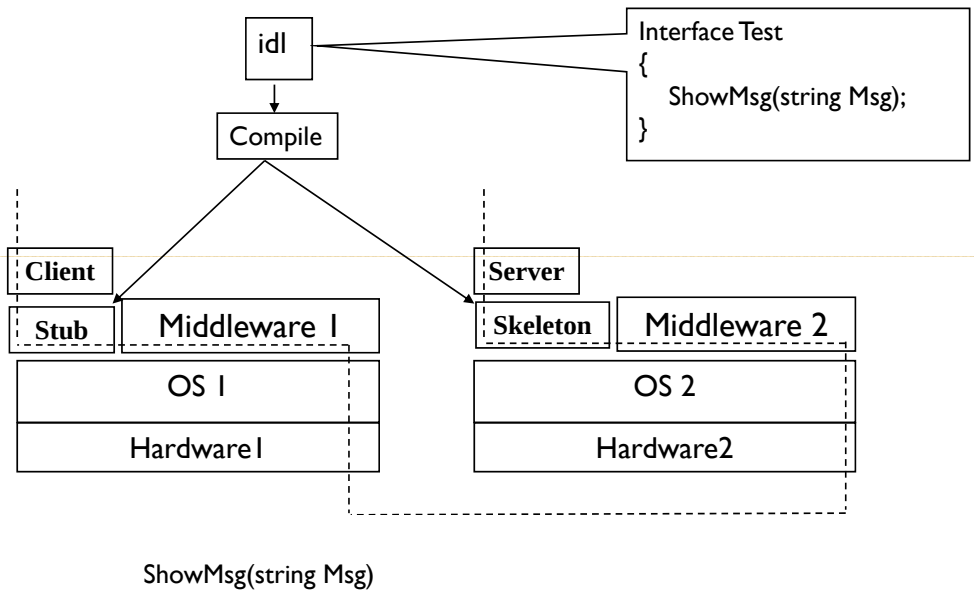
RPC Challenges

- Different Hardware Platforms
- Different Operating Systems
- Different Programming Languages
- Different Data Representation Standards

Middleware

- The term *middleware* refers to the software layer between the operating system— including the basic communication protocols—and the distributed applications that interact via the network.

Middleware (cont.)



Middleware (cont.)

- They can provide you with:
  - Location Transparency
  - Access Transparency
  - Replication Transparency
  - …

Middleware (cont.)

- There are lots of commercial/academic middlewares available:
  - Microsoft DCOM
  - OMG's CORBA
  - Java RMI
  - Microsoft .NET Remoting
  - …

Any Questions?