

Study Questions

“Implementing Remote Procedure Calls”

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1. Explain the “duality” between messaging and procedure call. In other words, why is a request-reply message transaction like a procedure call?
2. What are the fundamental ways in which “remote” procedure calls are different than “local” procedures calls? (What are the design issues that you must consider when implementing a remote procedure call system.)
3. What is the role of the “RPC compiler” (rpcgen, or rpcbind under Solaris; Lupine in the paper). Why is the “RPC compiler” also called the “stub generator”?
4. What does marshalling and unmarshalling mean? Why is it necessary in RPC systems? Is it necessary with messaging systems?
5. What are three ways name and location “binding” can be handled in RPC systems? Which technique does Sun RPC use?
6. Birrell and Nelson spend a considerable amount of energy designing and describing a custom RPC network transport protocol yet modern implementations like Sun RPC are “transport independent” and allow the user to specify a transport protocol. What are the advantages of the “transport independent” RPC style? What are the disadvantages?