13th International Conference on High Performance Computing
HiPC 2006, December 18-21, Bangalore

INDUSTRY TRACK TALKS (HiPC Mini Symposium - Part II)

Wednesday, December 20, 1:00 pm-4:30 pm at Trinity I, Taj Residency, Bangalore

1.

Speaker: Dr. Reza Rooholamini

Dr. Rooholamini is currently the Director of OS & Global Solutions Engineering at Dell. He has been responsible for the product development of Dell's PowerEdge SMP servers, cluster offerings, database, and custom solutions. With more than 19 years of experience in the computer and communications industries, he has worked extensively in product development and has served as a technology consultant to many companies. Dr. Rooholamini has also served as a Professor of Computer Systems at the University of Wisconsin. A member of several influential industry committees, he has written over two-dozen published pieces and is a frequent speaker at industry events.

Title: Evolution of the HPCC Technology Ecosystem and Impact of HPCC technologies on Data Center Architecture of the Future

Abstract: Over the years, HPCC has been serving as the incubation ground for many technologies that are being used in commercial datacenters today. The current areas of research in HPCC, such as parallel processing techniques and high-speed interconnects, will also shape how the datacenter of the future and the applications running on top of it look like. On the other hand, as clusters grow in size, we face many challenges that can be solved using techniques employed in commercial datacenters today. Examples of these techniques are databases and virtualization. We are at a very critical juncture, where HPCC and commercial datacenter technology-pathways cross, and many research opportunities exist for the evolution of HPCC technology ecosystem.

This talk will start with a quick glance at the architecture of a traditional HPC cluster. Then we will talk about how certain datacenter technologies can be employed to enhance this architecture. We will also take a close look at several concepts used in the HPCC world, which will shape datacenter of the future. We conclude with some ideas on where opportunities for additional research exist, that will make an impact both in academic world and the industry.

2.

Speaker: R. Balasubramanian

R. Balasubramanian is HPC focused Senior Technical Consultant with HP. Bala has helped design innovative HPC solutions to several Indian HPC customers during the last one decade of work with HP, Compaq and Digital Equipment. Previous to that, Bala has served some of the best known S&T institutions in India, such as CDAC and Indian Space Research Organization. Bala is trained on Digital Imaging and

has implemented several parallel algorithms during his research years and in the corporate stint. Bala has special interest in performance benchmarks of HPC algorithms on various machine architectures. Bala has managed the HPC business development for HP earlier briefly as well. Bala holds a Masters degree in Physical sciences.

Abstract: The talk focuses on key challenges in building large HPC supercomputing configurations and cover the technology innovations to cater for :

- Increased demand for lower acquisition costs
- Demand for greater problem solving capabilities
- Proliferation of low cost, standards-based processors and system software
- Advances in usability and management software
- Advances in applications software

3.

Speaker: Manish Gupta

Manish Gupta is the CTO of the IBM India Systems and Technology Laboratory, which is one of the IBM global development labs for IBM servers and storage products. Until recently, he was a Senior Manager at the IBM T. J. Watson Research Center in Yorktown Heights, NY, and led research on system software for the IBM Blue Gene supercomputer, parallel performance tools for all of POWER based systems, applications for the Cell Broadband Engine, and visualization systems for Deep Computing. Manish received a B. Tech. from IIT Delhi in 1987, a Ph.D. in Computer Science from the University of Illinois at Urbana-Champaign in 1992, and has worked with IBM since then. He has received two Outstanding Technical Achievement Awards at IBM, filed about a dozen patents, and has co-authored over 60 papers in the areas of high performance compilers, parallel computing, and Java Virtual Machine optimizations.

Title: High Performance Computing in the Brave New World

Talk Abstract: Rising power dissipation in microprocessor chips is driving computer architects towards a variety of solutions, all of which require exploiting greater degrees of parallelism. We will present various efforts at IBM in pushing the limits of parallel computing. We will describe our experiences with the Blue Gene project, and present some of the efforts underway on the PERCS project and on accelerating computations in selected domains using the Cell Broadband Engine.

4.

Speaker: Dr. Shubhashis Sengupta

Dr. Shubhashis Sengupta is Principal Researcher and Head of Grid and HPC group at SETLabs, Infosys. He has vast experience in Industry R&D and solution consulting. Shubhashis is a member of the ACM and his research area include High Performance enterprise computing, Grid and clusters, performance engineering and modeling, Web services and SOA etc. He can be reached at shubhashis_sengupta@infosys.com

Title: Challenges and new dimensions in High Performance Enterprise Computing

Abstract: Traditional scaling approaches for custom built multi-tier Enterprise Applications (mainly J2EE) are not quite coping up in cases of extreme scalability and performance, especially in domains like BFSI and telecom. High availability container clustering and tiered scale-up approaches can be costly and are available only in high-end transaction processing systems. Research is currently on to create low cost

scale-out alternative using Grid like technologies on commodity servers. Vendors and providers are in the process of providing data /object caching on distributed shared memory (DSM) platforms. However, many complexities in the enterprise context are yet to be tackled like supporting transactions, cache coherency, scaling with state, external memory related problems etc. In this talk, we will give an overview of the dimensions and challenges ahead in High Performance Enterprise Computing.

5.

Speaker: Deepak Setty

Deepak Setty leads the HPC Program Office for Intel in Asia Pacific and Japan and is responsible for Sales & Marketing, Product definition - processor and software tools. Deepak has been with Intel for around 11 years and moved back to India from Europe a couple of years back. Deepak was responsible for Intel's Services business in United Kingdom and also heading business development group for Energy and Pharmaceutical sector in UK. He is actively engaged in Asia's and Japan's Petascale Projects and has a special interest in ramping the adoption of technical computing in the commercial sector.

Abstract: Deepak will talk about some of the worldwide trends in High Performance Computing and associated strategy and solution roadmap from Intel and their partners. He will also touch upon some of the challenges in Petascale computing, many core plans and future platform directions. A brief on current implementations of GRID computing in Asia and other parts of the world will be highlighted.

6.

Speaker: TBA
Abstract: TBA

7.

Speaker: Mahesh Krishnamoorthy

Mahesh Krishnamoorthy is a Senior Consultant at Satyam Computers Services, Ltd. An Industrial engineer by qualification, Mahesh has about 12 years experience in the business consulting space. His experience spans areas like BPR, ERP, SCM and cutting edge technologies like Grid computing. He is currently the competency head of the Grid computing practice of Satyam Computer Services, Ltd. He has taken keen interest in not only implementing solutions on Grid computing but also in evangelizing the benefits of this technology. He was a guest speaker at many seminars and conferences in the field of Grid computing. Mahesh was also a program committee member at the e-science conference held in Melbourne in early December 2005. He has also been a special invitee to the e-governance advisory committee of the Government of Pondicherry.

Title: Grid technology for infrastructure consolidation in enterprise applications and data centers

Abstract: A large number organizations are looking for ways to optimize the current data center environment. Standardization, Virtualization, Consolidation, and Automation are some of the techniques being considered as companies strive to achieve the next generation data center, where, operating costs and

manual intervention is minimized and performance is maximized. This trend towards optimization is being driven by a number of hard problems that are confronting today's data center owners and operators. Some of the key challenges include: a) Rising costs b) Space, power & infrastructure c) Low server utilization d) Long time for provisioning new servers e) SLAs

Commercial Grid technology has gained acceptance in many fortune 500 organizations, primarily being used to provide highly optimized, cost effective infrastructure to run applications. The trend is towards using the strengths of Grid technology to achieve dynamic provisioning based on load conditions and demand. A complimentary approach of virtualization and decoupling of applications from the infrastructure layer ensures that the application infrastructure scales up and down based on demand. Using Grid technology, it is possible to build a dynamic infrastructure layer to cater to the varying demand from applications. This results in bringing down the cost considerably and commercial organizations stand to gain in terms of costs. Other advantages include: a) Agility b) Flexibility c) Improved SLAs d) Enhanced Productivity e) High availability and easier maintenance.

8.

Speaker: Bjorn Andersson

Björn Andersson brings well over 20 years of experience in the computer industry to his position as Director of HPC and Grid Computing at Sun Microsystems, Inc. He directs a company wide initiative for High Performance Computing and also heads up a team building out Sun's portfolio for high performance Grid Computing using Sun's Sun Fire x64 based products.

He has previously held several sales, technology and marketing positions and has also been intimately involved in setting the strategic direction for Sun. In the past Mr. Andersson was the regional manager for product marketing in the Nordic and Baltic countries. He then transferred to the worldwide headquarters and was instrumental in bringing Sun's Ultra workstation series and graphics products to the world wide market.

Mr. Andersson holds a master's degree in Engineering Physics and Computer Technology from the University of Uppsala in Sweden

Title: Production Ready HPC

Abstract: High Performance Computing (HPC) is more and more being used as a critical competitive tool by commercial companies. More emphasis is being put on HPC solutions to be Production Ready, to be ready for prime time after minimal installation time and to be able to continually deliver a reliable service to users. This has implications on how systems are designed, configured, delivered and managed. A comprehensive system level view is required to address these requirements.