

Fias Protocol Specification

Protocol Specification, Testing and Verification XIV Protocol Specification, Testing and Verification XV Protocol Specification and Testing Protocol Specification, Testing and Verification, XII Formal Description Techniques and Protocol Specification, Testing and Verification Communication Protocol Specification and Verification Formal Description Techniques and Protocol Specification, Testing and Verification Agent-Based Manufacturing Communication Protocols Protocol Engineering TAPSOFT '91 – Volume 2 Concurrency 88 Advances in Computers Protocol Test Systems Communication Protocol Specification and Verification Artificial Intelligence – Agents and Environments Computer Network Architectures and Protocols Protocol Specification, Testing, and Verification, VI Operational Semantics and Verification of Security Protocols Bluetooth Application Programming with the Java APIs Essentials Edition S.T. Vuong Piotr Dembinski Katalin Tarnay R.J. Linn Stan Budkowski Richard Lai Atsushi Togashi S.M. Deen Drago Hercog Hartmut König Samson Abramsky Friedrich H. Vogt Tadanori Mizuno Richard Lai Carl A. Sunshine Concordia University Cas Cremers Timothy J. Thompson

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Semantics and Verification of Security Protocols Bluetooth Application Programming with the Java APIs Essentials Edition *S.T. Vuong*
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this pstv 94 symposium is the fourteenth of a series of annual meetings organized under the auspices of ifip w g 6 1 a working group dedicated to architectures and protocols for computer networks this is the oldest and most established symposium in the emerging field of protocol engineering which has spawn many international conferences including forte international conference on formal description tech niques iwpts international workshop on protocol test systems icnp interna tional conference on network protocols and cay conference on computer aided verification the main objective of this pstv symposium is to provide a forum for researchers and practitioners in industry and academia interested in advances in using formal methods and methodologies to specify develop test and verify communication protocols and distributed systems this year s pstv symposium enjoys a nice mixture of formal methods and practical issues in network protocols through the invited addresses of three outstanding speakers ed brinksma university of twente raj jain ohio state university and david tennenhouse mit as well as 5 tutorials in addition to 9 techni cal sessions and two practical panel sessions the 5 tutorials are offered on the first day in two parallel tracks for intensive exposure on hot topics of current interest this year out of 51 submissions the program committee selected 18 regular papers with an allotment of 16 pages in the proceedings and 9 mini papers of 8 pages

this volume presents the latest research worldwide on communications protocols emphasizing specification and compliance testing it presents the complete proceedings of the fifteenth meeting on protocol specification testing and verification arranged by the international federation for information processing

the increasing number of computer networks has aroused users interest in many and various fields of applications in how a computer network can be built and in how it may be used the fundamental rules of computer networks are the protocols a protocol is a set of rules that governs the operation of functional units to achieve communication sta 86 the book follows a practical approach to protocol specification and testing but at the same time it introduces clearly and precisely the relevant theoretical fundamentals the principal objectives of this work are to familiarize readers with communication protocols to present the main formal description techniques to apply various formal description techniques to protocol specification and testing it is considered that the readership will primarily consist of protocol developers protocol users and all who utilize protocol testers secondly the book is suggested for postgraduate courses or other university courses dealing with communication networks and data communication a large part of the book provides a comprehensive overview for managers some parts are of especial interest to postal organizations the book consists of three parts the first part introduces the os reference model it provides an overview of the most frequently used protocols and explains the fundamentals of protocol testing the second part familiarizes readers with the methods used for protocol 5pecification generation and testing finite state machines formal grammars petri nets and some specification languages sdl estelle lotos are discussed in a pragmatic style the third part deals with applications

for more than a decade researchers and engineers have been addressing the problem of the application of formal description techniques to protocol specification implementation testing and verification this book identifies the many successes that have been achieved within the industrial framework and the difficulties encountered in applying theoretical methods to practical situations issues discussed include testing and certification verification validation environments and automated tools formal specifications protocol conversion implementation specification languages and models consideration is also given to the concerns surrounding education available to students and the need to upgrade and develop this through sponsorship of a study of an appropriate curriculum at both undergraduate and graduate levels it is hoped this publication will stimulate such support and inspire further research in this important

arena

formal description techniques and protocol specification testing and verification addresses formal description techniques fdt applicable to distributed systems and communication protocols it aims to present the state of the art in theory application tools and industrialization of fdt among the important features presented are fdt based system and protocol engineering fdt application to distributed systems protocol engineering practical experience and case studies formal description techniques and protocol specification testing and verification comprises the proceedings of the joint international conference on formal description techniques for distributed systems and communication protocols and protocol specification testing and verification sponsored by the international federation for information processing held in november 1998 paris france formal description techniques and protocol specification testing and verification is suitable as a secondary text for a graduate level course on distributed systems or communications and as a reference for researchers and practitioners in industry

communication protocols are rules whereby meaningful communication can be exchanged between different communicating entities in general they are complex and difficult to design and implement specifications of communication protocols written in a natural language e g english can be unclear or ambiguous and may be subject to different interpretations as a result independent implementations of the same protocol may be incompatible in addition the complexity of protocols make them very hard to analyze in an informal way there is therefore a need for precise and unambiguous specification using some formal languages many protocol implementations used in the field have almost suffered from failures such as deadlocks when the conditions in which the protocols work correctly have been changed there has been no general method available for determining how they will work under the new conditions it is necessary for protocol designers to have techniques and tools to detect errors in the early phase of design because the later in the process that a fault is discovered the greater the cost of rectifying it protocol verification is a process of checking whether the interactions of protocol entities according to the protocol specification do indeed satisfy certain properties or conditions which may be either general e g absence of

deadlock or specific to the particular protocol system directly derived from the specification in the 80s an iso international organization for standardization working group began a programme of work to develop formal languages which were suitable for open systems interconnection osi this group called such languages formal description techniques fdts some of the objectives of iso in developing fdts were enabling unambiguous clear and precise descriptions of osi protocol standards to be written and allowing such specifications to be verified for correctness there are two fdts standardized by iso lotos and estelle communication protocol specification and verification is written to address the two issues discussed above the needs to specify a protocol using an fdt and to verify its correctness in order to uncover specification errors in the early stage of a protocol development process the readership primarily consists of advanced undergraduate students postgraduate students communication software developers telecommunication engineers edp managers researchers and software engineers it is intended as an advanced undergraduate or postgraduate textbook and a reference for communication protocol professionals

forte pstv 97 addresses formal description techniques fdts applicable to distributed systems and communication protocols such as estelle lotos sdl asn 1 ttcn z automata process algebra logic the conference is a forum for presentation of the state of the art in theory application tools and industrialization of fdts and provides an excellent orientation for newcomers

low volume high variety products like personalized cars or customized engines will be the key issues for manufacturing in the 21st century the necessary control technology is based on the concept of holons which are the units of production and behave as autonomous and cooperative agents providing flexibility adaptability agility and dynamic reconfigurability this book presents the latest research results in agent based manufacturing as carried out by researchers in academia and industry within the international holonic manufacturing systems project as this project was driven by industry the results presented here are of vital interest not just to researchers in agent technologies or distributed artificial intelligence but also to engineers and professionals in industry who have to respond to rapid changes and new demands in production

this book provides comprehensive coverage of the protocols of communication systems the book is divided into four parts part i covers the basic concepts of system and protocol design and specification overviews the models and languages for informal and formal specification of protocols and describes the specification language sdl in the second part the basic notions and properties of communication protocols and protocol stacks are explained including the treatment of the logical correctness and the performance of protocols in the third part many methods for message transfer on which specific communication protocols are based are explained and formally specified in the sdl language the fourth part provides for short descriptions of some specific protocols mainly used in ip networks in order to acquaint a reader with the practical use of communication methods presented in the third part of the book the book is relevant to researchers academics professionals and students in communications engineering provides comprehensive yet granular coverage of the protocols of communication systems allows readers the ability to understand the formal specification of communication protocols specifies communication methods and protocols in the specification language sdl giving readers practical tools to venture on their own

communication protocols form the operational basis of computer networks and telecommunication systems they are behavior conventions that describe how communication systems interact with each other defining the temporal order of the interactions and the formats of the data units exchanged essentially they determine the efficiency and reliability of computer networks protocol engineering is an important discipline covering the design validation and implementation of communication protocols part i of this book is devoted to the fundamentals of communication protocols describing their working principles and implicitly also those of computer networks the author introduces the concepts of service protocol layer and layered architecture and introduces the main elements required in the description of protocols using a model language he then presents the most important protocol functions part ii deals with the description of communication protocols offering an overview of the various formal methods the essence of protocol engineering the author introduces the fundamental description methods such as finite state machines petri nets process calculi and temporal logics that are in

part used as semantic models for formal description techniques he then introduces one representative technique for each of the main description approaches among others sdl and lotos and surveys the use of uml for describing protocols part iii covers the protocol life cycle and the most important development stages presenting the reader with approaches for systematic protocol design with various verification methods with the main implementation techniques and with strategies for their testing in particular with conformance and interoperability tests and the test description language ttcn the author uses the simple data transfer example protocol xdt example data transfer throughout the book as a reference protocol to exemplify the various description techniques and to demonstrate important validation and implementation approaches the book is an introduction to communication protocols and their development for undergraduate and graduate students of computer science and communication technology and it is also a suitable reference for engineers and programmers most chapters contain exercises and the author s accompanying website provides further online material including a complete formal description of the xdt protocol and an animated simulation visualizing its behavior

tapsoft 91 is the fourth international joint conference on theory and practice of software development it was held in brighton april 8 12 1991 and was organized by the department of computing imperial college london the proceedings of tapsoft 91 are organized into three parts advances in distributed computing adc colloquium on trees in algebra and programming caap colloquium on combining paradigms for software development ccpsd the proceedings are published in two volumes the first volume Incs vol 493 contains the papers from caap the second volume Incs vol 494 contains the papers from the adc and ccpsd the adc talks by distinguished invited speakers surveys current developments in distributed computing including the integration of different paradigms for concurrency algebraic logical and operational foundations and applications to software engineering and formal methods the ccpsd papers address aspects of the trend in software engineering towards unification and synthesis combining theory and practice and merging hitherto diverse approaches publisher s website

this volume contains the proceedings of concurrency 88 an international conference on formal methods for distributed systems held

october 18 19 1988 in hamburg concurrency 88 responded to great interest in the field of formal methods as a means of mastering the complexity of distributed systems in addition the impulse was determined by the fact that the various methodological approaches such as constructive or property oriented methods have not had an extensive comparative analysis nor have they been investigated with respect to their possible integration and their practical implications the following topics were addressed specification languages models for distributed systems verification and validation knowledge based protocol modeling fault tolerance distributed databases the volume contains 12 invited papers and 14 contributions selected by the program committee they were presented by authors from austria the federal republic of germany france israel italy the netherlands the united kingdom and the united states

advances in computers

this book presents the latest research results in protocol testing it contains the complete proceedings of the seventh ifip wg6 1 international workshop on protocol test systems iwpts 94 organized by the international federation for information processing and held in tokyo japan in november 1994 the book presents an alliance between research and industry and between the theory and practice of testing of data communication systems

this is a book about the bricks and mortar from which are built those edifices that will permeate the emerging information society of the future computer networks for many years such computer networks have played an indirect role in our daily lives as the hidden servants of banks airlines and stores now they are becoming more visible as they enter our offices and homes and directly become part of our work entertainment and daily living the study of how computer networks function is a combined study of communication theory and computer science two disciplines appearing to have very little in common the modern communication scientist wishing to work in this area soon finds that solving the traditional problems of transmission modulation noise immunity and error bounds in getting the signal from one point to another is just the beginning of the challenge the communication must be in the right form to be routed properly to be

handled without congestion and to be understood at various points in the network as for the computer scientist he finds that his discipline has also changed the fraction of computers that belong to networks is increasing all the time and for a typical single computer the fraction of its execution load storage occupancy and system management problems that are involved with being part of a network is also growing

security protocols are widely used to ensure secure communications over insecure networks such as the internet or airwaves these protocols use strong cryptography to prevent intruders from reading or modifying the messages however using cryptography is not enough to ensure their correctness combined with their typical small size which suggests that one could easily assess their correctness this often results in incorrectly designed protocols the authors present a methodology for formally describing security protocols and their environment this methodology includes a model for describing protocols their execution model and the intruder model the models are extended with a number of well defined security properties which capture the notions of correct protocols and secrecy of data the methodology can be used to prove that protocols satisfy these properties based on the model they have developed a tool set called scyther that can automatically find attacks on security protocols or prove their correctness in case studies they show the application of the methodology as well as the effectiveness of the analysis tool the methodology's strong mathematical basis the strong separation of concerns in the model and the accompanying tool set make it ideally suited both for researchers and graduate students of information security or formal methods and for advanced professionals designing critical security protocols

adoption of bluetooth wireless technology has become ubiquitous in the last few years one of the biggest steps forward is the standardization of java apis for bluetooth wireless technology jabwt the latest updates to this standard is explained in detail in this book the jabwt standard defined by the jsr 82 java specification request supports rapid development of bluetooth applications that are portable secure and highly usable wireless device manufacturers have responded overwhelmingly to the jabwt specification by implementing jabwt applications in mobile phones and other personal wireless communications products bluetooth application programming essentials

programming with the java apis explains in detail how to write bluetooth applications using the java apis to exploit the power of both technologies written by the specification lead for jsr 82 and two other key participants in developing the standards of jabwt this book provides the authoritative explanations and concrete examples needed to get started right away this book provides embedded java developers with to the point information on the apis in the specification with detailed programmatic examples of the apis in use a new chapter on the push registry definition a new feature in the 1.1 version of jsr 82 has been added finally the new essentials version of the book will update the remaining chapters to reflect changes in the latest bluetooth spec 2.1 and the industry as a whole by focusing only on the essentials this concise resource enables software and hardware vendors to quickly develop bluetooth applications for mobile devices in an increasingly competitive market the updated material examines crucial programming areas including rfcomm obex device discovery service discovery and l2cap which allows developers to not only successfully design but master and build java apis for bluetooth wireless technology includes a new and valuable chapter that delineates the pivotal push registry feature a recent development that will help programmers avoid the common problem of connection collision by providing real world issues and problems involved in implementing the java apis specification the book allows developers to identify with the text and encourages repeated reference

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