

## **Summary of Qualifications**

- 3 years experience in the IT industry, with responsibilities in technical consulting, pre and post-sales technical support, software infrastructure design, R&D and training in high performance and technical computing (HPTC) and Grid computing.
- Strong knowledge of Sun Solaris and Linux operating system.
- Strong knowledge of cluster management and resource management tools.
- Strong knowledge of Grid computing, distributed systems and service oriented architecture.
- Understanding of high speed network interconnects like Infiniband, Quadrics, Myrinet.
- Team player and work well in both team environments and individual assignments.
- Excellent interpersonal & communication skills, able to communicate with people at all levels of an organization and different cultures, able to put ideas and solutions across.

## **Technical Expertise**

Hands-on Experience in:

1. Solaris 9/10, Solaris Containers, SMF, DTrace
2. Most Linux distributions (RHEL, SUSE Linux etc)
3. Sun Java Enterprise Systems, Sun Studio, N1 Grid Engine, Globus Toolkit
4. Application performance tuning
5. Parallel and Distributed Programming – MPI, OpenMP, RMI, webservice, JavaSpace, Jini, JXTA

Knowledge in:

1. High bandwidth, low latency interconnects
2. Parallel filesystem for HPC
3. Sun servers and storage solution
4. Many Grid middlewares and tools
5. CPU hardware architectures
6. Identity management technology (SAML, Liberty, Shibboleth)

## **Education**

- Bachelor of Computing in Computer Science with Honours, National University of Singapore (Jul 1999 to Jul 2002)
- Diplomas in Computer Studies, Ngee Ann Polytechnic (Jul 1994 to Jul 1997)

## **Experience**

**Asia Pacific Science and Technology Centre, Sun Microsystems**  
**Senior Research Engineer / Technical Specialist**  
**From: March 2003 – present**

*Responsibilities:*

In the centre, I have 2 different roles: technical specialist and research engineer. As a technical specialist, my role in Sun Microsystems is to do pre-sale support to customers world-wide on our HPC and N1 Grid products, some of which required me to travel overseas for on-site support for proof-of-concept implementations or product trainings. Therefore it is my responsibility to keep myself updated on not only Sun's products and solutions, but also on our competitors'.

As a research engineer, I coordinate and take on several research projects, and my responsibilities include writing research papers, technical reports and propose new ideas. Most of our projects are in collaboration with overseas universities and research institutes in India, China, Japan, Europe and US. I am also required to attend conferences and seminars to present on our research.

- Provided on-site technical support to customers
- Provided remote technical support to customers globally
- Provide pre-sales support to the sales team
- Perform system and application tuning for Sun Solaris
- Perform application porting and proof-of-concepts
- Conducted trainings to partners and customers
- Perform applied R&D and review new technology and software
- Coordinate research projects in collaboration with oversea researchers
- System administrator for internal data centre

**Solution Delivery / Customer Engagement**

1. Industrial Technology Research Institute, Taiwan
  - Provide consultation on N1 Grid Engine
  - Integration of N1 Grid Engine with FLEXlm license manager
  - Conducted N1 Grid Engine introduction and advance features
2. Grid Technology Research Center, AIST Japan
  - Upgraded their Grid Engine from 5.3 to 6.0 on a 256 node Xeon Linux cluster (512 processors)
  - Migrated the old cluster configuration to the new version
  - Designed the Grid Engine queue configurations based on customers requirements
  - Reviewed customer's Grid Engine jobmanager script for Globus Toolkit
  - Tested performance of the new Grid Engine system on their cluster
3. ST Microelectronics, Singapore
  - Deployed and customized the LSF-SGE gateway to transfer compute job from LSF on 32 node Opteron Linux cluster to Grid Engine on Solaris SPARC
4. Ericsson, Brazil
  - Installed of the Grid Engine accounting and reporting console
  - Reviewed customer's application integration with N1 Grid Engine

- Provided N1 Grid Engine advise on policies, parallel tools integration, Globus Toolkit to the Sun Microsystems Brazil HPC team.
5. DSO National Lab, Singapore
    - Installation and setup of the Globus Toolkit 4.0
    - Integration of Globus Toolkit with N1 Grid Engine
  6. Large Semi-conductor Company, Taiwan
    - Implemented a POC on N1 Grid Engine 6.0 with EDA applications, focusing on high availability, license management and resource usage optimizations
    - Analyzed current production environment and provided technical consultation advise on possible improvements
  7. National Cheng Kung University, Taiwan
    - Supported in setting a HPC cluster of 128 nodes Sun Fire X2200 M2 with total of 512 cores, with Infiniband and Lustre parallel filesystem
    - Install, setup and configure N1 Grid Engine and Grid Engine Portal
  8. Samsung Electronics, Korea
    - Feasibility study of migrating customer's existing data centre infrastructure and business model from a cost centre to a profit centre by means of providing utility compute service

### **Internal Research Projects**

1. GrIDE: Grid Integrated Development Environment

The GrIDE project aims to provide a flexible, portable and conveniently integrated development environment for grid applications. I was involved in designing and implementing a Grid Workflow Management System.
2. Peer-to-peer Query Framework

A generic P2P query-response framework based on JXTA. Designed and implemented by me.
3. Economics and Market-mechanisms for the Grid

This project research on economics and pricing theory for resource allocations in computational Grid.
4. SORMA – Self-Organizing ICT Resource

This is an EU-funded project consisting of many top European universities. SORMA deals with the development of methods and tools for an efficient market-based allocation of resources, through a self-organizing resource management system, using market-driven models supported by extensions for Grid infrastructures.
5. Trust and Identity Management for Grid

Correct as of 22 February 2007

This project attempt to apply Identity management and federation concepts to computational Grid. I was involved in investigating Sun Access Manager and Identity Manager, and open specifications like SAML and Liberty.

### **Research Publications**

*A Market-Based Framework for Trading Grid Resources*, Melvin Koh, Jie Song, Liang Peng & Simon See, The 3rd International Workshop on Grid Economics and Business Models - GECON 2006, Singapore, 16 May 2006.

*Service Registry Discovery using GridSearch P2P Framework*, Melvin Koh, Jie Song, Liang Peng & Simon See, CCGrid06 - 6th International Workshop on Global and Peer-to-Peer Computing: Theory and Experience of Desktop Grids and P2P systems, Singapore, 16-19 May 2006.

*Integration of Parallel MM5 with Distributed Resource Manager and Performance Evaluation*, Melvin Koh, Liang Peng & Simon See, In Proceedings of the 8th IEEE International Conference on High Performance Computing in Asia-Pacific Region (HPCAsia 2005), IEEE Computer Society Press, Beijing, 30 November-3 December 2005.

*Performance Investigation of Weighted Meta-scheduling Algorithm for Scientific Grid*, Jie Song, Chee-Kian Koh, Simon See & Gay Kheng Leng, To be Published in the 4th International Conference on Grid and Cooperative Computing (GCC), Beijing, 29 November-04 December 2005.

*Grid Workflow Management System*, J. Song, J. Singh, C. K. Koh, Y. S. Ong & C. W. See, International Journal on Information Technology (IJIT), Singapore, 2005, Vol. 11, No. 4, pp. 50-57.

*Performance Monitoring for Distributed Service Oriented Grid Architecture*, Liang Peng, Melvin Koh, Jie Song, & Simon See, In Proceedings of the 6th International Conference on Algorithms and Architectures for Parallel Processing (ICA3PP2005), Lecture Notes of Computer Science (LNCS3719), Melbourne, Australia, 2-5 October 2005.

*Grid Workflow Management System*, Jie Song, Jasleen Singh, Melvin Koh, Yew Soon Ong & Simon See, 2nd Workshop on Grid Computing and Applications, Singapore, 5 May 2005.

*GriDE Workflow Editor*, Melvin Koh, Simon See, Jie Song, Poh Guan Khoo, Lip Kian Ng & Liang Peng, International Conference On Scientific & Engineering Computation 2004 (IC-SEC), Singapore, 30 June-1 July 2004.

### **Technical Reports**

*Survey on the Application of Economic and Market Theory for Grid Computing*, Xie Xia, Huang Jin, Wu Song, Jin Hai, Melvin Koh Chee Kian, Song Jie & Simon See, Technical

Report APSTC-TR-2006-005, 30 August 2006.

*Identity and Privacy Management for Grid Service Market*, Satish Chathapuram V, Teo Yong Meng, Melvin Koh Chee Kian, Jie Song & Simon See, Technical Report APSTC-TR-2006-004, 01 August 2006.

*NIGE6 Proof-of-Concept in Electronic Design Automation: Experience and Summary Report*, Melvin Koh Chee Kian & Kian Chau Ng, Technical Report APSTC-TR-2006-003, 21 July 2006.

*A Proposed Simple Grid Market Framework - Part I*, Jie Song, Melvin Koh, Liang Peng & Simon See, Technical Report APSTC-TR-2005-001, 8 August 2005.

### **Technical Briefs**

*Using MPICH-G2 in Solaris Container*, Melvin Koh, APSTC-TB-2005-004.pdf

*Using GridWay on Solaris 10 with Globus Toolkit 4.0*, Melvin Koh, APSTC-TB-2005-003.pdf

*LSF Migration to Grid Engine using LSF-SGE Gateway*, Melvin Koh & Poh Guan Khoo, APSTC-TB-2005-002.pdf

*Performance Analysis of Parallel Version of MM5*, Melvin Koh, Liang Peng, APSTC-TB-2004-007.pdf

*Numeric Computation Analysis: Gradual Underflow*, Melvin Koh, APSTC-TB-2004-002.pdf

*Sun Grid Engine License Management Using Load Sensor*, Melvin Koh, APSTC-TB-2004-001.pdf

*Test and evaluation of JGrid 1.0a*, Melvin Koh, APSTC-TB-2003-005.pdf

*Web-based System Monitoring Tools*, Melvin Koh, APSTC-TB-2003-002.pdf

### **Trainings and Presentations Conducted**

Basic Sun Grid Engine: Usage and Administration	Industrial Technology Research Institute, Taiwan
GriDE Workflow Editor	International Conference of Scientific and Engineering Computation 2004
Introduction to GriDE	NGPP Training Workshop: Grid-enabling Applications
Overview on Sun Grid Technologies	International Symposium of Grid

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	Computing and LCG-Asia Workshop
Sun Grid Engine	Grid Asia 2005, Singapore
Panelist for “Scheduler Shootout”	Grid Asia 2005, Singapore
BioBox for Researchers & collaborations with APSTC	National Health and Research Institute & Chinese Culture University, Taiwan
Introduction to Grid Services	Sun APSTC - NGO Joint Training Course Initiative, Singapore
Grid Services: Design and Development	MIMOS Grid Training, Kuala Lumpur, Malaysia
Integration of Parallel MM5 with Distributed Resource Manager and Performance Evaluation	HPC Asia 2005, Beijing, China
A Flexible High Performance Cluster Computing Service for Grid	
Java in High Performance Technical Computing (HPTC)	SUN@NUS'06, NUS, Singapore
N1GE and DRMAA Tutorial	CCGrid 2006, Singapore
Service Registry Discovery using GridSearch P2P Framework	