

PREMIER REFERENCE SOURCE

# SECURING WEB SERVICES

PRACTICAL USAGE OF STANDARDS AND SPECIFICATIONS



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## **Chapter I**

Security in Service-Oriented Architecture: Issues, Standards, and Implementations /

*Srinivas Padmanabhuni and Hemant Adarkar*..... 1

Through a set of core security requirements for Web services, they discuss and compare several mechanisms available for addressing those challenges, from current standards to specifications under review. In addition, their attempt to address future trends in the domain of Web service security makes this chapter a very valuable contribution.

## **Chapter II**

A Retrospective on the Development of Web Service Specifications / *Shrideep Pallickara,*

*Geoffrey Fox, Mehmet S. Aktas, Harshawardhan Gadgil, Beytullah Yildiz, Sangyoon Oh,*

*Sima Patel, Marlon E. Pierce, and Damodar Yemme*..... 22

Shrideep Pallickara, Geoffrey Fox et al. discuss how service-oriented architectures are envisaged using Web services. They address a number of specifications and as such provide a valuable insight into some of the core elements of this book.

## **Chapter III**

Secure Web Service Composition: Issues and Architectures / *Barbara Carminati,*

*Elena Ferrari, and Patrick C. K. Hung*..... 50

Barbara Carminati et al. address the issue of Web service composition and discuss the challenges in building large applications from modular pieces of software (Web services). Focusing on dependability, the authors provide an overview of the main security requirements that must be taken into account when composing Web services. In addition, a detailed survey of the related literature and standards relevant to Web services are outlined. Finally, the authors present a proposal for a brokered architecture to support secure Web services composition.

## **Chapter IV**

High-Value B2B Interactions, Nonrepudiation, and Web Services / <i>Nick Cook, Paul Robinson, and Santosh K. Shrivastava</i> .....	71
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Nick Cook et al. tackles a specific security requirement; that of nonrepudiation, and provides a thorough discussion of the problem of making high-value business-to-business (B2B) interactions nonrepudiable. The chapter presents the design and implementation details of the authors' novel Web services-based middleware that addresses nonrepudiable interactions using existing Web service standards.

## **Chapter V**

Dynamic Delegation of Authority in Web Services / <i>David W. Chadwick</i> .....	111
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The subject of access control sets off with the contribution of David Chadwick and his chapter on dynamic delegation of access control rights. David enumerates the requirements for delegation of authority, discusses the various implementation and architectural models, and finally highlights the essential elements of such an approach. David's authority and expertise in the field make this chapter one of the most valuable contribution of the book.

## **Chapter VI**

A Policy-Based Authorization Framework for Web Services: Integrating X-GTRBAC and WS-Policy / <i>Rafae Bhatti, Daniel Sanz, Elisa Bertino, and Arif Ghafoor</i> .....	138
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Rafae Bhatti et al., from IBM's Almaden Research Center, describe, and at the same time defend their effort at defining a new access control policy description language for Web services. They make use of some of the current Web services standards and show how their effort can be integrated with existing technologies such as WS-Policy to provide a robust, fine grained mechanism for access control.

## **Chapter VII**

Description of Policies Enriched by Semantics for Security Management / <i>Félix J. García Clemente, Gregorio Martínez Pérez, Juan A. Botía Blaya, and Antonio F. Gómez Skarmeta</i> .....	162
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Clemente et al. provides an evaluation of the ongoing efforts to use semantically rich ontological languages to represent policies for distributed systems, while at the same time highlighting the architectural considerations and implementation aspects of those efforts.

## **Chapter VIII**

Using SAML and XACML for Web Service Security and Privacy / <i>Tuncay Namli and Asuman Dogac</i> .....	182
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Asuman Dogac et al. concludes the access control part of the book with what is probably the most widely used of the Web Service standards, namely XACML and SAML. The authors demonstrate how they can be combined to provide an overall authentication and authorization mechanism and at the same time discuss their pros and cons.

## **Chapter IX**

Protecting ASP.NET Web Services / <i>Konstantin Beznosov</i> .....	206
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Konstantin Beznosov presents an experience report on designing and implementing an architecture for protecting enterprise-grade Web service applications hosted by ASP.NET. Kosta deploys his invaluable insight into .NET security mechanisms to discuss design patterns and best practices for constructing flexible and extensible authentication and authorization logic for .NET Web Services.

## **Chapter X**

Building Innovative, Secure, and Interoperable E-Government Services / <i>A. Kaliontzoglou, T. Karantjias, and D. Polemi</i> .....	228
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Kaliontzoglou et al. discusses a particular domain, that of e-government, and in this light the authors outline specific requirements for e-government services, interoperability, and security. Their chapter presents three innovative e-government architecture and implementation strategies based on Web service technologies, focusing on their security and interoperability aspects.

## **Chapter XI**

Grid Business Process: Case Study / <i>Asif Akram, Rob Allan, Sanjay Chaudhary, Prateek Jain, and Zakir Laliwala</i> .....	257
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Asif Akram presents an industrial-based case study that provides a pragmatic test bed for evaluating Web service technologies against emerging GRID scenarios. The author discusses issues such as state-full interactions, interoperability, integration, and others.

## **Chapter XII**

Combining Web Services and Grid Services: Practical Approaches and Implications to Resource Discovery / <i>Aisha Naseer and Lampros K. Stergioulas</i> .....	298
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Aisha Naseer and Lampros Stergioulas discuss infrastructural aspects of GRID computing and argue that Grids should be developed using the underlying Web infrastructure, and GRID services should be integrated with Web Services using inheritance techniques to produce Grid-supported Web services.

## **Chapter XIII**

Approaches and Best Practices in Web Service Style, XML Data Binding, and Validation: Implications to Securing Web Services / <i>David Meredith and Asif Akram</i> .....	318
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David Meredith addresses message level reliability by providing a lot of valuable technical details on WSDL interface style, strength of data typing, and approach to data binding and validation to demonstrate how these have important implications on application security (and interoperability). David shows how these Web service styles and implementation choices must be carefully considered and applied correctly by providing implementation examples and best practice recommendations.

## **Chapter XIV**

Enhancing Web Service Discovery and Monitoring with Quality of Service Information / <i>Christian Platzter, Florian Rosenberg, and Schahram Dustdar</i> .....	345
Christian Platzter et al. raise quality of service-related concerns. Focusing on general Web services dependability issues while leveraging his expertise and experience in distributed computing, his chapter deals with the various ways of describing, bootstrapping, and evaluating QoS attributes. The chapter addresses a way to bootstrap the most important performance and dependability values.	
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