MICHAEL FENN

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OBJECTIVE:

To use my technical and interpersonal skills to further my goal of being an excellent systems administrator and manager.

EDUCATION:

Clemson, SC — **Clemson University** — Jan 2009-May 2010

Master of Science, Computer Science

- GPR: 4.00 of 4.00
- Research focus: Grid computing, cloud computing, virtualization
- Master's Thesis: *Practical Implementation of the Virtual Organization Cluster Model*
- Coursework included "kernel hacking" class that investigated the process scheduling, block I/O, and driver portions of the kernel. Culminated in the development of a graphics driver capable of rendering a 3D mesh.

Clemson, SC — **Clemson University, Calhoun Honors College** — Aug 2005-Dec 2008

Bachelor of Science, Computer Science, Summa Cum Laude

- Major GPR: 4.00 of 4.00; Overall GPR: 3.92 of 4.00
- Honors Thesis: *A Performance Analysis of Virtual Machine Monitors for use in the Open Science Grid*

WORK EXPERIENCE:

New York, NY — **D. E. Shaw Research, LLC** — Aug 2012-Present

Systems Administrator

- Maintain a global systems and networking infrastructure for a top computational chemistry and molecular dynamics firm.
- Plan and manage transitioning the firm-wide backup infrastructure to IBM Tivoli Storage Manager (TSM) with Space Management and driven by GPFS ILM policies.
- Develop and maintain a configuration management system based on Bcfg2, including defining policies and procedures and on-boarding of technical staff.
- Maintain and extend Ethernet, Fibre Channel, and Infiniband network infrastructure which provides IP, SAN, and RDMA services.
- Plan and manage OS upgrade from CentOS 5 to CentOS 6. This included upgrading ~3000 machines and ~100 users along with porting and validating ~18,000 custom software modules.
- Manage a multi-PB GPFS installation consisting hardware from SuperMicro, Data Direct Networks, Texas Memory Systems, Brocade, and Force10. Implemented a GPFS Native RAID solution built on GSS with Infiniband interconnect. Managed a zero downtime upgrade of all GPFS NSD servers and underlying storage hardware.
- Maintain several batch processing clusters consisting of over 500 nodes each, some including Infiniband interconnects, which are scheduled with SLURM.
- Develop and maintain a distributed file system architecture based on CernVM-FS and Squid with a single "source of truth."
- Evaluate hardware for performance, reliability, and ease of integration with existing infrastructure.

State College, PA **The Pennsylvania State University** July 2010-Aug 2012

Research Computing and Cyberinfrastructure, Systems Administrator

- Worked effectively as part of a tight-knit team of systems administrators and domain experts that must also interface with a 10,000 employee organization.
- Architected high-performance compute and storage systems with total acquisition costs in excess of $1 million. Deeply involved with the process from conception to design, vendor selection, negotiation, acquisition, and finally implementation.
- Maintained 5+ Red Hat Enterprise Linux HPC clusters that provide batch-level computational resources to researchers. The clusters use the TORQUE PBS batch system along with the Moab scheduler and have Infiniband high speed interconnects. Newer clusters also have Nvidia Tesla GPUs.
- Maintained several Linux interactive visualization clusters that provide access to various scientific and analytical packages such as Abaqus, ANSYS, FLUENT, GAMBIT, Mathematica, MATLAB, R, SAS.
- Maintained a Windows 2008 R2 research computing cluster that provides Remote Desktop Session Host access to scientific applications.
- Maintained a large (raw capacity greater than 1 PB) GPFS file system and a 2.5 PB TSM backup system.
- Developed and maintained monitoring framework utilizing Nagios and Ganglia with custom probes and metrics written in Perl/Python. Framework generates critical performance metrics used for decision-making at the operational and strategic levels.
- Provided support to users for compiling code with GNU, Intel, and PGI compilers as well as maintaining and linking with optimized linear algebra libraries such as ATLAS, GotoBLAS, and Intel MKL.

Clemson, SC **Clemson University, School of Computing** Oct 2007-May 2010

Cyberinfrastructure Research Group, Open Science Grid/Cluster Administrator

- Collaborated with researchers from Brookhaven National Laboratory (BNL) and the Massachusetts Institute of Technology (MIT) to develop requirements for a next-generation batch scheduler designed for use with ephemeral virtual machines.
- Maintained an OSG Compute Element running CentOS (Red Hat Enterprise Linux)
- Maintained a High-Performance Computing Cluster of 26 Linux machines, including dynamically provisioned virtual machines.
- Provided support for the OSG software stack to internal and external users and administrators as a member of the OSG Engagement Virtual Organization.

Aiken, SC **Washington Savannah River Co.** May 2007-Aug 2007

Software Development Intern

- Developed .NET software for WSRC and the Department of Energy.
- Worked with a 10-person team on a ~10,000 line codebase, using source control.
- Reconstituted requirements for DOE software.

RELEVANT SKILLS:

- GNU/Linux, including Red Hat Enterprise Linux, CentOS, Fedora, Ubuntu
- GPFS, ZFS, NFS, CernVM-FS, Kerberos, LDAP, Bcfg2, TORQUE, Moab, SLURM
- Virtualization software, including QEMU-KVM, Xen, VirtualBox, VMWare ESXi
- Microsoft Windows 2000/XP/Vista/7, Office 2003/2007, Visual Studio .NET/2005
- Python, Perl w/CGI, Shell scripting, C, C#, PHP, Java, HTML w/CSS
- Open-source development, including code contributions to Bcfg2, MUNGE, pdsh, SLURM, VMware Ruby vSphere Client (rvc), and xCAT

- Condor, Globus, VDT, and other Open Science Grid software
- Linux performance analysis tools such as strace, iostat, vmstat, valgrind
- Debugging network issues using TCPdump, Wireshark, arp, iftop
- Hardware, including and servers from Dell, HP, IBM, and SuperMicro
- Planning data center build-outs incl. power, cooling, and physical space requirements.

SELECTED PUBLICATIONS:

- D.Turner, **M. Fenn**, and M. Murphy. "Pulley: Secure Administration of Virtual and Remote Computing Systems." 52nd ACM Southeast Conference (ACMSE '14), Kennesaw, GA, March 2014.
- **M. Fenn**, S. Goasguen, and J. Lauret. "Contextualization in Practice: The Clemson Experience." 13th International Workshop on Advanced Computing and Analysis Techniques in Physics Research (ACAT 2010), Jaipur, India, February 2010.
- M. Murphy, B. Kagey, **M. Fenn**, and S. Goasguen. "Dynamic Provisioning of Virtual Organization Clusters." 9th IEEE International Symposium on Cluster Computing and the Grid (CCGrid '09), Shanghai, China, May 2009. (21% acceptance rate)
- **M. Fenn**, M. Murphy, and S. Goasguen. "A Study of a KVM-based Cluster for Grid Computing." 47th ACM Southeast Conference (ACMSE '09), Clemson, SC, March 2009.
- **M. Fenn**, M. Murphy, J. Martin, and S. Goasguen. "An Evaluation of KVM for Use in Cloud Computing." 2nd International Conference on the Virtual Computing Initiative (ICVCI '08), RTP, NC, May 2008.