

# Gregory P. Rodgers, Ph.D.

119 Woodcrest Drive, Hopewell Junction, NY 12533 (US Citizen)

rodgersg@frontiernet.net

Mobile: 1-914-456-3259



**Objective** Leverage world-class experience with large IT and HPC systems to research and teach advanced computing systems and solutions; experience with all HPC technologies including fabrics, storage, and hybrid systems.

**Experience** 2007-2009 IBM Poughkeepsie, NY

## **Program Director for Next Generation Blade Clusters, STSM**

- Chief Architect for BSC Hybrid Test Cluster MariGel, <http://www.bsc.es/media/1762.pdf>  
Developed Virtual PowerXcell Environment software for the Hypernode Cluster Architecture, Inventor of the hypernode hybrid computing paradigm.
- Chief Architect for Seismic Image Processing Cluster for Reverse Time Migration application. Developed high-performance blade-sharing storage subsystem.
- Chief Architect for hybrid cluster for Raytheon customer with POWER SMP server, Cell blades, and InfiniBand. Created heterogeneous MPI environment between different Linux variants.

2006-2007 IBM Poughkeepsie, NY

## **Chief Engineer for IBM Cluster 1350 Development, STSM**

- Chief Architect for Indiana University Big Red Supercomputer, the fastest general purpose supercomputer at an American University. <http://rc.uits.iu.edu/hps/research/bigred/>
- Chief Architect for hybrid virtual world server cluster for Sony Computer Entertainment Inc.

2003-2005 IBM Poughkeepsie, NY

## **Chief Architect for POWER Clusters**

- Chief Architect for the MareNostrum Supercomputer. This system was 4<sup>th</sup> on the Top500 using IBM POWER blades, Linux, fiber channel storage, and a 2560-port Myrinet switch. Created architecture, installed, and benchmarked in 10 months. <http://en.wikipedia.org/wiki/MareNostrum>
- Designed the Distributed Image Management system that allows diskless operation of Linux. Provides network boot and image management. <http://alphaworks.ibm.com/tech/dim>
- Designed the manufacturing test environment for POWER blade clusters using remote image management to significantly reduce test time and increase in test coverage.

2003 IBM Poughkeepsie

## **Linux on POWER Corporate Strategy Advisor**

- Directed IBM corporate Linux on POWER strategy to establish PowerPC as a dominant 64-bit microprocessor. Involved in all aspects of building the Linux on POWER ecosystem.

2001-2003 IBM Australia (*International Assignment*)

## **Linux Kernel Development Team Lead**

- Recruited and managed the Linux on POWER kernel development team while on international assignment in Canberra Australia as part of the IBM LTC. The OzLabs team is responsible for maintaining the PPC Linux architecture with support for all IBM POWER processors.
- Developed an AIX emulation environment on POWER Linux booting Linux from AIX LVM.

1996-2000 IBM Fishkill, Austin, Yorktown, and Rochester

## **Physical Design Environment Lead for the POWER4 Microprocessor**

- Led design environment for the POWER4 microprocessor team, primarily with AIX systems.
- Implemented many Skill (Cadence Framework) programs and utilities
- Led physical design and chip integration activities including mask-house data delivery.
- Led the port of Linux to the POWER4 microprocessor. <http://wn.net/2000/0608/a/power4.html>

**Experience** 1990-1996 IBM Burlington  
**(continued)** **Physical Design Environment Lead and CAD engineer for the 615 Microprocessor**

- Led migration to Cadence Physical Design Tools, taught Skill programming courses.
- Created microprocessor tape-out audit system called GPA.
- Led mainframe to UNIX migration for IBM VLSI design teams.

1981-1985 IBM Burlington  
**Data Center Measurements and Performance Lead for Burlington Lab**

**Skills**

- Lead programmer for Simulation Program ASTAPXA, ported large FORTRAN code to MVS-XA
- Data Center leader for capacity planning and performance measurements
- MVS systems programmer with experience in data management and HSM
- Operating Systems: AIX, Windows, z/OS, and Linux (including custom kernel builds)
- Systems management including HMC, Director, SNMP, GPFS, LoadLeveler, Slurm, Ganglia
- IBM Storage Systems and advanced CLI scripting for complex storage configurations
- Programming languages: c (5 yrs), FORTRAN (10 yrs), Cadence Skill(10 yrs), SAS (4 yrs)
- Scripting languages: bash, perl, ksh, csh
- MPI programming and HPC fabric tuning with InfiniBand, Myrinet, and 10Gb Ethernet
- High frequency microprocessor design flows and VLSI Physical Design tools
- Microprocessor release audit processes
- HPC scalability research with BlueGene and Hybrid architectures
- HPL LINPACK benchmark tuning for Top500 and Green500 supercomputer ranking
- System Availability Modeling

**Education**

- Pennsylvania State University, Ph.D., Computer Science, 1989, "Unconstrained Quadratic 0-1 Programming on Advanced Computer Architectures", advisor: <http://www.ise.ufl.edu/pardalos>
- University of Vermont, EE, 1982-1985
- Pennsylvania State University, BS., Computer Science, 1981

**Awards** IBM Resident Study Program, Best Speaker Award, 2 Outstanding Technical Achievement  
**Professional** Awards, Chairman Cadence Users Group, IBM Alphaworks contributor, 20+ IBM informal awards.

**Presentations**

- "Implementation, Performance, and Science Results from a 20.5 TFLOPS, IBM BladeCenter Cluster", given by C.Stewart, ISC07, 2007, Dresden [URL to ISC07 presentation.](#)
- "Building Superclusters with Linux on POWER and Blade technologies", Conference On the Use of Commodity Clusters for Large Scale Scientific Applications 2005, Washington DC, [http://www.arl.hpc.mil/events/Clusters2005/bof\\_rodgers.html](http://www.arl.hpc.mil/events/Clusters2005/bof_rodgers.html)
- "Building Clusters with IBM BladeCenter and JS20", LCI Conference, 2004, Austin TX
- "PowerPC Linux", Linux Clusters Institute (LCI) Conference, 2000, Albuquerque, NM, <http://www.linuxclustersinstitute.org/conferences/archive/2000/PDF/Rodgers.pdf>

**Publications**

- "Infrastructure Requirements for a Large-scale, Multi-site VLSI Development Project", <http://www.research.ibm.com/journal/rd/461/rodgers.pdf>, IBM Journal of Research and Development, Vol. 46, No 1, pp. 87-96, 2002
- "A Branch and Bound Algorithm for the Maximum Clique Problem", Computers in Operations Research, Vol. 19, No 5, pp. 363-375, 1992, Pergamon Press Ltd.
- "Parallel Branch and Bound Algorithms for Quadratic Zero-One Programs on the Hypercube Architecture", Annals of Operations Research, Vol. 22, pp. 271-292, 1990, J.C. Baltzer AG, Scientific Publishing Company.
- "Computational Aspects of a Branch and Bound Algorithm for Quadratic Zero-One Programming", Computing, Vol. 45, pp. 131-144, 1990, Springer-Verlag.
- "Parallel Branch and Bound Algorithms for Unconstrained Quadratic Zero-One Programming", Published in book "Impacts of Recent Computer Advances on Operations Research", Vol. 9 of Publications in Operations Research Series, pp.131-143, 1989, North-Holland.

**Linkedin** <http://www.linkedin.com/in/GregoryRodgers>