Using R in a Distributed Computer Lab for Statistics Courses

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In many of today's computer labs it is not possible to provide a computer for every student. Fortunately many students already own a laptop computer which can be used for these labs. Universities tend to provide LAN or even WLAN access to the campus network for the student's computers. These facts already point out the solution to the problem.

We will discuss a software-architecture for using R in a distributed lab scenario and will describe the possible approaches and show the benefits and the problems arising from choosing one of them. The discussed scenarios will be

- lab-only installation and access of R
- lab installations and installations on student computers
- installation of R on lab computers and remote access via terminal services
- lab-provided installation of R and remote access via rich clients
- "repositories" of R on lab computers and static load balancing for access by rich clients on notebooks and lab computers

Our discussions will focus on using R as the computational engine while students are working in a spreadsheet-application on Windows platforms. Our main concerns are

- ease of installation both on lab computers and for the students' own computers
- transparency of computation
- maintenance of packages and installations
- administration of sample data and preparing exercises
- data storage and (semi-)automatic submission of results

Finally, we will show the implementation chosen for a course taking place in fall/winter 2004 at the University of Vienna, Austria and discuss future extensions using Web Service technology (SOAP/HTTP) as a portable client-interface.