2008 Seventh International Conference on Grid and Cooperative Computing

GCC 2008

Table of Contents

Message from General Chair.................................................................xiii
GCC 2008 Conference Committee............................................................xiv
PGSC 2008 Workshop Committee............................................................xvi
Keynote Speakers..................................................................................xvii

Seventh International Conference on Grid and Cooperative Computing (GCC 2008)

Session 1: Theory, Architecture, and Fundamental Algorithms

  Yongjian Wang, Zhongzhi Luan, Depei Qian, Yuanqiang Huang, Ting Chen, Biao Han,
  Yinan Ren, Kunqian Yu, and Hualiang Jiang

A Layered Context Reference Model for Context/Situation Middleware .........................................................15
  Jinhua Xiong, Jianping Fan, and Yan Li

Grid Memory Service Architecture for High Performance Computing .................................................................22
  Lei Li, Siyuan Liu, Mingyu Chen, and Jianping Fan

Providing Virtualization-Based Single System Image on Clusters ..............................................................................28
  Jinbing Peng, Xiang Long, and Limin Xiao

Solution of Large Scale Matrix Inversion on Cluster and Grid ....................................................................................33
  Ling Shang, Zhijing Wang, and Serge G. Petiton

Parallel Data Mining on Multicore Clusters ............................................................................................................41
  Xiaohong Qiu, Geoffrey Fox, Huapeng Yuan, Seung-Hee Bae,
  George Chrysanthakopoulos, and Henrik Nielsen

A Novel Self-Adaptive Casting Net-Based Particle Swarm Optimization ..........................................................50
  Hongbo Tian, Xiaoshe Dong, Yiduo Mei, Taiqiang Lv, and Xiaoyi Zhao
Session 2: Resource Management and Scheduling

R-DLS: An Improved DLS Algorithm .................................................................97
Liu Xiaogqian, Yang Shoubao, Wang Shuling, and Xu Jing
Impact of Parallel Download on Job Scheduling in Data Grid Environment 102
Junwei Zhang, Bu-Sung Lee, Xueyan Tang, and Chai-Kiat Yeo
Resource Discovery Algorithm Based on Small-World Cluster in Hierarchical Grid Computing Environment .................................................................110
Yan Ma, Bin Gong, and Lida Zou
A Heuristic Approach for Single Path Pipeline Execution on Grid .................................117
Ekasit Kijsipongse and Sudsanguan Ngamsuriyaroj
ZhiHui Lu, WeiMing Fu, Chuan Xiao, ShiYong Zhang, and YiPing Zhong
Agent-based Spatial Query Processing and Resource Management in Grid Environment ........................................................................................................133
Yufei Bai, Xiujun Ma, Kunqing Xie, Ping Zhang, Xiong Li, Yixian Sun, and Ke Li
A Heuristic on Job Scheduling in Grid Computing Environment .......................................141
Hojjat Baghban and Amir Masoud Rahmani
Dynamic Load Balancing in Web Cache Cluster ..........................................................147
Zhaolei Duan and Zhimin Gu
Flexible Advance Reservation Impact on Backfilling Scheduling Strategies ........................151
H. R. Moaddeli, Gh. Dastghaibyfard, and M. R. Moosavi
SmartGRID: A Fully Decentralized Grid Scheduling Framework Supported by Swarm Intelligence ......................................................................................160
Ye Huang, Amos Brocco, Pierre Kuonen, Michele Courant, and Béat Hirsbrunner
Adaptive Load Balancing Algorithm over Heterogeneous Workstations .......................................................169
   Liang Guangmin

Grid Service Scheduling Algorithm Based on Marginal Principle .................................................................175
   Lida Zou, Fang-ai Liu, and Yan Ma

Replica Prediction Guide Task Scheduling for a Highly Frequent
Task-Submitting Circumstance in Grid Environment ........................................................................................180
   Yu Kang, Xiangguo Yan, Chongxun Zheng, and Jian Kang

An Adaptive Scheduling Algorithm for Scheduling Tasks in Computational
Grid ............................................................................................................................................................................185
   Kun-Ming Yu and Cheng-Kwan Chen

Improving Grid Inter-Domain Scheduling with P2P Techniques: A
Performance Evaluation ..........................................................................................................................................190
   Agustin Caminero, Omer Rana, Blanca Caminero, and Carmen Carrión

Dynamic Visualization Service Deployment in Grid Scientific Workflow ....................................................201
   FuQiang Li, Bin Gong, Cheng Xing, and Yan Ma

Grid Resource Discovery Strategy Based on Historical Information ..............................................................206
   Wei Chen, Shoubao Yang, Yan Jiang, and Shuling Wang

Data Distribution Algorithm Using Time Based Weighted Distributed Hash Tables .........................................210
   Rongling Lang and Zhiqun Deng

Service-Oriented Aggregation of Distributed and Heterogeneous Information
Resources ..................................................................................................................................................................214
   Yongshan Wei, Xin Chen, and Yanbo Han

Resource and Information Sharing Mechanism Based on Spatial Information
Grid ............................................................................................................................................................................221
   Zhong Xie, Miao-Miao Song, and Xian-Gang Luo

Research of Grid Platform Oriented to Intensive Data Processing ..................................................................226
   Ya Ouyang, Lu Yang, and Rui-zhi Sun

Session 3: Data Management and Semantic Modeling

Priority Based Transaction Scheduling Model and Concurrency Control
in Grid Database ......................................................................................................................................................235
   Yaojun Han, Changjun Jiang, and Xuemei Luo

Implementation of a Cyber Transformer for Parallel Download
in Co-Allocation Data Grid Environments ..........................................................................................................242
   Chao-Tung Yang, Ming-Feng Yang, and Wen-Chung Chiang

An Attribute-Based Dynamic Data Organization in Mass Storage Systems ..................................................254
   Chentao Wu, Changsheng Xie, Qinqi Wei, Shenggang Wan, Qiang Cao, and Xubin He

A New Model for Distributed Knowledge Organization Management ........................................................261
   Huimin Lu, Boqin Feng, Yingliang Zhao, Qinghua Zheng, and Jun Liu
Session 4: Overlay Networks and Sensor Networks

Efficient Matrix Multiplication on Wireless Sensor Networks ............................................................331
   Hong Shen and Jing Chen

Data-Coverage Sleep Scheduling in Wireless Sensor Networks ............................................................342
   Xu Xu, Yu-Hen Hu, Wei Liu, and Jingping Bi

REBAR: A Reliable and Energy Balanced Routing Algorithm for UWSNs ........................................349
   Jinming Chen, Xiaobing Wu, and Guihai Chen

A Study on Reducing Chunk Scheduling Delay for Mesh-Based P2P Live Streaming ..............................356
   Zhengjun Chen, Kaiping Xue, and Peilin Hong

Energy Balanced Data Gathering in WSNs with Grid Topologies .........................................................362
   Jing Chen, Hong Shen, and Hui Tian

Scale-free Overlay Structures for Unstructured Peer-to-Peer Networks ............................................369
   Jing Qi and Jiguo Yu

A Novel P2P Overlay Network Based on Cycloid and Folded Hypercube ........................................374
   Xing Li and Jiguo Yu
Study on the Optimal QoS Utility Scheduling in Multiple-Plane and Multiple-Stage Switching Network ...............................................................................................................380
  Xiangjie Ma, Lei He, Julong Lan, Junpeng Mao, and Baisheng Zhang

PeerStrategy: A Local Strategy for Peers to Evaluate Their Neighbors ...............................................................................................................386
  Zhen Xie and Jingping Bi

Maximizing Universal Streaming Rate in Peer-to-Peer Streaming Networks ...............................................................................................................392
  Jiagao Wu, Jun Tao, and Zhiqiang Zou

An Active-Drop Congestion Control Protocol in Peer-to-Peer Multicast Streaming ...............................................................................................................398
  Weizhan Zhang, Qinghua Zheng, Yanze Lian, and Yiqin Yu

A Super Node Selecting Mechanism Based on AHP .................................................................................................................................403
  Shuling Wang, Shoubao Yang, Kai Shen, and Lihua Xie

Deep Analysis of Intending Peer-to-Peer Botnet .................................................................................................................................407
  Dafan Dong, Ying Wu, Liang He, Guowei Huang, and Gongyi Wu

Whirlpool: Structuring Mesh-Based Protocol for QoS-Aware Peer-to-Peer Streaming ...............................................................................................................412
  Huang YongXiang, Qian DePei, Wu WeiGuo, and Liu Tao

The Data Transfer Strategy Research on Distributed Mobile Environment ...............................................................................................................421
  Yanxin Xue and Xiaofeng Mao

Session 5: Programming Models, Workflows, and Service-Oriented Technologies

ADOM: An Adaptive Objective Migration Strategy for Grid Platform .................................................................................................................................429
  Chunfeng Si, Wenzhong Li, Qi Lv, Tao Yan, Sanglu Lu, and Daoxu Chen

An Improved Visual BPEL-Based Environment for Scientific Workflow ........................................................................................................435
  Zhili Zhao, Ruisheng Zhang, Jiazao Lin, Ying Chen, Huajian Zhang, and Lian Li

Grid Service Interaction Pattern and Composition Verification .................................................................................................................................442
  Guo Wencai and Lin Chuang

Request Sequencing: Enabling Workflow for Efficient Problem Solving in GridSolve .................................................................................................................................449
  Yinan Li, Jack Dongarra, Keith Seymour, and Asim YarKhan

A Chemical Interpretation of GSML Programs .................................................................................................................................459
  Xingwu Liu, Yann Radenac, Jean-Pierre Banâtre, Thierry Priol, and Zhiwei Xu

On Solving QoS-Aware Service Selection Problem with Service Composition ........................................................................................................467
  Changlin Wan, Carsten Ullrich, Limin Chen, Rui Huang, Jiewen Luo, and Zhongzhi Shi

A Web Service Orchestration Model Based on Concurrent Transaction Logic .........................................................................................................................475
  Yong Wang, Li Wang, and Guiping Dai

Heterogeneous Grid Workflow Management Based on Virtual Service .................................................................................................................................483
  Song Wu, Kai Wang, Hai Jin, and Deqing Zou

Multi-Phase Efficient Service Composition .................................................................................................................................................................490
  Zongxia Du and Wenyi Zhang
Fuzzy Petri Net-Based Optimized Semantic Web Service Composition ........................................................496
   Rui Fu, Weiqing Dong, Guang Yang, Yiduo Mei, and Xiaoshe Dong
A Grid Workflow Framework with High Scalability and Usability ...............................................................503
   Shifeng Shang, Jinlei Jiang, Zhenchun Huang, Xiaomeng Huang, Guangwen Yang,
   Weimin Zheng, and Lan Yu
A QoS-Aware and Fault-Tolerant Workflow Composition for Grid...............................................................510
   Jiang Bian, Chuliang Weng, Jie Du, and Minglu Li

Session 6: Nonfunctional Support for Grid Computing

PhoenixAccount: A Grid Accounting System for the Distributed Resource Sharing ......................................................519
   Yi Liang, Zheng Zhang, Jianping Fan, and Dan Meng
Reducing the Cluster Monitoring Workload by Identifying Application Characteristics ...........................................525
   Ke Wang, Zhongxin Wu, Zhongzhi Luan, and Depei Qian
Pricing Strategies in Grid Market: Simulation and Analysis ..................................................................................532
   Xia Xie, Jin Huang, Hai Jin, Song Wu, Melvin Koh, Jie Song, and Simon See
Qualification Evaluation in Virtual Organizations Based on Fuzzy Analytic Hierarchy Process ..............................539
   Fan Zhang, Junwei Cao, Lianchen Liu, and Cheng Wu
A Flexible and Timely Resource Accounting Framework and Service for CNGrid .............................................548
   Jianchao Zhu, Li Zha, and Sha Wu
KAP-AOT: A Novel Group Key Agreement Protocol Based on Considering Nodes' Average Online Time .................553
   Kaiping Xue, Peilin Hong, Zhengjun Chen, Lianhe Luo, and Hancheng Lu
A Dynamic Fault Tolerant Algorithm Based on Active Replication .................................................................557
   Lingxia Liu, Zhaoxue Wu, Zhiqiang Ma, and Yong Cai
ESIR: A Deployment System for Large-Scale Server Cluster ...........................................................................563
   Zhenghua Xue, Xiaoshe Dong, Junyang Li, and Hongbo Tian
A Scalable and Low-Cost Grid Portal .................................................................................................................570
   Jing Zhao, Jing Xu, Xiaoshe Dong, Zhengdong Zhu, and Zhao Wang
A High Performance Enterprise Service Bus Platform for Complex Event Processing ........................................577
   Deng Bo, Ding Kun, and Zhang Xiaoyi
Using SAML Callout to Realize Access Restriction for Geospatial Grid Services ................................................583
   Jiayuan Lin, Yu Fang, and Bin Chen
An Automated Negotiation Engine for Consistency of Access Policies in Grid ...................................................589
   Zhang Runlian, Wu Xiaonian, and Dong Xiaoshe
Session 7: Performance Evaluation, Simulation, and Applications

Mapping DAG-Based Power System Computing and Simulation Applications to Grid ........................................................................................................................................................................599

Jie Du, Chuliang Weng, Jiang Bian, and Minglu Li

Measurement and Evaluation Performance of Stream-Media Service Based on Active Measurement ..........................................................................................................................................605

Bin Zeng, Dafang Zhang, Lei Lv, Wenwei Li, and Gaogang Xie

A Software Defined Radio Receiver Architecture Based on Cluster Computing .................................................................................................................................................612

Guangjun Lu and Peizhong Lu

Empirical Performance Evaluation of Message Passing Programs Running in Virtual Machines .................................................................................................................................................620

Kang Chen, Jun Xin, and Weimin Zheng

Development of a Grid GIS Prototype for Geospatial Data Integration .................................................................................................................................................628

Zhou Huang, Yu Yang, Bin Chen, and Xi Wu

Deploying HEP Applications on Multiple Grid Infrastructures .................................................................................................................................................632

Yaodong Cheng, Gang Chen, Yongjian Wang, and Shuaijie Wang

A Network Alert Degree Evaluation Model Based on Cooperative Computing .................................................................................................................................................642

Hu Chang-Jun, Weng Yu, and Shi Peng

A Study on Parallel Imaging Algorithm of 3D Geological Data .................................................................................................................................................649

Sun Ya-Hao and Li Zhao-Hui

Performance Evaluation of Real-Time Video over Wireless Ad Hoc Networks .................................................................................................................................................653

Zhao Yu-ting, Dai Guan-zhong, and Mu De-jun

Research and Application on Virtualization Service Oriented Infrastructure for Networkitized M&S .................................................................................................................................................658

Bo Hu Li, Yabin Zhang, Li Tan, Zhihui Zhang, Xudong Chai, Baocun Hou, Haiyan Yu, and Zhihui Du

Integration and Sharing of Remote Sensing Images Based on Grid Service .................................................................................................................................................665

Binge Cui, Qiang Wang, and Chuanmin Wang

A Design of the Architecture of Geospatial Information Collaborative Service in Spatial Data Grid Environment .................................................................................................................................................669

Xiaobo Guan and Chengqi Cheng

Federation Integration Architecture for Shiring Resources of Product Development Platforms .................................................................................................................................................674

Wu Song, Xiao Tianyuan, Fan Wenhui, and Sun Hongbo

A Design for Polygon Overlay Algorithm in the Simple Feature Model .................................................................................................................................................680

Zhong Xie, Zi Ye, and Liang Wu

A History-Based Motion Prediction Method for Mouse-Based Navigation in 3D Digital City .................................................................................................................................................686

Zhang Xiaohong, Feng Shengzhong, and Fan Jianping
Cooperative Recommendation System Based on Ontology Construction ......................................................691
   Jike Ge, Yuhui Qiu, and Zuqin Chen
The Simulation of MSC EASY5 Model Based on the Grid .................................................................695
   Zhang Tianle, Zhihui Du, Wang Man, and Ye Yin

Second International Workshop on Personalization in Grid and Service Computing (PGSC2008)

An Algorithm for Priority Ranking of Individualized Functional Requirements in Networked Software .................................................................701
   Dunhui Yu, Keqing He, Jian Wang, and Haiyan Mao
A Context-Aware Services Mash-Up System .........................................................................................707
   Yan Li, Jun Fang, and Jinhua Xiong
Mining Frequent Composite Service Patterns .......................................................................................713
   Hui Meng, Lifu Wu, Tianlei Zhang, Guisheng Chen, and Deyi Li
Domain-Specific Individualization of Workflows .....................................................................................719
   Tim Raedisch, Norbert Weissenberg, and Bernhard Holtkamp
A Suitability Measure Approach of Domain Models Based on Semantic Association ...........................................727
   Peng Rong, Cui Jingsong, and Liu Ping
Configuration Knowledge Expression of ETO Product for Mass Customization ........................................733
   Lu Yujun and Wang Chunqing
Agile Data Streaming for Grid Applications ...............................................................................................739
   Wen Zhang, Junwei Cao, Yisheng Zhong, Lianchen Liu, and Cheng Wu
Towards Improving Web Service Registry and Repository Model Through Ontology-Based Semantic Interoperability ........................................................................747
   Cheng Zeng, Keqing He, Zhitao Yu, and Caiping Wan
A General Model of Mobile Environments: Simulation Support for Strategic Management Decisions ...............................................................753
   Volker Gruhn and Thomas Richter

Author Index ..................................................................................................................................................765