

PROCEEDINGS

Seventh International Conference on Grid and Cooperative Computing

GCC 2008

**October 24–26, 2008
Shenzhen, China**

Sponsored by:

Shenzhen Institute of Advanced Technology, Chinese Academy of Sciences

Dawning Information Industry Co., Ltd, Beijing, China

China National Grid

European and Chinese Cooperation on the Grid (ECHOGRID)

Chinese Academy of Sciences Shenzhen Academician Consultation Center

Chinese Academy of Engineering Shenzhen Academician Consultation Center



Los Alamitos, California
Washington • Tokyo



TABLE OF CONTENTS

SEVENTH INTERNATIONAL CONFERENCE ON GRID AND COOPERATIVE COMPUTING (GCC 2008)

SESSION 1: THEORY, ARCHITECTURE, AND FUNDAMENTAL ALGORITHMS

DDGrid: A Grid Computing Environment with Massive Concurrency and Fault-Tolerance Support	1
<i>Yongjian Wang, Zhongzhi Luan, Depei Qian, Yuanqiang Huang, Ting Chen, Biao Han, Yinan Ren, Kunqian Yu, Hualiang Jiang</i>	
A Layered Context Reference Model for Context/Situation Middleware	11
<i>Jinhua Xiong, Jianping Fan, Yan Li</i>	
Grid Memory Service Architecture for High Performance Computing	18
<i>Lei Li, Siyuan Liu, Mingyu Chen, Jianping Fan</i>	
Providing Virtualization-Based Single System Image on Clusters	24
<i>Jinbing Peng, Xiang Long, Limin Xiao</i>	
Solution of Large Scale Matrix Inversion on Cluster and Grid	29
<i>Ling Shang, Zhijian Wang, Serge G. Petiton</i>	
Parallel Data Mining on Multicore Clusters	37
<i>Xiaohong Qiu, Geoffrey Fox, Huapeng Yuan, Seung-Hee Bae, George Chrysanthakopoulos, Henrik Nielsen</i>	
A Novel Self-Adaptive Casting Net-Based Particle Swarm Optimization	46
<i>Hongbo Tian, Xiaoshe Dong, Yiduo Mei, Taiqiang Lv, Xiaoyi Zhao</i>	
2C: A New Approach to Design the Second Level Buffer Cache	52
<i>Yingjie Zhao, Nong Xiao</i>	
Implementation of Virtual Dynamic Personal Cluster	58
<i>Hu Kai, Huang Bojun, Huang Shilin, Liu Deqing</i>	
Research and Design of a Parallel Debugging Interface in a New Parallel Debugger Framework	66
<i>Wei Cui, Weiguo Wu, Yixin Zhao, Leiqiang Zhang</i>	
Achieving Team-Awareness in Scientific Grid Environments	71
<i>Christoph Dorn, Daniel Schall, Schahram Dustdar</i>	
Study on Problem-Oriented Model for Spatial Analysis Parsing in Grid Environment	80
<i>Wu Liang, Han Qi-Juan, Xie Zhong</i>	
A Modified Ant Colony System for the Selection of Machining Parameters	85
<i>Jing Wu, Yingxue Yao</i>	

SESSION 2: RESOURCE MANAGEMENT AND SCHEDULING

R-DLS: An Improved DLS Algorithm	90
<i>Liu Xiaoqian, Yang Shoubao, Wang Shuling, Xu Jing</i>	

Impact of Parallel Download on Job Scheduling in Data Grid Environment	95
<i>Junwei Zhang, Bu-Sung Lee, Xueyan Tang, Chai-Kiat Yeo</i>	
Resource Discovery Algorithm Based on Small-World Cluster in Hierarchical Grid Computing Environment	103
<i>Yan Ma, Bin Gong, Lida Zou</i>	
A Heuristic Approach for Single Path Pipeline Execution on Grid	110
<i>Ekasit Kijispongse, Sudsanguan Ngamsuriyaroj</i>	
WS-M4: A Novel WS-Management-Based System Resource Management Middleware Model and Scheme	117
<i>ZhiHui Lu, WeiMing Fu, Chuan Xiao, ShiYong Zhang, YiPing Zhong</i>	
Agent-based Spatial Query Processing and Resource Management in Grid Environment	126
<i>Yufei Bai, XiuJun Ma, Kunqing Xie, Ping Zhang, Xiong Li, Yixian Sun, Ke Li</i>	
A Heuristic on Job Scheduling in Grid Computing Environment	134
<i>Hojjat Baghban, Amir Masoud Rahmani</i>	
Dynamic Load Balancing in Web Cache Cluster	140
<i>Zhaolei Duan, Zhimin Gu</i>	
Flexible Advance Reservation Impact on Backfilling Scheduling Strategies	144
<i>H. R. Moaddeli, Gh. Dastghaibifard, M. R. Moosavi</i>	
SmartGRID: A Fully Decentralized Grid Scheduling Framework Supported by Swarm Intelligence	153
<i>Ye Huang, Amos Brocco, Pierre Kuonen, Michèle Courant, Béat Hirsbrunner</i>	
Adaptive Load Balancing Algorithm over Heterogeneous Workstations	162
<i>Liang Guangmin</i>	
Grid Service Scheduling Algorithm Based on Marginal Principle	168
<i>Lida Zou, Fang-ai Liu, Yan Ma</i>	
Replica Prediction Guide Task Scheduling for a Highly Frequent Task-Submitting Circumstance in Grid Environment	173
<i>Yu Kang, Xiangguo Yan, Chongxun Zheng, Jian Kang</i>	
An Adaptive Scheduling Algorithm for Scheduling Tasks in Computational Grid	178
<i>Kun-Ming Yu, Cheng-Kwan Chen</i>	
Improving Grid Inter-Domain Scheduling with P2P Techniques: A Performance Evaluation	183
<i>Agustín Caminero, Omer Rana, Blanca Caminero, Carmen Carrión</i>	
Dynamic Visualization Service Deployment in Grid Scientific Workflow	194
<i>FuQiang Li, Bin Gong, Cheng Xing, Yan Ma</i>	
Grid Resource Discovery Strategy Based on Historical Information	199
<i>Wei Chen, Shoubao Yang, Yan Jiang, Shuling Wang</i>	
Data Distribution Algorithm Using Time Based Weighted Distributed Hash Tables	203
<i>Rongling Lang, Zhiqun Deng</i>	
Service-Oriented Aggregation of Distributed and Heterogeneous Information Resources	207
<i>Yongshan Wei, Xin Chen, Yanbo Han</i>	
Resource and Information Sharing Mechanism Based on Spatial Information Grid	214
<i>Zhong Xie, Miao-Miao Song, Xian-Gang Luo</i>	

Research of Grid Platform Oriented to Intensive Data Processing	219
<i>Ya Ouyang, Lu Yang, Rui-zhi Sun</i>	

SESSION 3: DATA MANAGEMENT AND SEMANTIC MODELING

Priority Based Transaction Scheduling Model and Concurrency Control in Grid Database	225
<i>Yaojun Han, Changjun Jiang, Xuemei Luo</i>	
Implementation of a Cyber Transformer for Parallel Download in Co-Allocation Data Grid Environments.....	232
<i>Chao-Tung Yang, Ming-Feng Yang, Wen-Chung Chiang</i>	
An Attribute-Based Dynamic Data Organization in Mass Storage Systems.....	244
<i>Chentao Wu, Changsheng Xie, Qinqi Wei, Shenggang Wan, Qiang Cao, Xubin He</i>	
A New Model for Distributed Knowledge Organization Management	251
<i>Huimin Lu, Boqin Feng, Yingliang Zhao, Qinghua Zheng, Jun Liu</i>	
CSONG: A Semantic-Based Hybrid Overlay Network for Data Grid.....	256
<i>Kan Li, Zhikun Zheng, Xiaoxing Xing, Xin Sun</i>	
RAIDB5: An Economical and High Available Database Cluster for Large-Scale Archived Stream.....	263
<i>Kai Du, Zhuxi Zhang, Huaimin Wang, Shuqiang Yang</i>	
A Quantitative Survey on QoS-Aware Replica Placement.....	271
<i>Wei Fu, Nong Xiao, Xicheng Lu</i>	
Memory Based Metadata Server for Cluster File Systems	277
<i>Jing Xing, Jin Xiong, Jie Ma, Ninghui Sun</i>	
SODA—A Distributed Data Management Framework for the Internet of Services	282
<i>Peter Paul Beran, Gernot Habel, Erich Schikuta</i>	
Query Prediction in Large Scale Data Intensive Event Stream Analysis Systems	291
<i>Song Huaiming, Wang Yang, An Mingyuan, Wang Weiping, Sun Ninghui</i>	
VDM: Virtual Database Management for Distributed Databases and File Systems.....	299
<i>Wenhao Xu, Jing Li, Yongwei Wu, Xiaomeng Huang, Guangwen Yang</i>	
Using Data Grid Technology to Build MODIS Data Management and Distribution System Based on Spatial Information Grid	306
<i>Yi Zeng, Dingsheng Liu, Guoqing Li, Zhenchun Huang</i>	
A Domain-Specific Service Metadata Model for Adaptive Service Registry.....	312
<i>Zhuohao Wang, Zhuofeng Zhao, Jun Fang</i>	

SESSION 4: OVERLAY NETWORKS AND SENSOR NETWORKS

Efficient Matrix Multiplication on Wireless Sensor Networks	318
<i>Hong Shen, Jing Chen</i>	
Data-Coverage Sleep Scheduling in Wireless Sensor Networks.....	329
<i>Xu Xu, Yu-Hen Hu, Wei Liu, Jingping Bi</i>	
REBAR: A Reliable and Energy Balanced Routing Algorithm for UWSNs	336
<i>Jinming Chen, Xiaobing Wu, Guihai Chen</i>	
A Study on Reducing Chunk Scheduling Delay for Mesh-Based P2P Live Streaming.....	343
<i>Zhengjun Chen, Kaiping Xue, Peilin Hong</i>	

Energy Balanced Data Gathering in WSNs with Grid Topologies	349
<i>Jing Chen, Hong Shen, Hui Tian</i>	
Scale-free Overlay Structures for Unstructured Peer-to-Peer Networks	356
<i>Jing Qi, Jiguo Yu</i>	
A Novel P2P Overlay Network Based on Cycloid and Folded Hypercube	361
<i>Xing Li, Jiguo Yu</i>	
Study on the Optimal QoS Utility Scheduling in Multiple-Plane and Multiple-Stage Switching Network	367
<i>Xiangjie Ma, Lei He, Julong Lan, Junpeng Mao, Baisheng Zhang</i>	
PeerStrategy: A Local Strategy for Peers to Evaluate Their Neighbors	373
<i>Zhen Xie, Jingping Bi</i>	
Maximizing Universal Streaming Rate in Peer-to-Peer Streaming Networks	379
<i>Jiagao Wu, Jun Tao, Zhiqiang Zou</i>	
An Active-Drop Congestion Control Protocol in Peer-to-Peer Multicast Streaming	385
<i>Weizhan Zhang, Qinghua Zheng, Yanze Lian, Yiqin Yu</i>	
A Super Node Selecting Mechanism Based on AHP	390
<i>Shuling Wang, Shoubao Yang, Kai Shen, Lihua Xie</i>	
Deep Analysis of Intending Peer-to-Peer Botnet	394
<i>Dafan Dong, Ying Wu, Liang He, Guowei Huang, Gongyi Wu</i>	
Whirlpool: Structuring Mesh-Based Protocol for QoS-Aware Peer-to-Peer Streaming	399
<i>Huang YongXiang, Qian DePei, Wu WeiGuo, Liu Tao</i>	
The Data Transfer Strategy Research on Distributed Mobile Environment	408
<i>Yanxin Xue, Xiaofeng Mao</i>	

SESSION 5: PROGRAMMING MODELS, WORKFLOWS, AND SERVICE-ORIENTED TECHNOLOGIES

ADOM: An Adaptive Objective Migration Strategy for Grid Platform	414
<i>Chunfeng Si, Wenzhong Li, Qi Lv, Tao Yan, Sanglu Lu, Daoxu Chen</i>	
An Improved Visual BPEL-Based Environment for Scientific Workflow	420
<i>Zhili Zhao, Ruisheng Zhang, Jiazao Lin, Ying Chen, Huajian Zhang, Lian Li</i>	
Grid Service Interaction Pattern and Composition Verification	427
<i>Guo Wencai, Lin Chuang</i>	
Request Sequencing: Enabling Workflow for Efficient Problem Solving in GridSolve	434
<i>Yinan Li, Jack Dongarra, Keith Seymour, Asim YarKhan</i>	
A Chemical Interpretation of GSML Programs	444
<i>Xingwu Liu, Yann Radenac, Jean-Pierre Banâtre, Thierry Priol, Zhiwei Xu</i>	
On Solving QoS-Aware Service Selection Problem with Service Composition	452
<i>Changlin Wan, Carsten Ullrich, Limin Chen, Rui Huang, Jiewen Luo, Zhongzhi Shi</i>	
A Web Service Orchestration Model Based on Concurrent Transaction Logic	460
<i>Yong Wang, Li Wang, Guiping Dai</i>	
Heterogeneous Grid Workflow Management Based on Virtual Service	468
<i>Song Wu, Kai Wang, Hai Jin, Deqing Zou</i>	

Multi-Phase Efficient Service Composition	475
<i>Zongxia Du, Wenyi Zhang</i>	
Fuzzy Petri Net-Based Optimized Semantic Web Service Composition	481
<i>Rui Fu, Weiqing Dong, Guang Yang, Yiduo Mei, Xiaoshe Dong</i>	
A Grid Workflow Framework with High Scalability and Usability	488
<i>Shifeng Shang, Jinlei Jiang, Zhenchun Huang, Xiaomeng Huang, Guangwen Yang, Weimin Zheng, Lan Yu</i>	
A QoS-Aware and Fault-Tolerant Workflow Composition for Grid	495
<i>Jiang Bian, Chuliang Weng, Jie Du, Minglu Li</i>	

SESSION 6: NONFUNCTIONAL SUPPORT FOR GRID COMPUTING

PhoenixAccount: A Grid Accounting System for the Distributed Resource Sharing	502
<i>Yi Liang, Zheng Zhang, Jianping Fan, Dan Meng</i>	
Reducing the Cluster Monitoring Workload by Identifying Application Characteristics	508
<i>Ke Wang, ZhongXin Wu, Zhongzhi Luan, Depei Qian</i>	
Pricing Strategies in Grid Market: Simulation and Analysis	515
<i>Xia Xie, Jin Huang, Hai Jin, Song Wu, Melvin Koh, Jie Song, Simon See</i>	
Qualification Evaluation in Virtual Organizations Based on Fuzzy Analytic Hierarchy Process	522
<i>Fan Zhang, Junwei Cao, Lianchen Liu, Cheng Wu</i>	
A Flexible and Timely Resource Accounting Framework and Service for CNGrid	531
<i>Jianchao Zhu, Li Zha, Sha Wu</i>	
KAP-AOT: A Novel Group Key Agreement Protocol Based on Considering Nodes' Average Online Time	536
<i>Kaiping Xue, Peilin Hong, Zhengjun Chen, Lianhe Luo, Hancheng Lu</i>	
A Dynamic Fault Tolerant Algorithm Based on Active Replication	540
<i>Lingxia Liu, Zhaoxue Wu, Zhiqiang Ma, Yong Cai</i>	
ESIR: A Deployment System for Large-Scale Server Cluster	546
<i>Zhenghua Xue, Xiaoshe Dong, Junyang Li, Hongbo Tian</i>	
A Scalable and Low-Cost Grid Portal	553
<i>Jing Zhao, Jing Xu, Xiaoshe Dong, Zhengdong Zhu, Zhao Wang</i>	
A High Performance Enterprise Service Bus Platform for Complex Event Processing	560
<i>Deng Bo, Ding Kun, Zhang Xiaoyi</i>	
Using SAML Callout to Realize Access Restriction for Geospatial Grid Services	566
<i>Jiayuan Lin, Yu Fang, Bin Chen</i>	
An Automated Negotiation Engine for Consistency of Access Policies in Grid	572
<i>Zhang Runlian, Wu Xiaonian, Dong Xiaoshe</i>	

SESSION 7: PERFORMANCE EVALUATION, SIMULATION, AND APPLICATIONS

Mapping DAG-Based Power System Computing and Simulation Applications to Grid	579
<i>Jie Du, Chuliang Weng, Jiang Bian, Minglu Li</i>	
Measurement and Evaluation Performance of Stream-Media Service Based on Active Measurement	585
<i>Bin Zeng, Dafang Zhang, Lei Lv, Wenwei Li, Gaogang Xie</i>	
A Software Defined Radio Receiver Architecture Based on Cluster Computing	592
<i>Guangjun Lu, Peizhong Lu</i>	
Empirical Performance Evaluation of Message Passing Programs Running in Virtual Machines	600
<i>Kang Chen, Jun Xin, Weimin Zheng</i>	
Development of a Grid GIS Prototype for Geospatial Data Integration	608
<i>Zhou Huang, Yu Fang, Bin Chen, Xi Wu</i>	
Deploying HEP Applications on Multiple Grid Infrastructures	612
<i>Yaodong Cheng, Gang Chen, Yongjian Wang, Shuaijie Wang</i>	
A Network Alert Degree Evaluation Model Based on Cooperative Computing	622
<i>Hu Chang-Jun, Weng Yu, Shi Peng</i>	
A Study on Parallel Imaging Algorithm of 3D Geological Data	629
<i>Sun Ya-Hao, Li Zhao-Hui</i>	
Performance Evaluation of Real-Time Video over Wireless Ad Hoc Networks	633
<i>Zhao Yu-ting, Dai Guan-zhong, Mu De-jun</i>	
Research and Application on Virtualization Service Oriented Infrastructure for Networkitized M&S	638
<i>Bo Hu Li, Yabin Zhang, Li Tan, Zhihui Zhang, Xudong Chai, Baocun Hou, Haiyan Yu, Zhihui Du</i>	
Integration and Sharing of Remote Sensing Images Based on Grid Service	645
<i>Binge Cui, Qiang Wang, Chuanmin Wang</i>	
A Design of the Architecture of Geospatial Information Collaborative Service in Spatial Data Grid Environment	649
<i>Xiaobo Guan, Chengqi Cheng</i>	
Federation Integration Architecture for Shiring Resources of Product Development Platforms	654
<i>Wu Song, Xiao Tianyuan, Fan Wenhui, Sun Hongbo</i>	
A Design for Polygon Overlay Algorithm in the Simple Feature Model	660
<i>Zhong Xie, Zi Ye, Liang Wu</i>	
A History-Based Motion Prediction Method for Mouse-Based Navigation in 3D Digital City	666
<i>Zhang Xiaohong, Feng Shengzhong, Fan Jianping</i>	
Cooperative Recommendation System Based on Ontology Construction	671
<i>Jike Ge, Yuhui Qiu, Zuqin Chen</i>	
The Simulation of MSC EASY5 Model Based on the Grid	675
<i>Zhang Tianle, Zhihui Du, Wang Man, Ye Yin</i>	

SECOND INTERNATIONAL WORKSHOP ON PERSONALIZATION IN GRID AND SERVICE COMPUTING (PGSC2008)

An Algorithm for Priority Ranking of Individualized Functional Requirements in Networked Software	679
<i>Dunhui Yu, Keqing He, Jian Wang, Haiyan Mao</i>	
A Context-Aware Services Mash-Up System	685
<i>Yan Li, Jun Fang, Jinhua Xiong</i>	
Mining Frequent Composite Service Patterns	691
<i>Hui Meng, Lifa Wu, Tianlei Zhang, Guisheng Chen, Deyi Li</i>	
Domain-Specific Individualization of Workflows	697
<i>Tim Raedisch, Norbert Weissenberg, Bernhard Holtkamp</i>	
A Suitability Measure Approach of Domain Models Based on Semantic Association	705
<i>Peng Rong, Cui Jingsong, Liu Ping</i>	
Configuration Knowledge Expression of ETO Product for Mass Customization	711
<i>Lu Yujun, Wang Chunqing</i>	
Agile Data Streaming for Grid Applications	717
<i>Wen Zhang, Junwei Cao, Yisheng Zhong, Lianchen Liu, Cheng Wu</i>	
Towards Improving Web Service Registry and Repository Model Through Ontology-Based Semantic Interoperability	725
<i>Cheng Zeng, Keqing He, Zhitao Yu, Caiping Wan</i>	
A General Model of Mobile Environments: Simulation Support for Strategic Management Decisions	731
<i>Volker Gruhn, Thomas Richter</i>	
Author Index	