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**UNIVERSITY OF CAMBRIDGE**

# Computer Laboratory
# NetOS publications

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## 2006 Publications

**Interacting with Mobile Services: An Evaluation of Camera-Phones and Visual Tags**
Eleanor Toye, Richard Sharp, Anil Madhavapeddy, David Scott, Eben Upton and Alan Blackwell
In Personal and Ubiquitous Computing Journal, Volume 10
(to appear in 2006)

- **A QoS-Negotiable Middleware System for Reliably Multicasting Messages of Arbitrary Size.**
  Antonio Di Ferdinando, Paul D. Ezhilchelvan, Michael Dales, Jon Crowcroft
  ISORC 2006: 253-260
  IEEE Online

- **Practical Taint-based Protection using Demand Emulation**
  Alex Ho, Michael Fetterman, Christopher Clark, Andrew Warfield and Steven Hand
  in the Proceedings of EuroSys 2006, April 2006, Leuven, Belgium
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- **10 networking papers: recommended reading** Jon Crowcroft
  ACM SIGCOMM CCR Volume 36 , Issue 2 (April 2006), Pages: 31 - 32
  ACM DL

- **The privacy and safety impact of technology choices for command, communications and control of the public highway**
  Jon Crowcroft
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  ACM DL

- **Haggle: a Networking Architecture Designed Around Mobile Users**
  J Scott, P Hui, J Crowcroft, C Diot
  IFIP WONS, Jan, 2006
  PDF

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- **Network Coding Made Practical**
  S Katti, H Rahul, W Hu, D Katabi, J Crowcroft

To appear , ACM SIGCOMM 2006,
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  Lim Meng How, Adam Greenhalgh, Julian Chesterfield, Jon Crowcroft
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  Lidong Zhou, Lintao Zhang, Paul T. Barham:
  SOSP 2005: 133-147

- **A Practical Approach for 4G Systems: Deployment of Overlay Networks.**
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  Jesus Bernardos
  TRIDENTCOM 2005: 172-181

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  Jon Crowcroft:
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  Rashid Mehmood, Jon Crowcroft, Steven Hand and Steven Smith
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  Technical Report UCAM-CL-TR-650, Computer Laboratory, University of
  Cambridge, UK.
  October 2005.
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- **Optical Network Packet Error-Rate due to Physical Layer Coding**
  Andrew W. Moore, Laura B. James, Madeleine Glick, Adrian Wonfor,
  Richard Plumb, Ian H. White, Derek McAuley, and Richard V. Penty
  IEEE/OSA Journal of Lightwave Technology,
  Volume 23, Number 10, Oct, 2005
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  Alex Ho and Steven Hand
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  in the Proceedings of the Tenth Workshop on Hot Topics in Operating Systems (HotOS-X), June 2005
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  4th International Workshop on Distributed Event-Based Systems (DEBS'05), June 2005, Columbus/Ohio, USA
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  in the Proceedings of IEEE WETICE ETNGRID, Linkoping, June 2005.
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- **DELTACAST - Efficient File Reconciliation in Wireless Broadcast Systems**
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  Andrew Warfield, Keir Fraser, Steven Hand and Tim Deegan
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- **Brooery: A Graphical Environment for Analysis of Security-Relevant Network Activity**
  Christian Kreibich
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  ACM Symposium on Applied Computing, ACM SAC'05, Santa Fe, NM, March 2005

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- **Global public computing**
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- **Highways: Proximity Clustering for Scalable Peer-to-Peer Network.**
  aEng Keong Lua, Jon Crowcroft, Marcelo Pias:
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- **BarterRoam: A Novel Mobile and Wireless Roaming Settlement Model.**
  Eng Keong Lua, Alex Lin, Jon Crowcroft, Valerie Tan:
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  Evangelos Kotsovinos, Tim Moreton, Ian Pratt, Russ Ross, Keir Fraser, Steven Hand, and Tim Harris
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  Marta Kwiatkowska, Dave Parker, Yi Zhang and Rashid Mehmood
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  Elgan Huang, Jon Crowcroft, Ian Wassell
  Proceedings of the ACM SIGCOMM workshop on Practice and theory of incentives in networked systems, Portland, Oregon, USA , August 2004
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- **An Implementation-Based Comparison of Measurement-Based Admission Control Algorithms**
  Andrew W. Moore
  Journal of High Speed Networks, 13(2), 2004, pp87-102, IOS Press,
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- **Brief Announcement: Implementing Multi-Word Atomic Snapshots on Current Hardware**
  Chris Purcell and Tim Harris
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  James Bulpin and Ian Pratt
  The Third Annual Workshop on Duplicating, Deconstruction and Debunking, June 2004.
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- **Design and Implementation of Netdude, a Framework for Packet Trace Manipulation**
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  Alberto Fernandes
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- **Optimizations for Streaming Media over Wide-area Wireless Networks**
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- **Practical Experience with HTTP and TCP over GPRS**
  Rajiv Chakravorty and Ian Pratt
  **poster** and an extended abstract in e-Proceedings of ACM MOBICOM
  2002, and also in forthcoming ACM Mobile Comunications and Computing
  Review (MC2R)
  Poster [PDF], Extended Abstract [PS]

- **WWW Performance over GPRS**
  Rajiv Chakravorty and Ian Pratt
  Proceedings of the IEEE International Conference on Mobile and Wireless
  Communication Networks (MWCN 2002)
  [PDF]

- **Engineering Mobile Proxy Design for Wide-Area Wireless**
  Rajiv Chakravorty and Ian Pratt
  Proceedings of the 7th CaberNet (European) Radicals Workshop
  [PS]

- **Distributed resource discovery and management in the XenoServers
  Platform**
  Evangelos Kotsovinos and Tim Harris
  Proceedings of the 7th CaberNet (European) Radicals Workshop
  [PDF]

- **Proactive Multipath Routing**
  Jing Shen, Jiaoying Shi and Jon Crowcroft
  Proceedings of Quality of future Internet Services (QofIS) 2002
  [PDF]

- **InfoSpect: Using a Logic Language for System Health Monitoring in Distributed Systems**
  Timothy Roscoe, Richard Mortier, Paul Jardetzky and Steven Hand.
  Proceedings of the 2002 ACM SIGOPS European Workshop
  [gzipped postscript][postscript][PDF]

- **SBM: Enabling Remote Management Services for Dynamically Reconfigurable Devices**
  Rajiv Chakravorty and Hans Ottevanger
  Proceedings of the Networks 2002: IEEE International Conference on Wireless LANs and Home Networking (IEEE ICWLHN), 2002, pages 699-710 (book chapter 15), ISBN 981-238-127-9, World Scientific Inc. (ed. Benny Bing, Pascal Lorenz)
  [PS]

- **Architecture and Implementation of a Remote Management Framework for Dynamically Reconfigurable Devices**
  Rajiv Chakravorty and Hans Ottevanger
  Proceedings of the 10th IEEE International Conference on Networks (IEEE ICON), 2002, pages 375-381, ISBN 0-7803-7533-5
  [PDF]

- **Dependable computing needs pervasive debugging**
  Timothy L Harris
  Proceedings of the 2002 ACM SIGOPS European Workshop
  [gzipped postscript][postscript][PDF]

- **Spread Spectrum Storage with Mnemosyne**
  Steven Hand and Timothy Roscoe
  Proceedings of Future Directions in Distributed Computing (FuDiCo02)

- **Storage, Mutability and Naming in *Pasta***
  Tim D Moreton, Ian A Pratt and Timothy L Harris
  Proceedings of the International Workshop on Peer-to-Peer Computing at Networking 2002
  [gzipped postscript][postscript][PDF] also published as part of Volume 2376 of Lecture Notes in Computer Science

- **Transaction-based Charged in Mnemosyne: a Peer-to-Peer Steganographic Storage System**
  Timothy Roscoe and Steven Hand
  Proceedings of the International Workshop on Peer-to-Peer Computing at Networking 2002
  [gzipped postscript][postscript][PDF]

- **Channel Islands in a Reflective Ocean: Large Scale Event Distribution in Heterogeneous Networks**
  Jon Crowcroft

Proceedings of the IFIP-TC6 Networks 2002 Conference
[PDF]

- **Peer-to-Peer: Peering into the Future**
  Jon Crowcroft and Ian Pratt
  Proceedings of the IFIP-TC6 Networks 2002 Conference
  [gzipped postscript]

- **Resource Control in Network Elements**
  Austin Donnelly
  PhD dissertation, Computer Laboratory Technical Report 534
  [PDF]

- **Internet Traffic Engineering**
  Richard Mortier
  PhD dissertation, Computer Laboratory Technical Report 532
  [PDF]

- **Measurement-Based Management of Network Resources**
  Andrew William Moore
  PhD dissertation, Computer Laboratory Technical Report 528
  [PDF]

- **Mnemosyne: Peer-to-Peer Steganographic Storage**
  Steven Hand and Timothy Roscoe
  Proceedings of 1st International Workshop on Peer-to-Peer Systems
  [gzipped postscript][postscript][PDF]

## 2001 Publications

- **Non-Intrusive Estimation of Web Server Delays**
  James Hall, Ian Pratt and Ian Leslie
  IEEE LCN2001, November 2001
  [gzipped postscript 99.62 KB]

- **Observing Web Browser Behaviour Using the Nprobe Passive Monitoring Architecture**
  James Hall, Ian Pratt and Ian Leslie
  Cabernet 2001
  [pdf 32KB]

- **A Pragmatic Implementation of Non-Blocking Linked Lists**
  Timothy L Harris
  Proceedings of the 2001 IEEE Symposium on Distributed Computing
  [gzipped postscript][postscript][PDF] also published as part of Volume
  2180 of Lecture Notes in Computer Science

- **Extensible Virtual Machines**
  Timothy L Harris
  PhD dissertation, Computer Laboratory Technical Report 525
  [PDF]

- **Elastic Network Control: An Alternative to Active Networks**
  Herbert Bos, Rebecca Isaacs, Richard Mortier, Ian Leslie
  Journal of Communications and Networks
  *Note*: This was due to appear in the March 2001 special issue on programmable switches and routers. Due to extensive delays on the part of the editors it will now appear in a later issue.
  [gzipped postscript 94.56 KB]

- **Support for Resource-Assured and Dynamic Virtual Private Networks**
  Rebecca Isaacs and Ian Leslie
  IEEE Journal on Selected Areas in Communications (JSAC) 19(3) March 2001
  [PDF]

- **Arsenic: A User-Accessible Gigabit Ethernet Interface**
  Ian Pratt and Keir Fraser
  Proceedings of the Twentieth Annual Joint Conference of the IEEE Computer and Communications Societies (INFOCOM), April 2001
  [postscript]

## 2000 Publications

- **Implicit Admission Control**
  Richard Mortier, Ian Pratt, Christopher Clark, Simon Crosby
  IEEE Journal on Selected Areas in Communications (JSAC) 18(12) December 2000

- **Dynamic Adaptive Pre-Tenuring**
  Timothy L Harris
  Proceedings of the 2000 ACM International Symposium on Memory Management
  [postscript]

- **Lightweight, Dynamic and Programmable Virtual Private Networks**
  Rebecca Isaacs
  IEEE OPENARCH, March 2000
  [gzipped postscript 63.92 KB] [PDF]

- **Open Extensible Network Control**
  Herbert Bos
  Journal of Network and Systems Management, 8(1), March 2000
  [gzipped postscript 102.35 KB]

## 1999 Publications

- **An experimental configuration for the evaluation of CAC algorithms**
  Andrew Moore and Simon Crosby
  Performance Evaluation Review, 27(3), pp43-54, December 1999
  [gzipped postscript]

- **INCA: Support for IN Using the Tempest**
  Rebecca Isaacs and Richard Mortier
  IEEE GLOBECOM, December 1999
  [gzipped postscript 61.10 KB] [PDF]

- **Elastic Network Control**
  Herbert Bos
  PhD dissertation, August 1999
  Technical Report No. 483
  [gzipped postscript 679.45 KB]

- **Application-Specific Policies: Beyond the Domain Boundaries**
  Herbert Bos
  IFIP Integrated Network Management VI, May 1999
  [gzipped postscript 82.70 KB]

- **An Economic Approach to Adaptive Resource Management**
  Neil Stratford and Richard Mortier
  IEEE Hot Topics in Operating Systems (HotOS) VII, March 1999
  [online][gzipped postscript 98.09 KB][postscript][PDF]
  *Resource management is a fundamental concept in operating system design. In recent years it has become fashionable to consider the problem as an aspect of heterogeneous support for Quality of Service (`QoS'). Several authors have advocated the construction of an ``oracle''-like entity, with the effect of abstracting the fundamental problems into oblivion. In this paper we propose a radically different approach that attempts to address the underlying issues in a uniform and fundamentally scalable manner.*

- **Xenoservers: accountable execution of untrusted code**
  Dickon Reed, Ian Pratt, Paul Menage, Stephen Early, Neil Stratford
  IEEE Hot Topics in Operating Systems (HotOS) VII, March 1999
  [online][gzipped postscript 57.30 KB][postscript][PDF]
  *Many networked applications could benefit from executing closer to the data or services with which they interact. By doing this they may be able to circumvent long communication latencies or avoid transferring data over congested or expensive network links. However, no public infrastructure currently exists that enables this. We propose a system that can execute code supplied by an untrusted user, yet can charge this user for all resources consumed by the computation. Such servers could be deployed at strategic locations throughout the Internet, enabling network users such as content providers to distribute components of their applications in a manner that is both efficient and economical. We call such a server a Xenoserver. This paper discusses the construction of such a system, examining how accounting, billing, and quality of service provision can be achieved.*

- **Self-Paging in the Nemesis Operating System**
  Steven Hand
  Usenix Third Symposium on Operating Systems Design and Implementation, February 1999
  [online][gzipped postscript 150.84 KB]
  *In contemporary operating systems, continuous media (CM) applications*

*are sensitive to the behaviour of other tasks in the system. This is due to contention in the kernel (or in servers) between these applications. To properly support CM tasks, we require ``Quality of Service Firewalling'' between different applications. This paper presents a memory management system supporting Quality of Service (QoS) within the Nemesis operating system. It combines application-level paging techniques with isolation, exposure and responsibility in a manner we call self-paging. This enables rich virtual memory usage alongside (or even within) continuous media applications.*

- **Elastic Network Control with Future Reservations**
  Herbert Bos
  ERSADS, February 1999

## 1998 Publications

- **Controlling run-time compilation**
  Timothy Harris
  IEEE Workshop on Programming Languages for Real-Time Industrial Applications, December 1998
  [gzipped postscript 43.20 KB]
  *This paper describes a technique for integrating run-time compilation which is effectively pause free and for which the worst-case impact can be bounded. Three extensions to a JVM implementation are used. Firstly, a new scheduler allows the allocation of CPU time to threads to be controlled. Secondly, a code generator provides a mechanism for run-time compilation. Finally, a control interface allow application-specific compilation policies to be specified. By defining a compilation policy in which native code is generated in a designated compiler thread with a limited CPU allocation, it is possible to bound the worst-case impact of the compiler.*

- **Building a Distributed Video Server using Advanced ATM Network Support**
  Herbert Bos
  IFIP/IEEE MMNS, November 1998

- **The Tempest: A Framework for Safe, Resource-Assured Programmable Networks**
  Sean Rooney and Jacobus E. van der Merwe and Simon A. Crosby and Ian M. Leslie
  IEEE Communications Magazine, 36(10), October 1998
  [gzipped postscript 91.23 KB]

- **Efficient Reservations in Open ATM Network Control Using Online Measurements**
  Herbert Bos
  International Journal of Communication Systems, 11(4), August 1998
  [gzipped postscript 135.73 KB]

- **A new audio device driver abstraction**
Dickon Reed
IEEE NOSSDAV98, July 1998
[online][gzipped postscript 55.68 KB]
*Traditional audio device drivers are unable to provide low latency audio services and often do not provide audio mixing services. High quality audio has, compared to other media types, relatively low bandwidth, but is very sensitive to latency and errors. This paper presents a device driver abstraction that exploits the low bandwidth and constant bit rate of audio to provide multiple channels of low latency audio efficiently. It provides applications with a great deal of flexibility with regards to latency, blocking behaviour and mixing.*

- **The Tempest --- A Practical Framework for Network Programmability**
Jacobus E. van der Merwe and Sean Rooney and Ian Leslie and Simon Crosby
IEEE Network Magazine, 12(3), June 1998
[gzipped postscript 125.23 KB]

- **Service Specific Control Architectures for ATM**
Jacobus E. van der Merwe and Ian M. Leslie
IEEE Journal on Selected Areas in Communications, 16(3), April 1998
[gzipped postscript 117.20 KB]
*The concept of a Service Specific Control Architecture (SSCA) in an ATM environment is presented. Here a Control Architecture denotes the out-of-band control and management mechanisms operation in a network or virtual network (or part thereof). An SSCA can use knowledge about the application it serves to make better use of network resources and thus provide a more efficient service. Such a control architecture can be designed to provide only the subset of control functions required by the applications it serves, thereby greatly reducing its complexity. The switchlet mechanism, which allows more than one control architecture to be operational simultaneously within the same network, enables the use of service specific control architectures. Implementation work is presented to illustrate the use of switchlets and SSCAs. This includes both an environment which uses switchlets to dynamically create virtual networks, and an SSCA used to provide video and audio conferencing facilities in an ATM environment*

- **Controlling the Tempest: Adaptive Management in Advanced ATM Control Architectures**
David A. Halls and Sean G. Rooney
IEEE Journal on Selected Areas in Communications, 16(3), April 1998
[gzipped postscript 104.53 KB]

- **ATM Admission Control based on Measurements and Reservations**
Herbert Bos
IEEE IPCCC, February 1998
[gzipped postscript 109.50 KB]

- **The Structure of Open ATM Control Architectures**
Sean Rooney
Ph.D. dissertation, February 1998

Technical Report No. 451
[gzipped postscript 362.69 KB]

- **Measurement Based Admission Control and Resource Allocation for Multimedia Applications**
  Paul Barham and Simon Crosby and Tim Granger and Neil Stratford and Fergal Toomey and Muriel Huggard
  Proceedings of IEEE MMCN'98, Janurary 1998

- **Practical Connection Admission Control for ATM Networks Based on On-line Measurements**
  Simon Crosby and Ian Leslie and John Lewis and Raymond Russell and Fergal Toomey and Brian McGurk
  Computer Communications, 1998


## 1997 Publications

- **Protocol Implementation in a Vertically Structured Operating System**
  Richard Black, Paul Barham, Austin Donnelly, and Neil Stratford
  Proceedings of IEEE Conference on Computer Networks, November 1997
  [online][gzipped postscript 51.24 KB]
  *A vertically structured Operating System is one in which neither the ``kernel'' nor ``servers'' perform work on behalf of applications - the former because it exists only to multiplex the CPU, and the latter in order to avoid Quality of Service interference between the applications. Instead, wherever possible, the applications perform all of their own processing. Such a vertical structure provides many advantages for applications but leads to some interesting problems and opportunities for protocol stack implementation. This paper describes the techniques we used in our protocol implementation and the benefits that the vertical structure provided.*

- **Open Service Support for ATM**
  J.E. van der Merwe
  Ph.D. dissertation. September 1997
  Technical Report No. 450
  [gzipped postscript 504.38 KB]

- **Statistical Properties of a Near-Optimal Measurement-based CAC Algorithm**
  John Lewis and Raymond Russell and Fergal Toomey and Brian McGuirk and Simon Crosby and Ian Leslie
  Proceedings of ATM'97, May 1997

- **The Hollowman: An Innovative ATM Control Architecture**
  Sean Rooney
  IFIP Integrated Network Management V, May 1997
  [gzipped postscript 61.36 KB]

- **Switchlets and Dynamic Virtual ATM Networks**
  Jacobus E. van der Merwe and Ian Leslie

IFIP Integrated Network Management V, May 1997
[gzipped postscript 91.09 KB]

- **A Fresh Approach to File System Quality of Service**
  Paul Barham
  IEEE NOSSDAV 97, May 1997.
  [online][gzipped postscript 115.99 KB]
  *This paper describes a file system structure for supporting Quality of Service (QoS) guarantees. The device driver model clearly separates control and data path operations and presents a low level of abstraction. The data path module provides translation and protection of I/O requests enabling the file system layers to be executed as unprivileged code within shared libraries. Scheduling of low level operations within the device driver is used to provide isolation between clients and Quality of Service guarantees.*

- **Connection Closures: Adding Application-Defined Behaviour to Network Connections**
  Sean Rooney
  ACM Computer Communication Review, April 1997
  [gzipped postscript 79.38 KB]

- **An Active Distributed File Server For Continuous Media**
  Herbert Bos
  ERSADS, March 1997


## 1996 Publications

- **Devices in a Multi-Service Operating System**
  Paul Barham
  Ph.D. Dissertation, October 1996
  Technical Report 403
  [online][gzipped postscript 1.50 MB]

- **Exploring the queueing behaviouer of ATM switches**
  Nils Bjorkman and Alexander Latour-Henner and A Miah and Simon Crosby and Ian Leslie and M Davey and Raymond Russell and Fergal Toomey
  Proceedings Performance 96, October 1996

- **The Design and Implementation of an Operating System to Support Distributed Multimedia Applications**
  Ian Leslie, Derek McAuley, Richard Black, Timothy Roscoe, Paul Barham, David Evers, Robin Fairbairns, and Eoin Hyden
  IEEE Journal on Selected Areas in Communications, 14(7), September 1996
  [online][gzipped postscript 119.64 KB]
  *Support for multimedia applications by general purpose computing platforms has been the subject of considerable research. Much of this work is based on an evolutionary strategy in which small changes to existing systems are made. The approach adopted here is to start ab initio*

*with no backward compatibility constraints. This leads to a novel structure for an operating system. The structure aims to decouple applications from one another and to provide multiplexing of all resources, not just the CPU, at a low level. The motivation for this structure, a design based on the structure, and its implementation on a number of hardware platforms is described.*

- **Predicting bandwidth requirements of ATM and Ethernet traffic**
  Simon Crosby and Ian Leslie and Neil O'Connel and Raymond Russell and Fergal Toomey
  Proceedings of the Thirteenth UK Teletraffic Symposium, March 1996

## 1995 Publications

- **The Structure of a Multi-Service Operating System**
  Timothy Roscoe
  Ph.D. Dissertation, August 1995
  Technical Report 376
  [online][gzipped postscript 403.18 KB]

- **CLANGER: An Interpreted Systems Programming Language**
  Timothy Roscoe
  ACM Operating Systems Review 29(2), April 1995
  [online][gzipped postscript 54.21 KB]
  *CLANGER is a powerful, yet simple, command language for the Nemesis operating system. It uses runtime type information to interface directly with operating system components. CLANGER is a combination of command-line interpreter, scripting language, debugger and prototyping tool. This paper describes why such a language is possible, how it is being implemented, and outlines the language as it currently stands.*

- **Bypassing Modelling: an Investigation of Entropy as a Traffic Descriptor in The Fairisle ATM Network**
  Simon Crosby and Ian Leslie and Muriel Huggard and John Lewis and Brian McGurk and Raymond Russell
  Proceedings of the Twelfth UK Teletraffic Symposium, March 1995

- **Wide-Area Audio Synchronization**
  Paul Barham, Richard Black and Ian Pratt
  [gzipped postscript]
  *A brief note on performing highly accurate multi-source stream synchronization over the wide area without the use of a global clocking.*

## 1994 Publications

- **Explicit Network Scheduling**
  Richard Black
  Ph.D. Dissertation, December 1994
  Technical Report 361.
  [online][gzipped postscript 300.04 KB]

- **Linkage in the Nemesis Single Address Space Operating System**
Timothy Roscoe
ACM Operating Systems Review 28(4), October 1994
[online][gzipped postscript 61.17 KB]
*The recent interest in single address space operating systems has resulted in a number of papers, most of which gloss over the issues of linking programs to run in multiple protection domains. Some of the confusion about 64-bit address spaces is due to the almost pervasive use of UNIX and UNIX-like operating systems (such as Mach, Chorus and Amoeba) and languages with poor enforcement of abstraction like C and C++. This paper describes some of the linkage structure of Nemesis, a multi-service operating system being developed as part of the Pegasus project. Nemesis provides a simple and efficient mechanism for program linkage which provides rich sharing of text at a level of individual object classes.*

- **Operating System Support for Distributed Multimedia**
Sape Mullender, Ian Leslie and Derek McAuley
Usenix Summer Technical Conference, June 1994
[online][gzipped postscript 70.63 KB]
*Multimedia applications place new demands upon processors, networks and operating systems. While some network designers, through ATM for example, hae considered revolutionary approaches to supporting multimedia, the same cannot be said for operating systems designers. Most work is evolutionary in nature attempting to identify additional features that can be added to existing systems to support multimedia. Here we describe the Pegasus project's attempt to buil an operating system from the ground up with multimedia support as a prime objective.*

- **Operating System Support for Quality of Service**
Eoin Hyden
Ph.D. Dissertation, February 1994
Technical Report 340.
[online][gzipped postscript 688.82 KB]