



Grid Computing Customer References

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IBM Grid Announced References

Research & Development	Engineering & Design	Business Analytics	Enterprise Optimization	Government Development
NDMA CERN N.C. Bio Grid TeraGrid Chonnum U. eDiamond Novartis WestGrid Cincea IN2P3	PDVSA PGS Royal Dutch Shell European Aeronautic & Defense Company	Charles Schwab Royal Bank of Canada Wachovia Corp. Morgan Stanley Hewitt NLI Research Institute (Nippon Life Insurance)	U. of Florida Marist College Sony CE / Butterfly Kansai Electric Power T-Systems (DT)	AIST NCHC Tiger Grid HLRN VPAC Ngee Ann Polytechnic



Charles Schwab

Business Analytics

Challenge

- Reduce the processing time on an existing wealth management application.

Solution

- IBM @server
- Linux
- Globus Toolkit
- IBM Research
- Server Allocation for WebSphere® Application Server

“We believe that Grid computing ... has the potential to greatly improve our quality of service and be a truly disruptive technology.”

Oren Leiman, Managing Director, Charles Schwab



Technology Benefits:

- Reduced processing time from more than four minutes to fifteen seconds
- Planning to explore leveraging Grid computing into other areas

Business Benefits:

- Potential to increase customer satisfaction by responding to inquiries at a faster pace
- Potential to enable Schwab to provide more robust wealth management applications



Hewitt Associates LLC

Business Analytics

Challenge

Create Grid Computing environment to:

- **Contain expenses for CalcEngine valuations**
- **Maintain or improve availability, response time & scalability**
- **Insure personal-data security**
- **Capitalize on existing application code**
- **Cooperate with z/OS Sysplex CICS Calling Environment**
- **Enable smooth and orderly migration to change**

Solution

Grid Computing environment includes:

- **IBM eServer zSeries® server**
- **IBM eServer BladeCenter™ servers**
- **Linux Red Hat v8.0**
- **Business Partner: DataSynapse GridServer**

Hewitt a global HR outsourcing and consulting firm

Benefits:

- Efficiently uses of the combined processing power of their heterogeneous environment
- Experienced an immediate 10% faster response time with the first application deployment
- Open architecture enables Hewitt to easily deploy additional applications
- Increased processing speed reduced cost per transaction
- Reduced operational costs improves competitiveness in their industry segment



NLI Research (Nippon Life Insurance)

Business Analytics

Challenge:

Improve the performance of Financial Risk Management Application (developed by NLI) for business needs including new regulations (Basel II and audits) and competitive process.

Solution:

- By adopting the Grid Job Scheduler, performance is improved with minimum investment.
- IBM Tokyo Research Laboratory joined a customer project in applying Grid technology for this application.
- Key middleware for security and data integrity to be developed through this joint research.



Technology Benefits:

- Reduced processing time for financial risk calculation from around 10 hours to about 49 minutes – an approximate 12-fold increase in speed.
- Automated job-scheduling

Business Benefits:

- Can run more complex scenarios to reduce risk exposure

"Grid technology enables us to realize faster risk management calculations for complex financial derivatives. In addition, we expect that we will be able to analyze factors from a variety of angles and explore new financial businesses that take risk into consideration."

-- Shuji Tanaka, Executive Research Fellow at the NLI Research Institute



RBC Insurance

Business Analytics

Challenge:

Dramatically improve compute services to Valuation Actuaries.

The Grid Computing solution includes:

- IBM xSeries servers
- IBM Global Services
- Platform Computing Inc. Software and Services

“IBM and Platform Grid enabled our valuation application and supporting infrastructure for immediate results. With the integrated solution, we have been able to reduce a 2.5 hour job to 10 minutes, and an 18 hour job to 32 minutes. We are now looking to move to a production environment. By virtualizing applications and infrastructure, we anticipate being able to deliver higher quality services to our clients faster than ever before, which will significantly impact our competitive edge”

*Keith Medley, Head of Insurance Technology,
RBC Insurance*



Technology Benefits:

- Reduced application processing time
- Increased ability to run multiple valuation scenarios to reduce risk

Grid Computing Business Benefits:

- 75% reduction of time spent on manual job scheduling
- 97% reduction in application processing time



Wachovia

Challenge

- Create an infrastructure that can support significant increases in trading volume.
- Reduce the time to results of risk reports in fixed income and capital markets and

Solutions

- IBM eServer™ xSeries® Blade servers
- Linux
- DataSynapse GridServer

“We haven’t scratched the surface yet for how we envisage using Grid Computing to meet our ongoing product development and trading activity”

--Andy Cook, Head Exotics Trader, Wachovia



WACHOVIA



Business Benefits:

- P&L Risk report turnaround improved...from as much as 15 hours to minutes on a real-time intraday basis
- Solution enables 4x more volume and 25x more modeling simulations
- Platform supports the trading of more complex financial products

Technology Benefits:

- Improved resiliency of application and jobs
- Improved utilization of supporting HW assets
- Reduces cost of ownership of infrastructure



AIST (National Institute of Advanced Industrial Science & Technology)

Life Sciences & Nanotechnology

● Challenge

AIST, Japan's largest national research organization needed to provide:

- an on-demand computing infrastructure which dynamically adapts to
- support various research requirements of its collaborators focusing in
- areas of grids, life science, and nanotechnology.

✓ Solution

- The Globus Toolkit 3.0 ensembles heterogeneous and geographically dispersed computing resources, such as servers, storage and data, to create an adaptive and secure system which allows researchers to
- collaborate through these shared Grid resources.

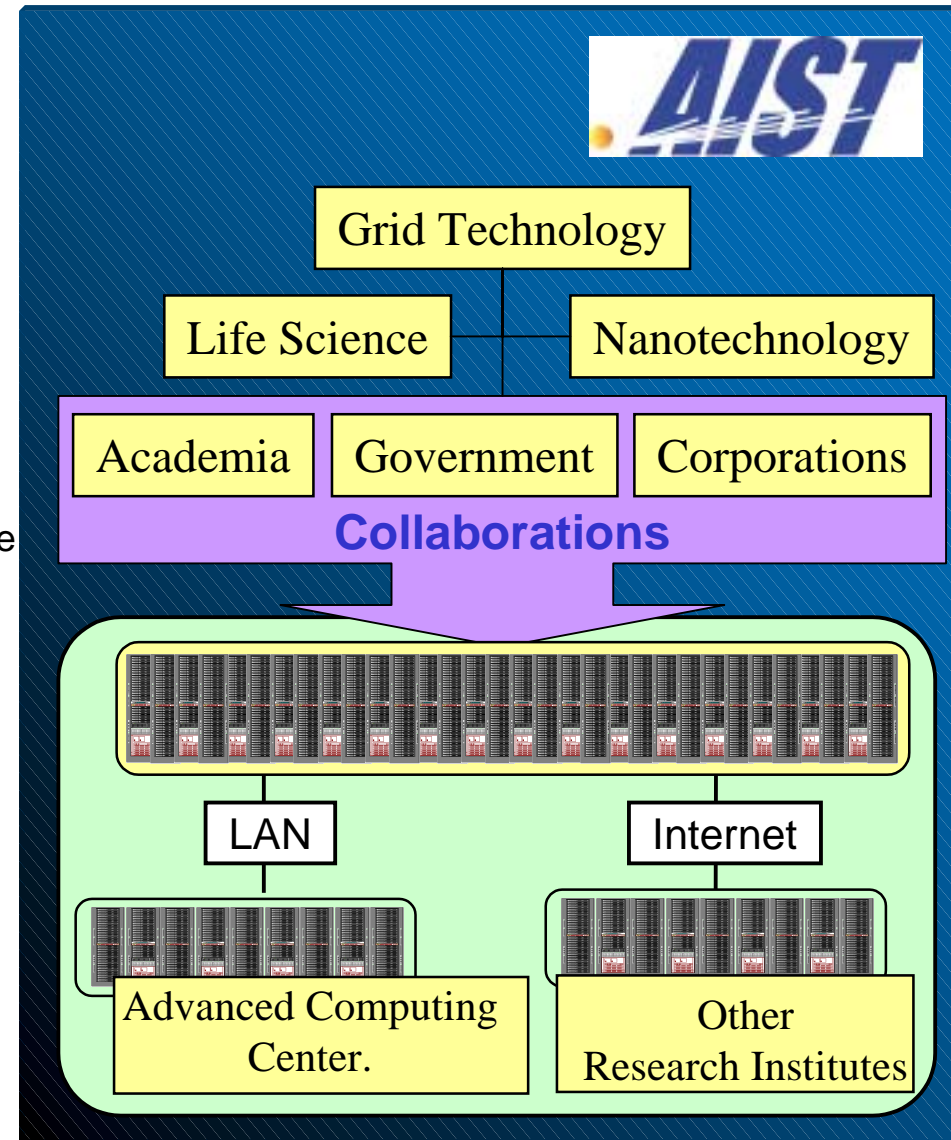
➤ Linux Cluster

- 2116 CPU AMD Opteron Cluster
- 520 CPU Intel Madison Cluster

➤ Globus Toolkit 3.0 (OGSA)

✓ *World's most powerful Linux-based supercomputer*

- More than 11 trillion calculations per second
- More powerful than the current third most powerful supercomputer in the world





IN2P3

Research & Development

Institut National de Physique Nucleaire et de Physique des Particules

Challenge:

With ten centers throughout France, the research institute needs to enhance the scalability, reliability and resilience of the existing grid environment to meet the large-scale, high-performance computing needs of new and existing users, as well as prepare for expansion to other grid environments throughout Europe.

Solution:

Incorporate leading edge hardware and middleware to improve grid utility and performance. The solution includes:

- IBM eServer® pSeries® UNIX-based servers
- IBM eServer® xSeries® Linux clusters
- Globus Tool Kit V3.0
- Storage capacity of up to thirty terabytes



Benefits:

- Improved performance increases the number of compute intensive research projects.
- Enhanced environment increases the ability of the organization to contribute in key Life Sciences research.
- State-of-the-art, production-ready Grid allows European technological community to efficiently collaborate

“We are extremely pleased about our collaboration with IBM. IBM’s technical expertise will allow us to rapidly achieve our goal to build a production ready Grid to support our key research initiatives”

-- Guy Wormser Deputy Director - IN2P3



TIGER

Government Development

Challenge

- The Taiwanese government is building a grid between their leading academic and research institutions for research and collaboration in the areas nanotechnology and life sciences

Solution

- **IBM and NCHC building National Grid Test Bed**
- **IBM is assisting in the planning and implementation of the grid infrastructure.**



Technology Benefits

- Integrate in-country academic and research computing resources
- Test implementations and investigations into billing and provisioning systems will take place

Business Benefits

- Stimulate research in Life Sciences and Nanotech



Royal Dutch Shell

Business Analytics

Challenge

- Improve accuracy and speed of summarization and scientific modeling applications

Solution

- IBM ^
- Linux
- Globus Toolkit

"Grid computing is important to Shell because it offers the potential to create a truly unlimited resource, with a uniform interface to a variety of services. This is a significant opportunity for Shell to engage its independent companies in closer cooperation."

J.N. Buur, Principal Research Physicist, Shell International Exploration and Production B.V.



Technology Benefits:

- More robust, scalable IT infrastructure that adjusts as volumes fluctuate
- Open standards permit easy integration of existing software

Business Benefits:

- Cut processing time of seismic data, while improving the quality of the output
- Focus employees on key scientific, not IT problems



European Aeronautic Defense and Space Company

Challenge

In the framework of its Corporate Research Center, EADS wanted to build an “on demand computing” model for the simulation tools used by their engineers to shorten analysis completion time and provide a single image of computer resources. The infrastructure will be based on Grid Technology including Data Grid and Compute Grid.

Solution

Shorten the product design cycle with a Grid Computing platform based on:

- IBM ^
- Open standard Linux-based operating system
- Globus OGSA
- GridXpert technology

Engineering Design and Collaboration



Technology Benefits:

- More robust, scalable IT infrastructure that adjusts as requests fluctuate
- Open standards permit easy integration of existing software

Grid Computing Business Benefits:

- Cut analysis and simulation time, while improving the quality of the output
- Improve the productivity of the Design Office



CINECA

EMEA - Higher Education

Challenge

- Improve research capabilities at high-performance computing (HPC) competence center for major public and private research institutions

Solution

- IBM eServer™ pSeries™ 690 servers running IBM AIX® 5
- IBM 7133 Serial Disk System
- IBM Global Services—Integrated Technology Services

“CINECA has established a long-term partnership with IBM in most of the business areas in which HPC is becoming crucial. IBM has the capability and competency to be a big player in this arena.”

—Sanzio Bassini, HPC Team Leader, CINECA

CINECA

Technology Benefits:

- *Gained performance, availability and flexibility in an IBM 1600 Cluster Architecture*
- *Achieved over three teraflops of processing power during peak performance times*

Business Benefits:

- *Top 500 list for HPC facilities*
- *Ranks among the top 30 installations of its kind in the world*
- *One of EMEA's leading HPC providers*



Marist College

Information and Technology

Challenge

Medium-sized U.S. college needed a more stable, resilient and powerful platform for internal IT operations and computer science student labs, to respond to demands for classes in Linux and grid computing

Increase and improve educational IT resources

Consolidate servers onto a mainframe partitioned into hundreds of virtual machines to enable the creation of a grid environment for instructional purposes, based on:

- IBM eServer™ zSeries® server
- Red Hat Linux
- Z/VM V4.3
- Globus Grid Computing toolkit



Technology Benefits:

- Quick and easy to add new virtual servers when needed
- More stable, robust and secure environment

Grid Computing Business Benefit:

- Stronger Linux skills and greater satisfaction for students
- Lower cost due to server consolidation, lower license fees, less maintenance



Ngee Ann Polytechnic

Operating Environment

Challenge:

Resolve the computing capacity and project processing issues in the school's seven technology, research and development labs.

Solution:

Create a scalable grid infrastructure that maximized the compute power of the lab's twenty five PC's. The solution, designed by IBM Global Services, Integrated Technology Services included:

- Linux operating system
- Globus Toolkit
- Platform LSF
- Installation services performed by IBM independent software vendor Avaki



Benefits:

- Maximized the utilization of existing computing power while minimizing IT investment
- Reduces project run time improving research lab project capacity and student and faculty
- Enhances Polytechnic's image as a leading-edge provider of technology research and development



University of Florida

Research & Development

Challenge

U.S.-based research university's Advanced Computing and Information Systems (ACIS) lab sought to respond to the needs of scientists, in multiple geographic locations, for a high-performance, secure and reliable infrastructure for grid computing research

Solution

Create a virtual, secure grid computing environment for collaboration based on:

- IBM [^] zSeries® server
- Linux and z/VM™
- IBM virtualization software
- IBM TotalStorage® Enterprise Storage Server®
- IBM [^] xSeries® server in an 8-node cluster



Grid Computing Benefits:

- Allows secure, shared usage of geographically distributed computing resources and services--as if they resided on an individual user's computer
- Enables scientific and design collaboration, using ACIS-developed software (In-VIGO), In Virtual Grid Organizations

Technology Benefits:

- Virtualization allows multiple researchers, each with separate and distinct applications, to use a single mainframe solution



Kansai Electric Power Co.

Enterprise Optimization

Challenge

Japan's second largest electric utility company has various information on heterogeneous data base environment distributed across multiple departments.

KEPCO wanted to integrate information beyond departments and affiliated companies to enable information sharing.

Create virtual data base federated from heterogeneous data base environment

Data Grid technology enables to federate various data source distributed across multiple departments.

- IBM DB2 Data Federation Technology
- Wrapper to access other RDBs including legacy data base

“KEPCO has been working very closely with IBM and IBM's Grid computing technologies to develop an information based grid that will allow KEPCO to federate and virtualize their various data sources across the enterprise”

