Chapter 4

Test Preparation Phase I: Test Definition

The core theme of the previous chapters is that a methodical and structured approach to PT is rather necessary right from the early phases of the development cycle. This will ensure predictability and controllability of application performance in practice. The preparatory activities associated with PT (Figure 4.1) are of great importance and are distributed over the life cycle phases of requirement elicitation and analysis, High Level Design (HLD), Detail Level Design (DLD), and several sets of system builds. These activities help define and provide continuity between the high level requirements for application performance, strategies for testing, a framework for designing the tests (see Barber, 2004), and artifacts used to plan and carry out tests. This chapter contains a detailed consideration of the definition phase while Chapters 5 and 6 highlight issues related to the design and build phases associated with the preparatory activities as shown in Figure 4.1.

Need for Test Definition Phase

Customarily, designers address performance issues close to the end of the project life cycle, when the system is available for testing in its entirety or in significantly large modular chunks. This, however, poses a difficult problem, since it exposes the project to a potentially large risk related to the effort involved in both identifying as well as rectifying possible problems in the system at a very late stage in the life cycle. (Refer to
Chapter 1 and Chapter 2 on the problems of debugging.) A more balanced approach would tend to distribute such risks by addressing these issues at different levels of abstraction (intended to result in increased clarity with time), multiple times (leading to greater effectiveness and comprehensiveness in testing application performance), and at different stages during the life cycle. The very first component of activities related to preparation for such testing is in collecting and analyzing requirements related to the performance of the system alongside those related to its features and functions. Hence, this activity would have to take place during the requirement study of business functions and is termed the test definition phase. The main objectives of this phase are to:

- Define goals of PT;
- Remove ambiguities in performance goals;
- Determine the complexity involved in PT;
- Define performance metrics to measure the performance;
- List risk factors involved in PT;
- Define the strategy for PT.

Although most of these activities are carried out during the requirement study phase, some of these have to be revisited for further tuning and clarification during the design phase.

While requirements for modeling business functions and those for performance complement each other, their gathering, as well as analysis, need to be treated as different activities. The performance requirements must be well defined before the design phase, as shown in Figure 4.2, so as to facilitate a more precise design of tests of critical performance parameters.

Collection of performance requirements is a difficult and complex task due to a variety of reasons. It is often easier to elicit requirements associated with business functionality
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