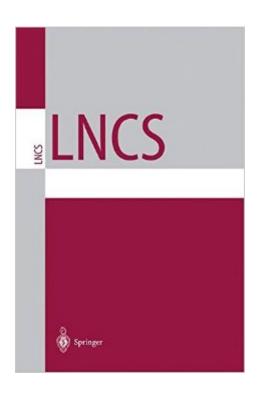# Performance Evaluation Of Complex Systems: Techniques And Tools: Performance 2002. Tutorial Lectures (Lecture Notes In Computer Science)

Synopsis

Thefastevolutionandtheincreasedpervasivenessofcomputersandcom-nicationnetworkshaveledtothedevelopmentofalargevarietyofcomplex applicationsandserviceswhichhavebecomeanintegralpartofourdailylives. Modernsocietywidelyreliesoninformationtechnologies. Hence,theQuality ofService,thatis,thee?ciency,availability,reliability,andsecurityofthese technologies,isanessentialrequirementfortheproperfunctioningofmodern society. Inthisscenario,performanceevaluationplaysacentralrole. Performance evaluationhastoassessandpredicttheperformanceofhardwareandsoftware systems,andtoidentifyandpreventtheircurrentandfutureperformancebo- lenecks. Inthepastthirtyyears,manyperformanceevaluationtechniquesandtools havebeendevelopedandsuccessfullyappliedinstudiesdealingwiththec-?gurationandcapacityplanningofexistingsystemsandwiththedesignand developmentofnewsystems. Recently,performanceevaluationtechniqueshave evolvedtocopewiththeincreasedcomplexityofthecurrentsystemsandtheir workloads. Manyoftheclassicaltechniqueshavebeenrevisitedinlightofthe recenttechnologicaladvances,andnoveltechniques,methods,andtoolshave beendeveloped. Thisbookisorganizedaroundasetofsurveypaperswhichprovideac-prehensiveoverviewofthetheories,techniques,andtoolsforperformanceand reliabilityevaluationofcurrentandnewemergingtechnologies. Thepapers,by leadinginternationalexpertsinthe?eldofperformanceevaluation,arebasedon thetutorialspresentedattheIFIPWG7. 3InternationalSymposiumonCom-terModeling,Measurement,andEvaluation(Performance2002)heldinRome onSeptember23-27,2002. Thepapersaddressthestateoftheartofthetheoreticalandmethodological advancesintheareaofperformanceandreliabilityevaluationaswellasnew perspectivesinthemajorapplicationdomains. Abroadspectrumoftopicsis coveredinthisbook. Modelingandveri?cationformalisms,solutionmethods, workloadcharacterization,andbenchmarkingareaddressedfromametho- logicalpointofview. Applicationsofperformanceandreliabilitytechniquesto variousdomains,suchas,hardwareandsoftwarearchitectures,wiredand-relessnetworks,Gridenvironments,Webservices,real-timevoiceandvideo applications,arealsoexamined. Thisbookisintendedtoserveasareferenceforstudents,scientists,and-gineersworkingintheareasofperformanceandreliabilityevaluation,hardware

andsoftwaredesign,andcapacityplanning. VI Preface

Finally,aseditorsofthebook,wewouldliketothankallauthorsfortheir

valuablecontributionsandtheire?ortandcooperationinthepreparationof theirmanuscripts. July2002

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