

# *The 7th International Workshop on Network and Operating Systems Support for Digital Audio and Video (NOSSDAV 97)*

May 19-21, 1997

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**Hosted By:**

Washington University  
Department of Computer Science

**Applied Research Laboratory**

in St. Louis, Missouri



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being held at the:  
*Innsbrook Estates Executive Conference Center*

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sponsored by:  
IEEE Communications Society,  
in cooperation with:  
ACM SIGMM,  
ACM SIGCOMM,

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**Call for Papers**

**Program**

**Workshop Schedule**

**List of Participant**

**Participant Information**

## Travel Information

- [Applied Research Laboratory](#) in the [Department of Computer Science](#) at [Washington University St. Louis](#)
- 

## Previous NOSSDAV on-line proceedings

- [1995](#)
  - [1996](#)
- 

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Prepared by [Diana Ehrlich](#)

Updated May 29, 1997

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# *The 7th International Workshop on Network and Operating Systems Support for Digital Audio and Video (NOSSDAV 97)*

**May 19-21, 1997**

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***The Applied Research Laboratory***  
***Department of Computer Science***  
***Washington University in St. Louis, Missouri***

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## ***CALL FOR PAPERS***

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### **Objectives**

The 7th International Workshop on Network and Operating Systems Support for Digital Audio and Video (NOSSDAV 97) is the international workshop concerned with state of the art technology in networking and operating system support for multimedia systems. For seven years, NOSSDAV has proven to be an outstanding forum for researchers involved in building innovative multimedia systems, networks and applications on both the research and industrial front. Other topics that will be examined include "middleware" for multimedia, media toolkits, mobile communications, Virtual Reality (VR), real-time systems, software agents, digital libraries, and other digital media besides audio and video.

A key aspect of the workshop is that it provides extensive discussion periods during which attendees can informally discuss their current work and future research directions. Traditionally, NOSSDAV has emphasized on high quality experimental research that prototypes systems to explore innovative solutions to the problems in the diverse areas of multimedia computing. NOSSDAV97 will continue this tradition.

### **Relevant topics for the workshop include:**

- APIs and Continuous Media (CM) programming abstractions for multimedia
- Cell-based system architectures
- Communication protocols for multimedia
- Distributed multimedia systems
- End-to-end admission control
- High-speed/ATM networks
- Micro-kernel and OS support for real-time communications
- Mobile multimedia systems
- Multicast protocols and media scaling
- Multimedia network interfaces
- Multimedia-oriented desk, local and wide area networks
- Multimedia and the Internet
- Multimedia storage, server, and I/O architectures
- Quality of service and synchronization frameworks

- Resource management and reservation in the OS and network
  - Software agents for multimedia systems
  - TV set-top device communication
  - VOD system architecture
  - VR systems
  - Workstation and PDA architectures for multimedia
- 

## Submissions

Two types of submissions are solicited: position papers and research papers. For the purpose of paper review, position papers are restricted to three single-spaced pages. Research papers are restricted to an extended abstract no longer than five formatted postscript pages. To complete your submission, please send the following items by electronic mail to [NOSSDAV97@arl.wustl.edu](mailto:NOSSDAV97@arl.wustl.edu)

1. The research or position paper in POSTSCRIPT form
2. The title of the paper, the list of authors with complete contact information in the form of email address and phone number, and an abstract summarizing the paper in **PLAIN TEXT**.

**Only** if electronic submission is impossible, papers may be sent to the following mailing address.

*Dr. Gurudatta M. Parulkar*  
*ATTN: NOSSDAV 97*  
*Washington University*  
*Department of Computer Science*  
*Applied Research Laboratory*  
*Campus Box 1045*  
*St. Louis, Missouri 63130*  
*USA*

The paper abstracts will be circulated among the NOSSDAV program committee members to solicit reviewers.

Please note that the proceedings of the workshop will be published as a book by IEEE and the best papers will be forwarded to selected journals for publication.

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## Important Dates

Submission Deadline:	15 January 1997 (A FIRM DEADLINE)
Acceptance Notification:	15 March 1997
Final Paper Due:	22 April 1997 (A FIRM DEADLINE)
Workshop:	19 - 21 May 1997

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- Mike Jones, Microsoft, Inc.
- Chuck Kalmanek, AT&T Research
- S. Keshav, Cornell University
- Dilip Kandlur, IBM
- Jim Kurose, University of Masachusetts
- Monica Lam, Stanford University
- Ian Leslie, Cambridge University, UK
- Tom Little, Boston University
- Derek McAuley, University of Glasgow, UK
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## **LOCATION**

As is traditional, the workshop will take place at an elite resort, away from the hustle and bustle of daily life. Innsbrook Estates Executive Conference Center is located on 3,200 acres of the most gorgeous rolling Missouri woodland, dotted by crystal clear lakes. For accommodations, there are 1, 2, and 3-bedroom condominiums which are fully equipped with living and dining areas, fireplaces, cable television and kitchens to offer conferees all the comforts of home in a lakeside or wooded hideaway. You want to relax after a day of lectures? There is an eighteen hole golf-course, a junior-olympic swimming pool, lighted tennis courts, mini-fitness center with a sauna and hot tub, softball, volleyball, horseback riding, miniature golf course, fishing, lake swimming, canoeing, and sailing, just to name a few of the amenities. A relaxing excursion to a scenic location away from the conference site is also being planned.

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Prepared by [Diana Ehrlich](#)

Updated August 29, 1997

# NOSSDAV '97 *Program*

## **Session I - "*Multimedia-on-Demand (MOD) Servers and Services*"**

Session Chair: TBD

- *Design and Implementation of Video Server for Mixed-rate Streams*

J. Nishikawa, I. Okabayashi, Y. Mori, S. Sasaki, M. Migita, Y. Obayashi, S. Furuya and K. Kaneko.  
Matsushita Electric Industrial Co.

- *Random RAIDs with Selective Exploitation of Redundancy for High Performance Video Servers*

Y. Birk. Technion - Israel Inst. of Technology.

- *Efficient Striping Techniques for Multimedia File Servers*

P. Shenoy, and H. Vin. University of Texas.

## **Session II - "*Middleware for Multimedia Applications*"**

Session Chair: Steve McCanne

- *U of California, Berkeley contribution*

- *Microsoft contribution*

- *Intel contribution*

## **Session III - "*Networking*"**

Session Chair: TBD

- *A Comprehensive Multimedia Control Architecture for the Internet*

H. Schulzrinne. Columbia University.

- *Environments for Active Networks*

R. Sharma, S. Keshav, M. Wu and L. Wu. Cornell Univeristy.

- *WANDS: Wide-Area Network Delay Simulator*

M. Borella & A. Sears. DePaul University.

## **Session IV - "*Operating System Optimizations*"**

Session Chair: TBD

- *Evaluation of Data Passing and Scheduling Avoidance*  
J. Brustoloni and P. Steenkiste. Carnegie Mellon University.
- *User-Safe Devices for True End-to-End QoS*  
I. Pratt. University of Cambridge.
- *A Fresh Approach to File System Quality of Service*  
P. Barham. University of Cambridge.

## **Session V - "Mobility and Wireless"**

Session Chair: TBD

- *Mobile Filters: Delivering Scaled Media to Mobile Devices*  
A. Balachandran and A. Campbell
- *System Support for Mobile Multimedia Applications*  
Inouye, Cen, Walpole
- *On Quality of Service in Mobile Wireless Networks*  
M. Srivastava, P. Mishra

## **Session VI - "Multicast"**

Session Chair: TBD

- *Layered Video Multicast with Retransmission (LVRM): Evaluation of Error Recovery Schemes*  
X. Li and M. Ammar. Georgia Institute of Technology.  
S. Paul and P. Pancha. Bell Laboratories.
- *Thin Streams: An Architecture for Multicasting Layered Video*  
L. Wu, R. Sharma and B. Smith. Cornell University.
- *Resilient Multicast Support for Continuous Media Applications*  
R. Xu, A. Myers, H. Zhang, R. Yavatkar. Carnegie Mellon University and Intel.

## **Session VII - "Miscellaneous and Short Paper Session"**

Session Chair: TBD

- *Service Aggregation Through Rate Adaptation Using a Single Storage Format*  
Krishnan and Little



*Practical Experience with a Smoothing Algorithm for Video Streaming*

F. Miller, X. Mei, T. Lam, K. Zhang, and S. Tripathi. University of Maryland.

- *A Virtual Network Service for Integrated-Services Internetworks*

L. Delgrossi and Domenico Ferrari. Unversita Cattolica.

- *Randomized Token Buckets: Reducing the Buffers Required in Multiplexors*

J. A. Fingerhut and G. Varghese. Washington University.

**Session VIII - "Smoothing, Scaling, etc on Endsystems"**

Session Chair: TBD

- *The Performance of Two Dimensional Media Scaling for Internet Videoconferencing: Experiments with ProShare(TM) on the Internet*

P. Nee, K. Jeffay and G. Danneels. University of North Carolina.

- *Online Smoothing of Live, Variable-Bit-Rate Video*

J. Rexford. AT&T Research Laboratories.

S. Sen, K. Dey, J. Kurose, J. Stankovic, D. Towsley. University of Massachusetts.

W. Feng. Ohio State University.

- *Adaptive Middleware for Mobile Multimedia Applications*

G. Blair, G. Coulson, N. Davies, P. Robin and T. Fitzpatrick. Lancaster University.

**Session IX - "Networking: Packet Scheduling, Integrated Service"**

Session Chair: TBD

- *Fair Airport Scheduling Algorithms*

P. Goyal and H. Vin. University of Texas.

- *Hierarchical Relative Error Scheduler: An Efficient Traffic Shaper for Packet Switching Networks*

A. Charny. Digital Equipment Corporation.

- *Understanding TCP Dynamics in an Integrated Services Internet*

W. Feng, D. Kandlur, D. Saha and K. Shin. IBM.

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# NOSSDAV '97 *Schedule*

## Sunday, May 18, 1997

16:00- 19:00	Conference Registration
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19:00- 21:30	Informal Dinner ???
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## Monday, May 19, 1997

7:30- 8:30	Breakfast Buffet
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8:30- 9:00	<p>Introductions and Welcome</p> <p style="padding-left: 40px;">Christopher I. Byrnes Dean of the School of Engineering and Applied Science Washington University</p> <p style="padding-left: 40px;">Workshop Chairs Guru Parulkar John DeHart</p>
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9:00- 10:30	<p>Session I "<b>Multimedia-on-Demand (MOD) Servers and Services</b>" Session Chair: TBD</p> <ul style="list-style-type: none"> <li>• <i>Design and Implementation of Video Server for Mixed-rate Streams</i>  J. Nishikawa, I. Okabayashi, Y. Mori, S. Sasaki, M. Migita, Y. Obayashi, S. Furuya and K. Kaneko. Matsushita Electric Industrial Co.</li> <li>• <i>Random RAIDs with Selective Exploitation of Redundancy for High Performance Video Servers</i>  Y. Birk. Technion - Israel Inst. of Technology.</li> <li>• <i>Efficient Striping Techniques for Multimedia File Servers</i>  P. Shenoy, and H. Vin. University of Texas.</li> </ul>
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10:30- 11:00	Break
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11:00- 12:30	<p>Session II "<b>Middleware for Multimedia Applications</b>" Session Chair: Steve McCanne</p>
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	<ul style="list-style-type: none"> <li>• <i>U of California, Berkeley contribution</i></li> <li>• <i>Microsoft contribution</i></li> <li>• <i>Intel contribution</i></li> </ul>
12:30-13:30	Lunch
13:30-15:00	<p>Session III "<b>Networking</b>" Session Chair: TBD</p> <ul style="list-style-type: none"> <li>• <i>A Comprehensive Multimedia Control Architecture for the Internet</i> H. Schulzrinne. Columbia University.</li> <li>• <i>Environments for Active Networks</i> R. Sharma, S. Keshav, M. Wu and L. Wu. Cornell Univeristy.</li> <li>• <i>WANDS: Wide-Area Network Delay Simulator</i> M. Borella &amp; A. Sears. DePaul University.</li> </ul>
15:00-15:30	Break
15:30-17:00	<p>Session IV "<b>Operating System Optimizations</b>" Session Chair: TBD</p> <ul style="list-style-type: none"> <li>• <i>Evaluation of Data Passing and Scheduling Avoidance</i> J. Brustoloni and P. Steenkiste. Carnegie Mellon University.</li> <li>• <i>User-Safe Devices for True End-to-End QoS</i> I. Pratt. University of Cambridge.</li> <li>• <i>A Fresh Approach to File System Quality of Service</i> P. Barham. University of Cambridge.</li> </ul>
17:00-18:00	Break
18:00-20:00	Banquet
20:00-21:00	PC/Planning Meeting
<b>Tuesday, May 20, 1997</b>	
7:30-8:30	Breakfast Buffet

8:30-10:00	<p>Session V "<b>Mobility and Wireless</b>" Session Chair: TBD</p> <ul style="list-style-type: none"> <li>• <i>Mobile Filters: Delivering Scaled Media to Mobile Devices</i> A. Balachandran and A. Campbell</li> <li>• <i>System Support for Mobile Multimedia Applications</i> Inouye, Cen, Walpole</li> <li>• <i>On Quality of Service in Mobile Wireless Networks</i> M. Srivastava, P. Mishra</li> </ul>
10:00-10:30	Break
10:30-12:00	<p>Session VI "<b>Multicast</b>" Session Chair: TBD</p> <ul style="list-style-type: none"> <li>• <i>Layered Video Multicast with Retransmission (LVRM): Evaluation of Error Recovery Schemes</i> X. Li and M. Ammar. Georgia Institute of Technology. S. Paul and P. Pancha. Bell Laboratories.</li> <li>• <i>Thin Streams: An Architecture for Multicasting Layered Video</i> L. Wu, R. Sharma and B. Smith. Cornell University.</li> <li>• <i>Resilient Multicast Support for Continuous Media Applications</i> R. Xu, A. Myers, H. Zhang, R. Yavatkar. Carnegie Mellon University and Intel.</li> </ul>
12:00-13:00	Lunch
13:00-15:00	<p>Session VII "<b>Miscellaneous and Short Paper Session</b>" Session Chair: TBD</p> <ul style="list-style-type: none"> <li>• <i>Service Aggregation Through Rate Adaptation Using a Single Storage Format</i> Krishnan and Little</li> <li>• <i>Practical Experience with a Smoothing Algorithm for Video Streaming</i> F. Miller, X. Mei, T. Lam, K. Zhang, and S. Tripathi. University of Maryland.</li> <li>• <i>A Virtual Network Service for Integrated-Services Internetworks</i> L. Delgrossi and Domenico Ferrari. Unversita Cattolica.</li> <li>• <i>Randomized Token Buckets: Reducing the Buffers Required in Multiplexors</i> J. A. Fingerhut and G. Varghese. Washington University.</li> </ul>

15:00-16:30	Break
16:30-23:59	Excursion (To Cardinals Baseball Game)
<b>Wednesday, May 21, 1997</b>	
8:00-9:00	Breakfast Buffet
9:00-10:30	<p>Session VIII "<b>Smoothing, Scaling, etc on Endsistemas</b>" Session Chair: TBD</p> <ul style="list-style-type: none"> <li>• <i>The Performance of Two Dimensional Media Scaling for Internet Videoconferencing: Experiments with ProShare(TM) on the Internet</i>  P. Nee, K. Jeffay and G. Danneels. University of North Carolina.</li> <li>• <i>Online Smoothing of Live, Variable-Bit-Rate Video</i>  J. Rexford. AT&amp;T Research Laboratories.  S. Sen, K. Dey, J. Kurose, J. Stankovic, D. Towsley. University of Massachusetts.  W. Feng. Ohio State University.</li> <li>• <i>Adaptive Middleware for Mobile Multimedia Applications</i>  G. Blair, G. Coulson, N. Davies, P. Robin and T. Fitzpatrick. Lancaster University.</li> </ul>
10:30-11:00	Break
11:00-12:30	<p>Session IX "<b>Networking: Packet Scheduling, Integrated Service</b>" Session Chair: TBD</p> <ul style="list-style-type: none"> <li>• <i>Fair Airport Scheduling Algorithms</i>  P. Goyal and H. Vin. University of Texas.</li> <li>• <i>Hierarchical Relative Error Scheduler: An Efficient Traffic Shaper for Packet Switching Networks</i>  A. Charny. Digital Electric Company.</li> <li>• <i>Understanding TCP Dynamics in an Integrated Services Internet</i>  W. Feng, D. Kandlur, D. Saha and K. Shin. IBM.</li> </ul>
12:30-13:30	Lunch
	Workshop ends

# *The 7th International Workshop on Network and Operating Systems Support for Digital Audio and Video (NOSSDAV 97)*

## **List of Participants**



[A](#) | [B](#) | [C](#) | [D](#) | [E](#) | [F](#) | [G](#) | [H](#) | [I](#) | [J](#) | [K](#) | [L](#) | [M](#) | [N](#) | [O](#) | [P](#) | [Q](#) | [R](#) | [S](#) | [T](#) | [U](#) | [V](#) | [W](#) | [X](#) | [Y](#) | [Z](#) |

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