After many years of hype, the promise of true multi-service networks with any media, anywhere, and any time connectivity is on the verge of becoming a reality. Advances in photonics allow 400 Gbps on a single fiber strand in commercial products today and Tb/s capacity is on the horizon. A single fiber optics cable can now bundle 432 fibers. Each such cable can carry the daily volume of the total wide area traffic in the whole world in 60 seconds! Similarly, advances in electronics permit switches and routers with capacities in the range of several hundred Gbps, and Tb/s switches are approaching soon. New access technologies using copper loop, hybrid fiber-coax (HFC), hybrid fiber wireless, and fiber-to-the home (FTTH) are promising several hundred Kbps to Gbps access, thus relieving the curse of the ‘last mile’ for residential and small business users. Improvements in wireless technologies and capacities are nothing short of revolutionary. Of course, it is the intelligence of the humans that is exploiting these advances to bring new software, user interfaces, signal processing algorithms, protocols, and traffic controls to introduce exciting new services with ever decreasing cost and increasingly more user friendly access.

Over a billion users are connected to the global public telephone network. Starting from almost nothing in 1990, we have over 200 million cellular users and close to 100 million Internet hosts. And these numbers, especially for the last two, are growing at a phenomenal pace. Services once considered in the realm of science fiction are becoming common place and new ones are being introduced every day.
The future is certainly here. Of even greater importance, what is future today is becoming past in just a few months. We are in an era of tremendous excitement for professionals working in many aspects of the converging networking, information retailing, entertainment, and publishing industries. If the reactions of the end users and financial community in the last two years are any guide, this excitement is shared by both.

With this backdrop, it is a pleasure to welcome you to INFOCOM’99 in Sheraton Hotel, New York City. For many years, INFOCOM has been a premier conference bringing state-of-the-art research and applications related to networking and information technologies to the academic and industrial audience. The 1999 version has a very exciting technical program consisting of 184 very high quality papers, 8 tutorials and 4 panels on exciting current topics, and a keynote talk reflecting the commercial success of packet networking and issues it is raising on pricing strategies. We could not have had a better venue. This financial capital of the world has not only welcomed the arrival of the networking future, it has also become a premier user community. Of course, New York City continues to offer great entertainment and dining. The conference hotel is within walking distance of Broadway shows, Rockefeller Center, and fine restaurants. The conference Web site (http://www.comm.utoronto.ca/~infocom99/) describes a myriad of exciting places to see and enjoy. Recent efforts have made this exciting city cleaner and safer. I hope you will extend your stay to enjoy both the conference and the city.
We are proud to present to you the technical program of the IEEE INFOCOM'99. Of course, the main credit goes to the authors who contributed their work to the conference. They are the ones who set the standard of quality that INFOCOM enjoys. The technical program committee (which consisted of 71 members representing over 10 countries and drawn from academia, industry, and government) helped us go through 573 papers of which we selected 184 that were included in the final technical program. Collectively we are grateful to the several hundred reviewers who responded to our call for help and assisted with the evaluation of the papers.

The contributions to the conference came from 32 countries. In the final program 20 of these countries are represented. There is also a healthy mix of contributions from universities, industry, and government laboratories.

We selected as the "theme" of this year's INFOCOM the motto "The Future is Now." We did this because we believed that networking has come of age and does not represent exotic or futuristic technologies anymore. It is in the mainstream of everyday life and affects directly millions of people around the world. The maturation of our technology is evidenced by the composition of the program. In addition to the traditional areas that represent the basis of networking (such as traffic management, protocols, switching, etc.) we see an increasing presence of new application areas such as wireless networks, active networks, pricing issues, and others. In particular, the problems of pricing (and related economic issues) are very timely and
topical, especially as we gather in New York City which is in a sense the financial capital of the
world. To highlight this convergence we featured a keynote address by Professor Pravin Varaiya
of the University of California, Berkeley, on questions of service pricing and a preconference
tutorial by Paul Stripe of Reuters Information Technology, Inc. again on economic issues that
relate to networks.

Our approach this year has been to integrate the tutorials and panel discussions with the technical
sessions and to adopt a flat technical program committee structure. Thus, we worked closely
with the tutorial and panel chairs in selecting topics and individuals and we conducted the review
process by fielding out each paper to a member of the technical program committee, who, then
obtained three external reviews from experts of his/her choice. Based on these reviews and on
his/her own reading of the paper, the TPC member made a recommendation to accept, reject, or
discuss the paper. To provide an additional check and balance we had each paper reviewed by an
additional TPC member who made an independent accept, reject, or discuss recommendation.
On October 24, 25 of 1998, 41 of the 71 committee members joined us in College Park, MD for
a final grueling review of the papers and came up with final recommendations. It was, of course,
our responsibility to make the final decisions and we followed the committee's recommendations
in all but a handful of cases. We believe that such a rigorous review process is the best guarantee
for the maintenance of the highest standard of quality.

There was a great deal of hard work involved in this process but in the end it was an enjoyable
experience. It would be a terrible omission if we did not, from this forum, acknowledge the
invaluable help (and concurrent intense work) by Professor Henning Schulzrinne of Columbia
University who was responsible for developing the elaborate software that enabled us to handle
the entire submission and review process electronically. The system he has developed will
actually form the basis not only for future INFOCOMs but for many other meetings and
conferences across IEEE. We wish you well for next year Henning! The technical program of
INFOCOM "2000" is in the able hands of him and of his co-chair, Rafael Rom. Again, our
thanks to all who helped us put the program together and our warmest welcome to the
participants in the conference and to the readers of these proceedings.
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# Table of Contents

## Volume 1 Tuesday

### Session 1A: Mobile IP and Tracking

Enhancing Survivability of Mobile Internet Access Using Mobile IP with Location Registers ........................................... 3  
*R. Jain, T. Raleigh, D. Yang, L. F. Chang, C. Graff, M. Bereschinsky, and M. Patel*

Mobile Internet Telephony: Mobile Extensions to H.323 ................................................................. 12  
*W. Liao*

A New Mobility Model and Its Application in the Channel Holding Time Characterization in  
PCS Network ............................................................................................................................... 20  
*Y. Fang and I. Chlamtac*

Cell Identification Codes for Tracking Mobile Users ........................................................................ 28  
*Z. Naor and H. Levy*

### Session 1B: Traffic Regulation and Specification

Stochastically Bounded Burstiness for Communication Networks ...................................................... 36  
*D. Starobinski and M. Sidi*

Deterministic Traffic Specification via Projections under the Min-Plus Algebra .................................. 43  
*C.-S. Chang*

Network Traffic Characterization Using Token Bucket Model .......................................................... 51  
*P. P. Tang and T.-Y. C. Tai*

A Time Varying Filtering Theory for Constrained Traffic Regulation and Dynamic Service Guarantees ...... 63  
*C.-S. Chang and R. L. Cruz*

### Session 1C: Routing and Reconfiguration

Optimization Algorithms for Large Self-Structuring Networks .......................................................... 71  
*R. Krishnan, R. Ramanathan, and M. Steenstrup*

Hop-by-Hop Routing with Node-Dependent Topology Information ................................................. 79  
*V. Fayet, D. A. Khotimsky, and T. Przygienda*

Constructing Optimal IP Routing Tables ........................................................................................ 88  
*R. P. Draves, C. King, S. Venkatachary, and B. D. Zill*

SUBMARINE: An Architecture for IP Routing over Large NBMA Networks .................................... 98  
*A. G. Lauck, C. R. Kalmanek, and K. K. Ramakrishnan*

### Session 1D: Web Caching

Performance of Web Proxy Caching in Heterogeneous Bandwidth Environments ................................ 107  
*A. Feldmann, R. Cá ceres, F. Douglas, G. Glass, and M. Rabinovich*
Cache-Based Compaction: A New Technique for Optimizing Web Transfer ........................................117
M. C. Chan and T. Y. C. Woo

Web Caching and Zipf-like Distributions: Evidence and Implications ........................................126
L. Breslau, P. Cao, L. Fan, G. Phillips, and S. Shenker

Design and Performance of a Web Server Accelerator .................................................................135
E. Levy-Abegnoli, A. Iyengar, J. Song, and D. Dias

Session 1E: Modeling, Analysis, and Traffic Control

Dynamic Partitioning: A Mechanism for Shared-Memory Management ..................................144
S. Krishnan, A. K. Choudhury, and F. M. Chiussi

Performance Evaluation and Dimensioning for AAL2 CLAD ..................................................153
H. Saito

Automatic Fault Detection and Recovery in Real Time Switched Ethernet Networks ................161
S. Varadarajan and T.-C. Chiueh

Approximation Capability of Independent Wavelet Models to Heterogeneous Network Traffic ....170
C. Ji, S. Ma, and X. Tian

Session 2A: Ad-Hoc Networks

A Reliable, Efficient Topology Broadcast Protocol for Dynamic Networks ..................................178
B. Bellur and R. G. Ogier

TDMA Scheduling Design of Multihop Packet Radio Networks Based on Latin Squares ........187
J.-H. Ju and V. Li

Hop Reservation Multiple Access (HRMA) for Ad-Hoc Networks ............................................194
Z. Tang and J. J. Garcia-Luna-Aceves

CEDAR: a Core-Extraction Distributed Ad Hoc Routing Algorithm ........................................202
P. Sinha, R. Sivakumar, and V. Bharghavan

Session 2B: Performance Measurement and Estimation

An Architecture for a Global Internet Host Distance Estimation Service ................................210

Origins of Internet Routing Instability .................................................................218
C. Lubovitz, G. R. Malan, and F. Jahanian

Estimation and Removal of Clock Skew from Network Delay Measurements .....................227
S. B. Moon, P. Skelly, and D. Towsley

Measuring Bandwidth .................................................................................................235
K. Lai and M. Baker
Session 2C: Multicast Resource Allocation

Optimal Partition of QoS Requirements on Unicast Paths and Multicast Trees .............................................. 246
D. H. Lorenz and A. Orda

Bandwidth Allocation Policies for Unicast and Multicast Flows ................................................................................ 254
A. Legout, J. Nonnenmacher, and E. W. Biersack

Resource Allocation in a Multicast Tree ................................................................................................................. 262
M. Kodialam and S. H. Low

Optimal Broadcasting of Two Files over an Asymmetric Channel ................................................................. 267
A. Bar-Noy and Y. Shilo

Session 2D: High Performance Web Service

Accessing Multiple Mirror Sites in Parallel: Using Tornado Codes to Speed Up Downloads .............................. 275
J. W. Byers, M. Luby, and M. Mitzenmacher

Efficient Algorithms for Predicting Requests to Web Servers ............................................................................. 284
E. Cohen, B. Krishnamurthy, and J. Rexford

A Scalable System for Consistently Caching Dynamic Web Data .................................................................... 294
J. Challenger, A. Iyengar, and P. Dantzig

Performance Characteristics of Mirror Servers on the Internet ......................................................................... 304
A. Myers, P. Dinda, and H. Zhang

Session 2E: Reconfiguration and Blocking in WDM Networks

Dynamic Reconfiguration Policies for WDM Networks ......................................................................................... 313
I. Baldine and G. N. Rouskas

Blocking in Wavelength Routing Networks, Part I: The Single Path Case ......................................................... 321
Y. Zhu, G. N. Rouskas, and H. G. Perros

Computing Approximate Blocking Probabilities in Wavelength Routed All-Optical Networks with Limited-Range Wavelength Conversion ........................................................................... 329
T. Tripathi and K. Sivarajan

Photonic Rearrangeable Networks with Zero Switching-Element Crosstalk .................................................... 337
A. Pattavina and G. Maier

Session 3A: Traffic Measurement and Inference

Measurement and Modeling of the Temporal Dependence in Packet Loss .................................................. 345
M. Yajnik, S. B. Moon, J. Kurose, and D. Towsley

Inference of Multicast Routing Trees and Bottleneck Bandwidths Using End-to-end Measurements ............. 353
S. Ratnasamy and S. McCanne

Classifying Loss Rates in Broadband Networks ................................................................................................. 361
T. Brown
Multicast-Based Inference of Network-Internal Characteristics: Accuracy of Packet Loss Estimation ........371
R. Caceres, N. G. Duffield, J. Horowitz, D. Towsley, and T. Bu

Session 3B: Panel - The Value/Future of Quantitative Modeling and Analysis
Ted Eckberg (Lucent)

Session 3C: Scheduling
Minimizing End-to-End Delay in High-Speed Networks with a Simple Coordinated Schedule ...............380
M. Andrews and L. Zhang
Efficient Fair Queueing for ATM Networks Using Uniform Round Robin ........................................................389
N. Matsufuru and R. Aibara
Generalised Minimum Queuing Delay: An Adaptive Multi-Rate Service Discipline for ATM Networks ......398
H.-T. Ngin, C.-K. Tham, and W. S. Soh

Quality of Service Driven Packet Scheduling Disciplines for Real-Time Applications: Looking Beyond Fairness ...........................................................................................................405
D. Hayes, M. Rumsewicz, and L. L. H. Andrew

Volume 2 Wednesday

Session 4A: TCP: Wireless and Flow Control
Link Layer Enhancements for TCP/IP over GSM ................................................................................................415
R. Ludwig and B. Rathonyi
A Model for Window Based Flow Control in Packet-Switched Networks .......................................................423
X. Yang
Using Back-Pressure to Improve TCP Performance with Many Flows ..........................................................431
C. M. Pazos, J. C. Sanchez-Agrelo, and M. Gerla
TCP and UDP Performance over a Wireless LAN ............................................................................................439
G. Xylomenos and G. C. Polyzos

Session 4B: Multimedia Traffic Smoothing
An Effective and Efficient Traffic Smoothing Scheme for Delivery of Online VBR Media Streams ..........447
R.-I. Chang, M.-C. Chen, J.-M. Ho, and M.-T. Ko
Optimal Multicast Smoothing of Streaming Video over an Internetwork .......................................................455
S. Sen, D. Towsley, Z.-L. Zhang, and J. Dey
Periodic Broadcasting with VBR-Encoded Video ............................................................................................464
D. Saparilla, K. W. Ross, and M. Reisslein
Efficient Selective Frame Discard Algorithms for Stored Video Delivery across Resource Constrained Networks .............................................................................................................472
Z.-L. Zhang, S. Nelakuditi, R. Aggarwal, and R. P. Tsang
Session 4C: Routing and Topology

Virtual Private Networks: Joint Resource Allocation and Routing Design ................................................................. 480
D. Mitra, J. A. Morrison, and K. G. Ramakrishnan

Virtual Path Network Topology Optimization Using Random Graphs ................................................................. 491
A. Farago, I. Chlamtac, and S. Basagni

A Decentralized Model for Virtual Path Capacity Allocation ............................................................................... 497
S. H. Rhee and T. Konstantopoulos

Bounds on the Performance of Admission Control and Routing Policies for General Topology Networks with Multiple Call Classes ................................................................. 505
A. Dasylva and R. Srikant

Session 4D: Communication Protocols and Software

Techniques for Optimizing CORBA Middleware for Distributed Embedded Systems ........................................... 513
A. Gokhale and D. C. Schmidt

A Signaling Protocol for Structured Resource Allocation ............................................................................... 522
P. Chandra, A. Fisher, and P. Steenkiste

Interoperation of Copy Avoidance in Network and File I/O ............................................................................... 534
J. C. Brustoloni

HPF: A Transport Protocol for Heterogeneous Packet Flows in the Internet ........................................................... 543
J.-R. Li, S. Ha, and V. Bharghavan

Session 4E: Jitter Control and Effects

Cell Loss Asymptotics in Priority Queues Accessed by a Large Number of Independent Stationary Sources .................................................................................. 551
S. Delas, R. R. Mazumdar, and C. Rosenberg

Network Modeling and Jitter Control for Multimedia Communication over Broadband Network ................................ 559
A. Bashandy, E. Chong, and A. Ghafoor

Performance of the GFR-Service with Constant Available Bandwidth ........................................................................ 567
N. Vicari and R. Schedel

End-to-End Jitter Analysis in Networks of Periodic Flows ............................................................................... 575
K. Sohraby and A. Privalov

Session 5A: Channel Allocation

Distributed Fault-Tolerant Channel Allocation for Mobile Cellular Networks ........................................................... 584
G. Cao and M. Singhal

Distributed Wireless Channel Allocation in Networks with Mobile Base Stations .................................................. 592
S. Nesargi and R. Prakash
A Centralized Approach to Dynamic Channel Assignment in Wireless ATM LANs .............................................601
G. F. Marias, D. Skyrianoglou, and L. Merakos

Channel Sharing Scheme for Packet-Switched Cellular Networks .................................................................609
S. Kalyanasundaram, J. Li, E. K. P. Chong, and N. B. Shroff

Session 5B: Queues and Long-Range Dependence

Queueing Analysis of High-Speed Multiplexers including Long-Range Dependent Arrival Processes ..........617
J. Choe and N. B. Shroff

Network Multiplexer with Truncated Heavy-Tailed Arrival Streams ..............................................................625
P. Jelenkovic

Asymptotic Behavior of a Discrete-Time Queue with Long Range Dependent Input ...........................................633
T. Daniëls and C. Blondia

Queue-Length Distributions for Multi-Priority Queueing Systems ...............................................................641
J. Daigle and M. Roughan

Session 5C: QoS Routing

Supporting Dynamic Inter-Class Resource Sharing: A Multi-Class QoS Routing Algorithm ..........................649
Q. Ma and P. Steenkiste

A New Approach to Routing with Dynamic Metrics .........................................................................................661
J. Chen, P. Druschel, and D. Subramanian

Crankback Prediction in Hierarchical ATM Networks ......................................................................................671
E. Felstaine, R. Cohen, and O. Hadar

Implementation and Performance Measurements of QoS Routing Extensions to OSPF .................................680
G. Apostolopoulos, R. Guérin, and S. Kamat

Session 5D: Security

Key Management for Secure Internet Multicast Using Boolean Function Minimization Techniques ............689
I. Chang, R. Engel, D. Kandlur, D. Pendarakis, and D. Saha

User-Friendly Access Control for Public Network Ports ..............................................................................699
G. Appenzeller, M. Roussopoulos, and M. Baker

Multicast Security: A Taxonomy and Some Efficient Constructions ............................................................708
R. Canetti, J. Garay, G. Itkis, D. Micciancio, M. Naor, and B. Pinkas

G. Apostolopoulos, V. Peris, and D. Saha

Session 5E: WDM Networks

Survivable Networks Based on Optimal Routing and WDM Self-Healing Rings .............................................726
A. Fumagalli, I. Cerutti, M. Tacco, F. Masetti, R. Jagannathan, and S. Alagar
Combined WDM and SONET Network Design ................................................................. 734
O. Gerstel, P. Lin, and G. Sasaki

Survivable WDM Mesh Networks, Part I – Protection .................................................. 744
S. Ramamurthy and B. Mukherjee

WDM Loop-back Recovery in Mesh Networks ............................................................... 752
M. Medard, S. G. Finn, and R. Barry

Session 6A: Multi-Access and Wireless Routing

Reliable Multicast in Multi-Access Wireless LANs ....................................................... 760
J. Kuri and S. Kasera

The Sound of Silence: Guessing Games for Saving Energy in Mobile Environment ........................................... 768
S. Dolev, E. Korach, and D. Yukelson

Spread Spectrum Medium Access Protocol with Collision Avoidance in Mobile Ad-hoc
Wireless Network ........................................................................................................... 776
M. Joa-Ng and I.-T. Lu

A Multicast Routing Protocol for Ad-Hoc Networks .................................................... 784
J. J. Garcia-Luna-Aceves and E. L. Madruga

Session 6B: Flow Control Theory

Utility Max-Min: An Application-Oriented Bandwidth Allocation Scheme .................. 793
Z. Cao and E. W. Zegura

Stability and Performance Analysis of Networks Supporting Services with Rate Control-Could
the Internet Be Unstable? .............................................................................................. 802
G. De Veciana, T.-J. Lee, and T. Konstantopoulos

Re-Examining Maxmin Protocols: A Fundamental Study on Convergence, Complexity, Variations,
and Performance ......................................................................................................... 811
W. K. Tsai and Y. Kim

Performance Evaluation of Congestion Phenomena in the Rate Based Flow Control Mechanism
for ABR ............................................................................................................................ 819
O. Ait-Hellal and E. Altman

Session 6C: Multicast Congestion Control

A Framework for Routing and Congestion Control in Multicast Networks ................ 827
S. Sarkar and L. Tassiulas

Scalable Flow Control for Multicast ABR Services ...................................................... 837
X. Zhang, K. G. Shin, D. Saha, and D. Kandlur

Multiple-Channel Multicast Scheduling for Scalable Bulk-Data Transport ................. 847
M. J. Donahoo, M. Ammar, and E. W. Zegura

The Loss Path Multiplicity Problem in Multicast Congestion Control ......................... 856
S. Bhattacharyya, D. Towsley, and J. Kurose
Session 6D: Pricing and Sharing

An Architecture for Noncooperative QoS Provision in Many-Switch Systems ................................................. 864
S. Chen and K. Park

The Cost of QoS Support in Edge Devices An Experimental Study ......................................................... 873
R. Gue'rin, L. Li, S. Nadas, P. Pan, and V. Peris

Best-Effort Resource Sharing by Users with QoS Requirements ............................................................... 883
I. Ben-Shahar, A. Orda, and N. Shimkin

Incentive Compatible Pricing Strategies for QoS Routing ............................................................................. 891
Y. A. Korilis and A. Orda

Session 6E: Optical Networks

Design and Analysis of an Asynchronous WDM Local Area Network Using a Master/Slave Scheduler ...... 900
E. Modiano and R. Barry

A Heuristic for Placement of Limited Range Wavelength Converters in All-Optical Networks .................. 908
K. R. Venugopal, M. Shivakumar, and P. S. Kumar

An Efficient Algorithm for Optimal Wavelength Converter Placement on Wavelength-Routed Networks with Arbitrary Topologies ................................................................. 916
S. Thiagarajan and A. Somani

All-Optical Cross-Connect Meshed-Ring Communications Networks Using a Reduced Number of Wavelengths ..................................................................................................................... 924
I. Rubin and J. Ling

Session 7A: Power Control

A Static Power Control Scheme for Wireless Cellular Networks ................................................................. 932
J. Li, N. B. Shroff, and E. K. P. Chong

CDMA Systems with Random Spreading in Fading Channels: Network Capacity and Power Control .......... 940
J. Zhang and E. K. P. Chong

A Kalman-Filter Method for Power Control in Broadband Wireless Networks ........................................... 948
K. K. Leung

Power Control for Multirate Multimedia CDMA Systems ............................................................................ 957
C. W. Sung and W. S. Wong

Session 7B: Panel - Whither Third-Generation Cellular?
David Goodman (Rutgers University)

Session 7C: Multicasting

Multicast Session Membership Size Estimation ............................................................................................. 965
T. Friedman and D. Towsley
New Dynamic SPT Algorithm Based on a Ball-and-String Model .................................................. 973
P. Narvaez, K.-Y. Siu, and H.-Y. Tzeng

Performance Trade-offs in Reliable Group Multicast Protocols .................................................. 982
S. Chen, B. Yener, and Y. Ofek

Fundamental Observations on Multicast Congestion Control in the Internet ................................. 990
S. J. Golestani and K. K. Sabnani

Panel: Can the Internet be Secured?
Peter Honeyman (Univ of Michigan)

Volume 3 Thursday

Session 8A: Wireless QoS

Quality of Service over Wireless ATM Links .................................................................................. 1003
J. G. Kim and M. Krunz

A Simple QoS Signaling Protocol for Mobile Hosts in the Integrated Services Internet ............... 1011
A. Terzis, M. Srivastava, and L. Zhang

A Framework for Call Admission Control and QoS Support in Wireless Environments ............... 1019
A. R. Aljadhai and T. F. Znati

A Framework for Design & Evaluation of Admission Control Algorithms in Multi-Service Mobile Networks .................................................................................................................. 1027
R. Jain and E. W. Knightly

Session 8B: Connection Admission Control

Performance Analysis of a Priority Based ATM Multiplexer with Correlated Arrivals .................... 1036
R. Jafari and K. Sohraby

Efficient Bandwidth Allocation and Call Admission Control for VBR Service Using UPC Parameters ...... 1044
D. Wu and H. J. Chao

Regulation of a Connection Admission Control Algorithm ............................................................. 1053
T. Kurz, P. Thiran, and J.-Y. Le Boudec

 Guaranteeing Statistical QoS to Regulated Traffic: The Single Node Case ...................................... 1061
M. Reisslein, K. W. Ross, and S. Rajagopal

Session 8C: Multicast Trees

A Rearrangeable Algorithm for the Construction of Delay-Constrained Dynamic Multicast Trees .......... 1073
R. S. Ragahvan, G. Manimaran, and C. S. R. Murthy

Self Organizing Hierarchical Multicast Trees and Their Optimization ............................................ 1081
F. Baccelli, D. Kofman, and J.-L. Rougier
A Dynamic Bootstrap Mechanism for Rendezvous-based Multicast Routing .................................................. 1090
D. Estrin, M. Handley, A. Helmy, P. Huang, and D. Thaler

Ring versus Tree Embedding for Real-time Group Multicast ................................................................. 1099
M. Baldi and Y. Ofek

Session 8D: Protocols and Active Networks

The ENTRAPID Protocol Development Environment ........................................................................... 1107
X. W. Huang, R. Sharma, and S. Keshav

Active Networking Services for Wired/Wireless Networks .................................................................. 1116
A. B. Kulkarni and G. J. Minden

PLANet: An Active Internetwork .............................................................................................................. 1124
M. Hicks, J. T. Moore, D. S. Alexander, C. A. Gunter, and S. M. Nettles

A Simple Methodology for Constructing an Extensible and High-Fidelity TCP/IP Network Simulators ...... 1134
S. Y. Wang and H. T. Kung

Session 8E: Switching and Buffer Management

Integrated Scheduling of Unicast and Multicast Traffic in an Input-Queued Switch ................................. 1144
M. Andrews, S. Khanna, and K. Kumaran

Input-Queued Switching with QoS Guarantees ......................................................................................... 1152
S. Li and N. Ansari

Weighted Fair Early Packet Discard at an ATM Switch Output Port ....................................................... 1160
A. Rácz, G. Fodor, and Z. Turání

Matching Output Queueing with a Combined Input Output Queued Switch ........................................... 1169
S.-T. Chuang, A. Goel, N. McKeown, and B. Prabhakar

Session 9A: Handoffs and Mobility

A Study of a Channel Sharing Scheme in Wireless Cellular Networks Including Handoffs .................... 1179
J. Li, N. B. Shroff, and E. K. P. Chong

Performance Evaluation of Variable Reservation Policies for Hand-Off Prioritization in Mobile Networks 1187
M. Oliver and J. Borràs

Performance Analysis on Path Rerouting Algorithms for Handoff Control in Mobile ATM Networks ........ 1195
J. Li, R. Yates and D. Raychaudhuri

Resource Allocation during Handoff through Dynamic Schemes for Mobile Multimedia Wireless Networks ............................................................................................................................. 1204
P. Ramanathan, K. M. Sivalingam, P. Agrawal, and S. Kishore

Session 9B: Scheduling and Congestion Control

Stochastic Bounds on Delays of Fair Queueing Algorithms ....................................................................... 1212
N. Pekergin
Design of Generalized Processor Sharing Schedulers Which Statistically Multiplex Heterogeneous QoS Classes ................................................................. 1220
A. Elwalid and D. Mitra

The Stability of a Flow Merge Point with Non-Interleaving Cut-Through Scheduling Disciplines ................ 1231
A. L. Stolyar and K. K. Ramakrishnan

Traffic Equivalence and Substitution in a Multiplexer .............................................................. 1239
C. Courcoubetis, A. Dimakis, and G. D. Stamoulis

Session 9C: Reliable Multicast

Improving Reliable Multicast Using Active Parity Encoding Services (APES) ........................................ 1248
D. Rubenstein, S. Kasera, D. Towsley, and J. Kurose

Search Party: Using Randomcast for Reliable Multicast with Local Recovery .................................... 1256
A. Costello and S. McCanne

MTCP: Scalable TCP-like Congestion Control for Reliable Multicast ........................................... 1265
I. Rhee, N. Balaguru, and G. N. Rouskas

IRMA: A Reliable Multicast Architecture for the Internet .......................................................... 1274
K.-W. Lee, S. Ha, and V. Bharghavan

Session 9D: Web Delivery Mechanism

On the Optimal Placement of Web Proxies in the Internet ..................................................... 1282
B. Li, M. J. Golin, G. F. Italiano, X. Deng, and K. Sohraby

Globally Progressive Interactive Web Delivery ........................................................................... 1291
J. M. Gilbert and R. W. Brodersen

Bandwidth Modeling for Network-Aware Applications ................................................................... 1300
J. Bolliger, T. Gross, and U. Hengartner

Proxy Prefix Caching for Multimedia Streams ........................................................................ 1310
S. Sen, J. Rexford, and D. Towsley

Session 9E: TCP-Stability

A Self-configuring RED Gateway .............................................................................................. 1320
W.-C. Feng, D. Kandlur, D. Saha, and K. G. Shin

Fairness and Stability of Congestion Control Mechanisms of TCP ........................................ 1329
G. Hasegawa, M. Murata, and H. Miyahara

RAP: An End-to-End Rate-Based Congestion Control Mechanism for Realtime Streams in the Internet .... 1337
R. Rejaie, M. Handley, and D. Estrin

SRED: Stabilized RED ........................................................................................................... 1346
T. J. Ott, T. V. Lakshman, and L. H. Wong
Session 10A: Wireless Networks

Bounding the Performance of Dynamic Channel Allocation with QoS Provisioning for Distributed Admission Control in Wireless Networks ......................................................... 1356
X. Tian and C. Ji

Measurement-Based Band Allocation in Multiband CDMA ......................................................... 1364
L. L. Andrew

A Reduced Complexity Decoding Scheme for Wireless Applications ......................................... 1372
M. Sajadieh and F. Kschischang

Predictive Distance-Based Mobility Management for PCS Networks ....................................... 1377
B. Li and Z. J. Haas

Session 10B: Bandwidth Sharing

Simple Performance Models of Differentiated Services Schemes for the Internet ......................... 1385
M. May, J. C. Bolot, A. Jean-Marie, and C. Diot

Bandwidth Sharing: Objectives and Algorithms ...................................................................... 1395
L. Massoulié and J. Roberts

Inter-Class Resource Sharing using Statistical Service Envelopes ............................................. 1404
J. Qiu and E. W. Knightly

Fair Bandwidth Sharing among Adaptive and Non-Adaptive Flows in the Internet .................... 1412
F. M. Anjum and L. Tassiulas

Session 10C: IP Routing

High Performance IP Routing Table Lookup using CPU Caching .......................................... 1421
T.-C. Chiueh and P. Pradhan

A Fast IP Routing Lookup Scheme for Gigabit Switching Routers .......................................... 1429
N.-F. Huang, S.-M. Zhao, J.-Y. Pan, and C.-A. Su

Optimal Routing Table Design for IP Address Lookups Under Memory Constraints ............... 1437
G. Cheung and S. McCanne

Session 10D: Internet Control

A Framework for Management and Control of Distributed Applications Using Agents and IP-Multicast ........................................................................................................... 1445
P. Parnes, K. Synnes, and D. Schefstrom

Adaptive FEC-Based Error Control for Internet Telephony ...................................................... 1453
J.-C. Bolot, S. Fosse-Parisis, and D. Towsley

A Client Oriented, IP Level Redirection Mechanism .................................................................. 1461
S. Gupta and A. L. N. Reddy

End-to-end Transmission Control Mechanisms for Multiparty Interactive Applications on the Internet .... 1470
L. Gautier, C. Diot, and J. Kurose
**Session 10E: Routing and Multiprotocol over ATM**

Performance Evaluation of ATM Shortcut Connections in Overlaid IP/ATM Networks ........................................1480  
V. Firoiu, J. Kurose, and D. Towsley

A Flexible Rerouting Protocol in ATM Networks .................................................................1488  
Y. Dubinsky and A. Segall

MPOA Flow Classification Design and Analysis ...............................................................1497  
H. Che and S. Li

Scalability Evaluation of Multi-Protocol Over ATM (MPOA) ..................................................1505  
I. Widjaja, H. Wang, S. Wright, and A. Chatterjee

**Session 11A: Measurement-based Control**

Measuring Long-Range Dependence under Changing Traffic Conditions ........................................1513  
M. Roughan and D. Veitch

Unified Measurement Functions for Traffic Aggregation and Link Capacity Assessment .......................1522  
Y. Serbest and S. Li

Asymptotic Sampling Properties of Effective Bandwidth Estimation for Admission Control ..................1532  
N. G. Duffield

A Time-Scale Decomposition Approach to Measurement-Based Admission Control ..........................1539  
M. Grossglauser and D. N. C. Tse

**Session 11B: Panel - Multimedia Satellite Networks: Reality behind the Propaganda**  
Catherine Rosenberg (NORTEL and Imperial College)

**Session 11C: TCP-Performance**

Performance and Buffering Requirements of TCP Applications in Asymmetric Networks ......................1548  
S. Varma

Analysis and Comparison of TCP Reno and Vegas ........................................................................1556  
J. Mo, R. J. La, V. Anantharam, and J. Walrand

The Window Distribution of Idealized TCP Congestion Avoidance with Variable Packet Loss .................1564  
A. Misra and T. J. Ott

The TIME-WAIT State in TCP and Its Effect on Busy Servers .......................................................1573  
T. Faber, J. Touch, and W. Yue

**Author Index** .......................................................................................................................1585