Content

- ChinaGrid Introduction;
- 5 ChinaGrid Applications:
  - Bioinformatics Grid
  - Image Processing Grid
  - RealCourse Grid
  - Massive Information Processing Grid
  - Computing Fluid Dynamics Grid
ChinaGrid Introduction

- Funded by Ministry of Education
- Based on CERNET (China Education and Research Network)

First Phase
- From 2003-2005
- 12 top universities as initiative
- More than 12Tflops, 60TB
- 20 key universities now
As an important 211 project in the Tenth Five-Year Plan Period of Chinese Ministry of Education, ChinaGrid aims at constructing public service system for Chinese higher education.

The goal of ChinaGrid is to integrate heterogeneous resources distributed over CERNET, share those resources in the CERNET environment effectively and avoid the resource islands, provide useful services, finally form the public platform for research and education in China.
Main Research Tasks

- Campus grid platform
- Common platform for ChinaGrid
- Grid application platform and representative grid applications
  - Image processing grid
  - Bioinformatics grid
  - Course on-line grid
  - Computational fluid dynamic grid
  - Large scale information processing grid
Campus Grids and their Computing Power (Tflops)

- HUST: 0.8T
- THU: 1T
- PKU: 0.5T
- BUAA: 0.5T
- SCUT: 0.9T
- SJTU: 0.3T
- SEU: 0.2T
- XJTU: 0.1T
- NUDT: 0.2T
- NEU: 0.8T
- ZSU: 0.5T
- SDU: 1.3T
- NWPU: 0.4T
- ZJU: 0.6T
- FUDAN: 1.8T
- TONGJI: 0.2T
- USTC: 1.2T
- UESTC: 0.3T
- RUC: 0.1T
- LZU: 0.3T

ChinaGrid: 12Tflops
1. Gather heterogeneous large-scale computing and storage devices, computing tools, and related database together through grid technology.

2. Provide bioinformatics supercomputing services for bioinformatics researchers through Web interface transparently.

3. For users, there are only two steps. First, Input the computing requests according to submission form. Second, get the computing result from the BioGrid Portal.
项目理念

源于分析一些理论中的因素，

场景一：计算机系的《计算机系统结构》课程的老师对她的学生说，关于“程序编写”部分的内容请大家参考“大学课程在线”上的相关章节，与实验紧密结合。

场景二：西北大学的王老师在《数据库》课程中，对数据表的咨询以及数据库的存储，她亲自在“大学课程在线”上查看王老师的讲座。

场景三：未名湖旁，图书馆前，一位北大的学生打开自己的笔记本电脑，开始了“大学课程在线”上的继续学习。通过“大学课程在线”上的电邮，她完成了相关书籍中的所有内容的学习，这次考试取得了36分的优异成绩。

场景四：未名湖畔，图书馆前，一位北大的学生打开自己的电脑，开始了“大学课程在线”上的继续学习。通过“大学课程在线”上的电邮，他完成了相关书籍中的所有内容的学习，这次考试取得了36分的优异成绩。

场景五：五年前，我突然接到了一本大学的物理课程的参考书籍，于是我打开了“大学课程在线”。

场景六：一个没有经过大学的人，却对大学的课程内容有所了解，因为在那期间他参加了“大学课程在线”的所有课程，并认真地完成了老师们的指定的参考书。这成了他学业成功的坚实基础。
RealCourse Grid

- Aims at providing outstanding on-demand browsing service of video of courses provided by top 20 universities of China. At its first stage, Realcourse promises Click-responding time of seconds and smooth playing for all users over Internet.
- 2000 users at least every day.
图像处理网格简介

图像处理网格是中山大学在生物医学、材料、天然光、环境科学以及模型化等领域有广泛的应用。图像处理网格是通过在生物医学领域的具体应用，作为一个具体的网格应用平台，提供一套完整的应用平台。

用户登录

账号：
密码：
密码确认：
登录：
忘记密码？

新用户注册

网站地图
用户帮助
资料中心
相关网站
联系我们

图像处理网格的特色在于，它提供了丰富的计算资源和高性能的计算能力，为用户提供了一个全新的平台，来解决复杂的计算问题。
Image Processing Grid-ImageGrid

- Uses grid technology to integrate distributed high-performance computers, high-capacity storage, database and other resources
- ImageGrid provides common computing services, various sharing resources and complex image applications for professional image processing researchers
- Three main applications:
  - three-dimension reconstruction of digital virtual human being
  - remote sensing image processing
  - medical image diagnosis
One Application of ImageGrid

- three-dimension reconstruction of digital virtual human being
Massive Information Processing Grid - MIPGrid

- Includes three information intensive grid applications
  - University Digital Museums to share the resources effectively and eliminate the information island, to filter and classify the collection information, and to provide appropriate information service to users according to their knowledge levels and motivation.
  - High energy Physics Computing
  - Alpha Magnetic Spectrometer (AMS) Experiment
Portal of Digital Museum Grid
Portal of CFD Grid
Applications of CFDGrid

- Computational Electromagnetism Applications in Airplane and Automobile Design
CGSP (ChinaGrid Support Platform)

CGSP Work Group
Content

- Brief Introduction;
- CGSP Architecture;
- Compare CGSP with GT4;
- Working Flow of CGSP;
- Functions Provided by Each Module in CGSP;
- Current Status and Next Step;
Brief Introduction

- CGSP is a grid middleware developed for the construction and evolution of ChinaGrid;
- CGSP is based on OGSA, and developed according to the latest grid specification WSRF;
- CGSP support highly localized requirement and autonomy requirement;
- Scalability of CGSP satisfies the demand of expansion of ChinaGrid.
- CGSP guarantees the integrity and uniformity of ChinaGrid platform by a global monitoring system;
5 Function Modules in CGSP

Portal: Grid entry for submitting & monitoring job, querying resources’ info, user management and accounting;

Grid Developing Environment: a set of toolkits including portal development tools, resource encapsulation tools, programming tools and job generating tools etc.

Information Center: the manager of resource & service information

Uniform Management: a set of managers including job manager, data center, domain manager and service container.

Security: Identity authentication and mapping, service and resource authorization, secure transferring.
CGSP Architecture
Running Flow of CGSP

1. Input Data
2. Request for J1
3. Available Service
4. Request S2
5. Retrieve Input data
6. Composite Job
7. Status Report S2
8. Output Computing Result
9. Output Data
10. Computing Result

Job Manager of Another Domain

Global Local

Web App Portal

Domain manager

Information Center

Data Management

Storage
Functions provided by Each Module in CGSP

- **Portal development tools**
- **Resource encapsulation tools**
- **Programming tools (GridPPI)**
- **Job generation tools**
- **Management tools**
- **Installation tools**

**Grid Developing Environment**
- Service management
- Resource management
- Fault-tolerance mechanism
- Domain info management
- Domain User management
- Identity mapping
- Status monitor
- Negotiation policy

**Information Center**
- Job submission
- Job monitoring
- Job remote-deploy
- Work flow management
- Job scheduling
- Service support
- Uniform access entry
- Metadata manager
- Storage resource manager
- Replica catalog
- Storage agent

**Job Manager**
- Remote&hot deploy
- Node resource monitor
- Service monitor
- Batch job service
- Life cycle
- Service group
- Notification
- GT3.9.1 core
- Notification

**Service Container**
- Life cycle
- Service group
- Notification
- GT3.9.1 core
- Resource property
- Base fault
- Replication catalog
- Storage agent

**Domain Manager**
- Certification authority
- Identity certification
- Proxy management
- Single sign-on
- Security management of service and container
- Resource access control
Welcome to China Grid

ChinaGrid Support Platform (CGSP) is a grid middleware developed for the construction and evolution of ChinaGrid. CGSP aims to integrate all sorts of heterogeneous resources distributed over CERNET, and provide transparent, high performance, reliable, secure and convenient grid services for scientific researchers and engineers. In addition to supply the portal to ChinaGrid, CGSP offers a whole set of tools for developing and deploying various grid applications.
Current Status

- Formal Version 1.0 is issued this January.
  - Nearly 30 members; 10 months;
  - CGSP Software Download; Installation guide;
  - Function description; Usage Manual;

- 3 ChinaGrid Application
  - Bioinformatics Grid
  - Image Processing Grid
  - CFD Grid

- 30 Campus Grid
Next Step

- Use the core of GT 3.9.5;
- Implement JSDL in CGSP;
- Integration of heterogeneous Database;
- Media service;
- Grid monitoring, management, and accounting;
Thanks!