

## The Competitive Internet Service Provider. Network Architecture, Interconnection, Traffic Engineering and Network Design. Wiley Series on Communications Networking & Distributed Systems

**Description:** Due to the dramatic increase in competition over the last few years, it has become more and more important for Internet Service Providers (ISPs) to run an efficient business and offer an adequate Quality of Service. The Competitive Internet Service Provider is a comprehensive guide for those seeking to do just that.

Oliver Heckmann approaches the issue from a system point of view, looking not only at running a network, but also at connecting the network with peering and transit partners or planning the expansion of the network.

The Competitive Internet Service Provider:

- Offers an advanced reference on the topic, drawing on state-of-the art research in network technology.
- Clearly defines the criteria enabling ISPs to operate with the greatest efficiency and deliver adequate Quality of Service.
- Discusses the implications of the future multiservice Internet and multimedia applications such as Voice over IP, peer-to-peer, or network games.
- Delivers a comparative evaluation of different feasible Quality of Service approaches.
- Explores scientific methods such as queuing theory, network calculus, and optimization theory.
- Illustrates concepts throughout with mathematical models and simulations.

This invaluable reference will provide academic and industrial researchers in the field of network and communications technology, graduate students on telecommunications courses, as well as ISP managers, engineers and technicians, equipment manufacturers and consultants, with an understanding of the concepts and issues involved in running a successful ISP.

**Contents:** Foreword.  
List of Figures.  
List of Tables.  
List of Abbreviations.  
Part I Introduction and Basics.  
1 Introduction.  
1.1 Motivation.  
1.2 Efficiency and Quality of Service.  
1.3 Action Space and Approach.  
1.4 Overview.  
2 Internet Service Providers.  
2.1 A Classification Model for ISPs.  
2.2 Classification of Selected Providers.  
2.3 Summary and Conclusions.

3 Performance Analysis Basics.

3.1 Queueing Theory.

3.2 Network Calculus.

3.3 Optimisation Techniques.

3.4 Summary and Conclusions.

4 Internet Protocols.

4.1 The Internet Protocol Stack.

4.2 Summary and Conclusions.

5 Applications.

5.1 World Wide Web.

5.2 Peer-to-Peer Applications.

5.3 Online Games.

5.4 Voice over IP.

5.5 Traffic Classification.

5.6 Summary and Conclusions.

Part II Network Architecture.

6 Network Architecture Overview.

6.1 Introduction.

6.2 Quality of Service Architectures.

6.3 Data Forwarding Architecture.

6.4 Signalling Architecture.

6.5 Security Architecture.

6.6 Admission Control.

6.7 Summary and Conclusions.

7 Analytical Comparison of Quality of Service Systems.

7.1 On the Benefit of Admission Control.

7.2 On the Benefit of Service Differentiation.

8 Experimental Comparison of Quality of Service Systems.

8.1 QoS Systems.

8.2 Experiment Setup.

8.3 Per-flow versus Per-class Scheduling.

8.4 Central versus Decentral Admission Control.

8.5 Direct Comparison.

8.6 Summary and Conclusions.

Part III Interconnections.

9 Interconnections Overview.

9.1 A Macroscopic View on Interconnections.

9.2 A Microscopic View on Interconnections.

9.3 Interconnection Method.

9.4 Interconnection Mix.

9.5 Summary and Conclusions.

10 Optimising the Interconnection Mix.

10.1 Costs.

10.2 Reliability.

10.3 Quality of Service.

10.4 Environment Changes.

10.5 Summary and Conclusions.

Part IV Traffic and Network Engineering.

11 Traffic and Network Engineering Overview.

11.1 Network Design and Network Engineering.

11.2 Traffic Engineering.

11.3 Traffic Matrix Estimation.

11.4 Summary and Conclusions.

12 Evaluation of Traffic Engineering.

12.1 Traffic Engineering Performance Metrics.

12.2 Traffic Engineering Strategies.

12.3 Experiment Setup.

12.4 Explicit Routing versus Path Selection.

12.5 Performance Evaluation.

12.6 Singlepath versus Multipath.

12.7 Influence of the Set of Paths.

12.8 Summary and Conclusions.

13 Network Engineering.

13.1 Quality of Service Systems and Network Engineering.

13.2 Capacity Expansion.

13.3 On the Influence of Elastic Traffic.

13.4 Summary and Conclusions.

Part V Appendices.

A Topologies Used in the Experiments.

B Experimental Comparison of Quality-of-service Systems.

C Analytical Comparison of Interconnection Methods.

C.1 Internet Exchange Point Cost Models.

C.2 Cost Efficiency of an Internet Exchange Point.

C.3 LAN versus MAN IXP Structure.

D Elasticity of Traffic Matrices – Network Models.

D.1 Basic Model.

D.2 Discrete Service Times.

D.3 Self-similar Traffic.

D.4 Related Work.

References.

Index.

Ordering: Order Online - <http://www.researchandmarkets.com/reports/2169291/>

Order by Fax - using the form below

Order by Post - print the order form below and send to

Research and Markets,  
Guinness Centre,  
Taylors Lane,  
Dublin 8,  
Ireland.

## Fax Order Form

To place an order via fax simply print this form, fill in the information below and fax the completed form to 646-607-1907 (from USA) or +353-1-481-1716 (from Rest of World). If you have any questions please visit

<http://www.researchandmarkets.com/contact/>

## Order Information

Please verify that the product information is correct.

Product Name: The Competitive Internet Service Provider. Network Architecture, Interconnection, Traffic Engineering and Network Design. Wiley Series on Communications Networking & Distributed Systems

Web Address: <http://www.researchandmarkets.com/reports/2169291/>

Office Code: SC93JQTR

## Product Format

Please select the product format and quantity you require:

**Quantity**

Hard Copy (Hard Back):  USD 156 + USD 28 Shipping/Handling

\* Shipping/Handling is only charged once per order.

## Contact Information

Please enter all the information below in **BLOCK CAPITALS**

Title: Mr  Mrs  Dr  Miss  Ms  Prof

First Name: \_\_\_\_\_ Last Name: \_\_\_\_\_

Email Address: \* \_\_\_\_\_

Job Title: \_\_\_\_\_

Organisation: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_

Postal / Zip Code: \_\_\_\_\_

Country: \_\_\_\_\_

Phone Number: \_\_\_\_\_

Fax Number: \_\_\_\_\_

\* Please refrain from using free email accounts when ordering (e.g. Yahoo, Hotmail, AOL)

**Payment Information**

Please indicate the payment method you would like to use by selecting the appropriate box.

Pay by credit card: You will receive an email with a link to a secure webpage to enter your credit card details.

Pay by check: Please post the check, accompanied by this form, to:  
Research and Markets,  
Guinness Center,  
Taylors Lane,  
Dublin 8,  
Ireland.

Pay by wire transfer: Please transfer funds to:

Account number	833 130 83
Sort code	98-53-30
Swift code	ULSBIE2D
IBAN number	IE78ULSB98533083313083
Bank Address	Ulster Bank, 27-35 Main Street, Blackrock, Co. Dublin, Ireland.

If you have a Marketing Code please enter it below:

Marketing Code: \_\_\_\_\_

Please note that by ordering from Research and Markets you are agreeing to our Terms and Conditions at <http://www.researchandmarkets.com/info/terms.asp>

**Please fax this form to:**  
**(646) 607-1907 or (646) 964-6609 - From USA**  
**+353-1-481-1716 or +353-1-653-1571 - From Rest of World**