

CONTACT	Computer Science Dept. Naval Postgraduate School Glasgow East 339 1311 Cunningham Rd Monterey, CA 93943	+1 561 865 6573 jprohrer@nps.edu faculty.nps.edu/jprohrer
CITIZENSHIP	USA	
EDUCATION	<i>Ph.D., Electrical Engineering</i> , Fall 2011 The University of Kansas Lawrence, Kansas USA Thesis Topic: <i>Path Diversification for Network Transport Protocols</i> Thesis Proposal: <i>End-to-End Resilience Mechanisms for Transport Protocols</i> Adviser: Professor James P.G. Sterbenz Area of Study: Computer Networks	GPA: 4.0 (4.0 scale)
	<i>B.S., Electrical Engineering</i> , May 2004 Rensselaer Polytechnic Institute Troy, NY USA Microelectronic specialization Minors in Economics and Physics Dean's list all semesters National Dean's list 2001-2003	GPA: 3.5 (4.0 scale)
EMPLOYMENT		
12/2011–present	<i>Research Associate</i> Computer Science Department, Naval Postgraduate School, Monterey, CA	
08/2004–12/2011	<i>Graduate Research Assistant</i> Information & Telecommunication Technology Center, Department of Electrical Engineering & Computer Science, The University of Kansas Lawrence, KS	7 years
08/2008–12/2010	<i>Graduate Teaching Assistant</i> EECS–881: High Performance Networking EECS–168: Programming 1 Department of Electrical Engineering & Computer Science, The University of Kansas Lawrence, KS	2 semesters 1 semester
10/2003–06/2009	<i>Technical Consultant</i> Self Employed Albany, NY & Lawrence, KS	6 years

09/1999–06/2004 *Network Engineer* 5 years
Adirondack Area Network
Castleton, NY

RESEARCH EXPERIENCE

- 08/2010–present **Multilayer Network Resilience Analysis and Experimentation on GENI** (ITTC, KU)
Funding agency: National Science Foundation (NSF) – EAGER
- Prototyping the ResTP multipath transport protocol for evaluation in a Linux testbed environment
 - Federating the GpENI testbed with others in the GENI project
 - Developing web-based experiment management and monitoring functionality
 - Supervisor: Professor James P.G. Sterbenz
- 05/2009–present **Aeronautical Network Telemetry Protocols** (ITTC, KU)
Funding agency: US Army PEO STRI contracting office – T&E/S&T program
- Protocol design – Overall design of non-IP protocol stack and cross-layer communication, and detailed design and RFC-style specification of the AeroTP transport protocol
 - Simulation – Develop AeroTP transport protocol simulation models for the ns-3 simulator to test and evaluate the new protocol
 - Implementation – Implement the AeroTP transport protocol for evaluation in a Linux testbed environment
 - Management – Coordinate development of the transport, routing, network, and gateway components of the protocol suite
 - Supervisor: Professor James P.G. Sterbenz
- 08/2008–present **Great Plains Environment for Network Innovation (GpENI)** (ITTC, KU)
Part of GENI, managed by the GENI Project Office (GPO) at BBN Technologies
Funding agency: National Science Foundation (NSF) – CISE
- Systems integration – Designing and assembling testbed node cluster from commodity hardware and multiple research software projects
 - Network planning – Design and configure testbed consisting of node clusters in Europe, Asia, and North America, interconnected by VPN tunnels
 - Management – Manage operations across ~20 sites worldwide with independent staff at each location
 - Supervisor: Professor James P.G. Sterbenz
- 01/2008–12/2008 **Weather Disruption-Tolerant Mesh Networking** (ITTC, KU)
Funding agency: Sprint
- Correlate, process, and analyze weather station and link error-rate data using matlab and custom Perl scripts
 - Supervisor: Professor Victor Frost
- 08/2007–05/2009 **Context Based Networking** (ITTC, KU)
Funding agency: Sprint
- Designing a backhaul routing algorithm based on application requirements and resource availability

- Implement algorithm in MATLAB for testing
 - Supervisor: Professor James P.G. Sterbenz
- 08/2006–present **Postmodern Internetwork Architecture** (ITTC, KU)
 Funding agency: National Science Foundation (NSF) – FIND
- Design a multipath selection algorithm for greenfield future internets
 - Implement multipath discovery and selection algorithms in MATLAB
 - Implement the ResTP multipath transport protocol in the ns-2 and ns-3 simulators
 - Analyze impact of node and link failures on end-to-end multipath flows
 - Design a new *diversity* metric for comparing ISP topologies
 - Characterize 17 topologies (ISP logical & physical, and synthetic) using diversity
 - Supervisor: Professor James P.G. Sterbenz
- 01/2005–08/2006 **Development of an Integrated Bioinformatics Infrastructure** (ITTC, KU)
 Funding agency: US Army – Edgewood Chemical and Biological Center
- Systems integration – Designing, assembling, and installing 4 collaborative telepresence conference rooms
 - Software development:
 - control video-capture cards to record/playback dual-stream videoconferences on Linux
 - archive recordings from 4 sites to central database
 - web application to search/playback recordings
 - Supervisor: Professor Victor Frost
- 08/2004–12/2004 **ChatTrack** (ITTC, KU)
- Cleanup and debug Perl/CGI interactive web application
 - Create installable package
 - Supervisor: Professor Susan Gauch

PUBLICATIONS

Journal Papers

Justin P. Rohrer, Abdul Jabbar, Egemen K. Çetinkaya, Erik Perrins, and James P.G. Sterbenz. Highly-dynamic cross-layered aeronautical network architecture. *IEEE Transactions on Aerospace and Electronic Systems (TAES)*, 47(4):2742–2765, October 2011.

Abdul Jabbar, **Justin P. Rohrer**, Victor S. Frost, and James P. G. Sterbenz. Survivable millimeter-wave mesh networks. *Computer Communications (COMCOM)*, 34(16):1942–1955, October 2011.

James P.G. Sterbenz, Egemen K. Çetinkaya, Mahmood A. Hameed, Abdul Jabbar, Qian Shi, and **Justin P. Rohrer**. Evaluation of network resilience, survivability, and disruption tolerance: Analysis, topology generation, simulation, and experimentation (invited paper). *Springer Telecommunication Systems*, 2011. (accepted March 2011).

James P. G. Sterbenz, David Hutchison, Egemen K. Çetinkaya, Abdul Jabbar, **Justin P. Rohrer**, Marcus Schöller, and Paul Smith. Resilience and survivability in communication networks: Strategies, principles, and survey of disciplines. *Computer Networks: Special Issue on Resilient and Survivable Networks (COMNET)*, 54(8):1245–1265, June 2010.

Lance Feagan, **Justin P. Rohrer**, Alexander Garrett, Heather Amthauer, Ed Komp, David Johnson, Adam Hock, Terry Clark, Gerald Lushington, Gary Minden, and Victor Frost. Bioinformatics process management: information flow via a computational journal. *Source Code for Biology and Medicine*, 2(1):9, 2007.

Conference Papers

Justin P. Rohrer, Egemen K. Cetinkaya, Hemmanth Narra, Dan Broyles, Kevin Peters, and James P. G. Sterbenz. AeroRP performance in highly-dynamic airborne networks using 3D gauss-markov mobility model. In *Proceedings of the IEEE Military Communications Conference (MILCOM)*, Baltimore, MD, USA, November 7–10 2011.

Mohammed AL-Enazi, Santosh Ajith Gogi, Dongsheng Zhang, Egemen K. Çetinkaya, **Justin P. Rohrer**, and James P. G. Sterbenz. ANTP protocol suite software implementation architecture in python. In *International Telemetering Conference (ITC)*, Las Vegas, NV, October 2011.

Kamakshi Sirisha Pathapati, Anh Nguyen, **Justin P. Rohrer**, and James P.G. Sterbenz. Performance analysis of the AeroTP transport protocol for highly-dynamic airborne telemetry networks. In *Proceedings of the International Telemetering Conference (ITC)*, Las Vegas, NV, October 2011.

Justin P. Rohrer and James P. G. Sterbenz. Predicting topology survivability using path diversity. In *Proceedings of the IEEE/IFIP International Workshop on Reliable Networks Design and Modeling (RNDM)*, pages 95–101, Budapest, Hungary, October 5–7 2011.

Justin P. Rohrer, Egemen K. Çetinkaya, and James P.G. Sterbenz. Resilience experiments in the GpENI programmable future internet testbed. In *Proceedings of the 11th Würzburg Workshop on IP: Joint ITG and Euro-NF Workshop “Visions of Future Generation Networks” (EuroView2011)*, August 2011.

Justin P. Rohrer, Egemen K. Çetinkaya, and James P. G. Sterbenz. Progress and challenges in large-scale future internet experimentation using the GpENI programmable testbed. In *The 6th ACM International Conference on Future Internet Technologies (CFI)*, pages 46–49, Seoul, Korea, June 2011.

Hemanth Narra, Yufei Cheng, Egemen K. Çetinkaya, **Justin P. Rohrer**, and James P.G. Sterbenz. Destination-sequenced distance vector (DSDV) routing protocol implementation in ns-3. In *Proceedings of the ICST SIMUTools Workshop on ns-3 (WNS3)*, Barcelona, Spain, March 2011.

James P.G. Sterbenz, Egemen K. Çetinkaya, Mahmood A. Hameed, Abdul Jabbar, and **Justin P. Rohrer**. Modelling and analysis of network resilience (invited paper). In *Proceedings of the Third IEEE International Conference on Communication Systems and Networks (COMSNETS)*, pages 1–10, Bangalore, India, January 2011.

Justin P. Rohrer, Abdul Jabbar, Egemen K. Çetinkaya, and James P.G. Sterbenz. Airborne telemetry networks: Challenges and solutions in the ANTP suite. In *Proceedings of the IEEE Military Communications Conference (MILCOM)*, pages 74–79, San Jose, CA, USA, November 2010.

Kamakshi Sirisha Pathapati, **Justin P. Rohrer**, and James P. G. Sterbenz. Edge-to-edge ARQ: Transport-layer reliability for airborne telemetry networks. In *Proceedings of the International Telemetering Conference (ITC)*, San Diego, CA, October 2010.

James P. G. Sterbenz, Deep Medhi, Byrav Ramamurthy, Caterina Scoglio, David Hutchison, Bernhard Plattner, Tricha Anjali, Andrew Scott, Cort Buffington, Gregory E. Monaco, Don Gruenbacher, Rick McMullen, **Justin P. Rohrer**, John Sherrell, Pragatheeswaran Angu, Ramkumar Cherukuri, Haiyang Qian, and Nidhi Tare. The Great plains Environment for Network Innovation (GpENI): A programmable testbed for future internet architecture research. In *Proceedings of the 6th International Conference on Testbeds and Research Infrastructures for the Development of Networks & Communities (TridentCom)*, pages 428–441, Berlin, Germany, May 18–20 2010.

Justin P. Rohrer, Ramya Naidu, and James P. G. Sterbenz. Multipath at the transport layer: An end-to-end resilience mechanism. In *Proceedings of the IEEE/IFIP International Workshop on Reliable Networks Design and Modeling (RNDM)*, pages 1–7, St. Petersburg, Russia, October 2009.

Justin P. Rohrer and James P. G. Sterbenz. Performance and disruption tolerance of transport protocols for airborne telemetry networks. In *Proceedings of the International Telemetering Conference (ITC) 2009*, Las Vegas, NV, October 2009.

Justin P. Rohrer, Abdul Jabbar, and James P. G. Sterbenz. Path diversification: A multipath resilience mechanism. In *Proceedings of the IEEE 7th International Workshop on the Design of Reliable Communication Networks (DRCN)*, pages 343–351, Washington, DC, USA, October 2009.

Abdul Jabbar, **Justin P. Rohrer**, Andrew Oberthaler, Egemen K. Çetinkaya, Victor Frost, and James P. G. Sterbenz. Performance comparison of weather disruption-tolerant cross-layer routing algorithms. In *Proc. IEEE INFOCOM 2009. The 28th Conference on Computer Communications*, pages 1143–1151, April 2009.

Justin P. Rohrer, Abdul Jabbar, Erik Perrins, and James P. G. Sterbenz. Cross-layer architectural framework for highly-mobile multihop airborne telemetry networks. In *Proceedings of the IEEE Military Communications Conference (MILCOM)*, pages 1–9, San Diego, CA, USA, November 2008.

Justin P. Rohrer, Erik Perrins, and James P. G. Sterbenz. End-to-end disruption-tolerant transport protocol issues and design for airborne telemetry networks. In *Proceedings of the International Telemetering Conference*, San Diego, CA, October 27–30 2008.

Justin P. Rohrer, Weichao Wang, and James P. G. Sterbenz. Homogeneous security in heterogeneous networks: Towards a generic security management protocol. In *Proceedings of the IEEE Military Communications Conference (MILCOM)*, pages 1–6, Orlando, FL, USA, October 29-31 2007.

Technical Reports

James P.G. Sterbenz, **Justin P. Rohrer**, and Egemen K. Çetinkaya. Multilayer network resilience analysis and experimentation on GENI. ITTC Technical Report ITTC-FY2011-TR-61349-01, The University of Kansas, Lawrence, KS, July 2010.

Victor Frost, Terry Clark, Susan Gauch, Gerald Lushington, Gary Minden, Ed Komp, Adam Hock, David Johnson, Lance Feagan, Alexander Garrett, **Justin P. Rohrer**, Heather Amthauer, and Andrew Ozor. Bioinformatics computational journal: User guide. Technical Report ITTC-FY2008-TR-38270-04, Information Telecommunication and Technology Center, University of Kansas, Lawrence, KS, 2007.

PROFESSIONAL EXPERIENCE

Consulting

- Build & manage high-performance computing clusters
- Design, installation and technical support for video-enabled & telepresence conference facilities
- Enterprise network management
- Work with large and small systems in commercial and academic environments
- Develop and host static and interactive websites

Adirondack Area Network

- Part of team to design and maintain frame-relay WAN with more than 250 circuits across the US
- Develop automated network monitoring systems

- On-site customer network design, conference room design, installation, training, and support
- Videoconferencing and VoIP services and integration

TEACHING EXPERIENCE

The University of Kansas

Graduate Teaching Assistant EECS-881: High Performance Networking

- Grader and lab instructor
- Supervised 3-hour laboratory sections
- Fall 2010, 8 students
- Fall 2008, 11 students

Graduate Teaching Assistant EECS-168: Programming 1

- Grader and lab instructor
- Supervised 2 3-hour laboratory sections
- Spring 2009, 29 students

Sage Junior College of Albany

Teaching Assistant Physics 1 & 2

- Lab aid
- Set up equipment for weekly labs
- Design occasional lab experiments
- Fall 1999 & Spring 2000, 10 students

OTHER GRADUATE EXPERIENCE

Coursework

Graduate coursework topics included high-performance networks, network security, network survivability and disruption tolerance, data retrieval, computer vision, and image processing.

Grant Proposal Composition

Regularly contributed to the grant-proposal writing process. Contributions range from technical sections on specific topics, to drafting entire whitepapers or proposals. Target funding sources have included the National Science Foundation (NSF), the US Army, the US Air Force, the Department of Homeland Security (DHS), and DARPA.

Regular contributor to the **ResiliNets Research Initiative** and weekly journal club

Mentoring Masters students and new PhD students

Awards

- 11/2010 Student travel grant for IEEE MILCOM
- 07/2010 NSF Student travel grant for GENI engineering conference 8
- 06/2010 NSF Student travel grant for GENI experimenters workshop
- 03/2010 NSF Student travel grant for GENI engineering conference 7
- 11/2009 NSF Student travel grant for GENI engineering conference 6
- 07/2009 NSF Student travel grant for GENI engineering conference 5
- 03/2009 NSF Student travel grant for GENI engineering conference 4
- 08/2008 NSF Student travel grant for FIND student conference

10/2007 Student travel grant for IEEE MILCOM

UNDERGRADUATE RESEARCH

Free-space optical networking – (ECSE, RPI)

Design and fabricate digital logic boards to perform transmit, receive, and alignment detection functions of a free-space optical network system.

SERVICE

Professional

01/2010–12/2010 Vice-Chair of *IEEE Computer Society, Kansas City section*
01/2009–12/2009 Treasurer of *IEEE Computer Society, Kansas City section*
01/2008–12/2008 Secretary of *IEEE Computer Society, Kansas City section*
05/2003–05/2004 Chairman of *IEEE Student Chapter at RPI*
01/2003–12/2003 Bridge Correspondent of *Eta Kappa Nu, Beta Nu chapter (RPI)*

Academic

08/2003–05/2004 RPI ECSE Curriculum Committee member (first student member)
08/2003–05/2004 RPI School of Engineering Student Advisory Council

Referee

2011 *IEEE GreenCom conference*
2011 *KKITS/ETRI ICCCT conference*
2011 *EURASIP Journal on Wireless Communications and Networking*
2011 *IEEE DRCN conference*
2010 *IEEE FutureNet-III conference*
2010 *IEEE/IFIP RNDM conference*
2009 *Elsevier COMNET journal*
2009 *IEEE DRCN conference*
2009 *IEEE GLOBECOM NGNI conference*
2009 *International Journal of Computer Mathematics*
2009 *IEEE ICCCN NAP conference*
2008 *IEEE IWSOS conference*

Conference

2010 IWSOS 2011 *shadow TPC member*
2008 NSF-FIND *Student conference planning board*

Contributor to Wikipedia

Contributions to articles on network resilience and survivability

MEMBERSHIPS

2007–present Student Member, **Association for Computing Machinery** (ACM)
ACM Communications Special Interest Group (SIGCOMM)

2003–present Graduate Student Member, **Institute of Electrical and Electronics Engineers** (IEEE)
IEEE Communication Society
IEEE Computer Society

2003–present Member, **Eta Kappa Nu (HKN)** honor society

HONORS

- 10/2011 Best Graduate Student Paper Award – *International Telemetry Conference (ITC)*
- 08/2011–12/2011 EE Graduate Fellow – *Electrical Engineering and Computer Science Dept., KU*
- 06/2011 Best Poster Presentation Award – *Great Plains Network (GPN) annual meeting*
- 08/2010–05/2011 Graduate Fellow – *International Foundation for Telemetry (IFT)*
- 06/2010 Best Poster Award – *ITTC IAB meeting*
- 06/2010 2nd Best Poster Award – *Great Plains Network (GPN) annual meeting*
- 10/2008 Best Paper Award – *International Telemetry Conference (ITC)*
- 08/2004–05/2006 Graduate Fellow – *ITTC*
- 08/2004–05/2005 Strobel Scholar – *KU*

HARDWARE AND SOFTWARE SKILLS

Certifications:

- 2001 Cisco CCDA
- 2000 Cisco CCNA

Computer Programming:

Proficient

C/C++, Java, Javascript, MATLAB, Perl, Bash, HTML/XHTML, PHP, CGI (Perl), *ns-2* Network Simulator, *ns-3* Network Simulator

Familiar

OpenGL, Tcl/Tk, SQL, AppleScript, make

Version Control:

Mercurial, Git, CVS, SVN

Information/Internet Technology:

Networking (UDP, TCP, ARP, DNS, DHCP, Dynamic routing, experimental protocols, firewalls)
Services (Apache, SQL, MediaWiki, POP, IMAP, SMTP), Torque/PBS queues

Productivity Applications:

\TeX (\LaTeX , \BibTeX), Vim, Photoshop, Dreamweaver, Visio, Project, most common productivity packages (for Windows, OS X, and Linux platforms)

Operating Systems:

RedHat Linux variants, Ubuntu Linux, Microsoft Windows family, Apple OS X, BSD variants, Solaris

January 24, 2012