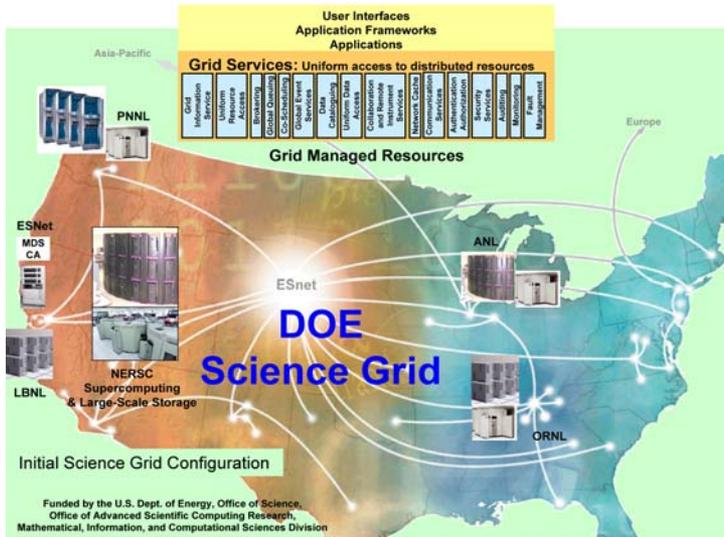


The DOE Science Grid

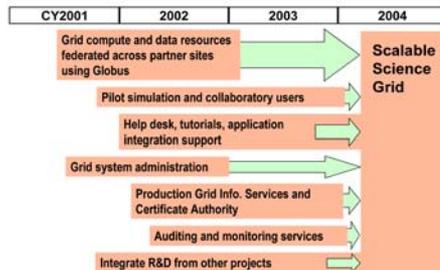
Computing and Data Infrastructure for Large-Scale Science

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<http://doesciencegrid.org>



Roadmap for the Science Grid



The Goal of the DOE Science Grid project is to define, integrate, deploy, support, evaluate, refine, and develop (as necessary), the persistent Grid services needed for a scalable, robust, high-performance DOE Science Grid, thus creating the underpinnings for a Collaboratory Software Environment. This Grid will provide applications and workflow systems with persistent services for security, resource discovery, resource access, system monitoring, and so on. By thus reducing barriers to the use of remote resources and to the use of advanced Collaboratory services, we will make a significant contribution to SciDAC application and technology projects. Integrated activities in deployment, research and development, and application outreach will allow us to refine the tools and their deployment and support processes. This will provide the capabilities and experience needed for the DOE Science Grid to be cost-effectively scaled to support large-scale science collaborations. Close collaborations with a variety of application projects will ensure relevance to SciDAC goals and enable innovative approaches to scientific computing, via secure remote access to online facilities, distance collaboration, shared petabyte datasets, and large-scale distributed computation.

What are Grids?

- Middleware for uniform, secure, and highly capable access to large and small scale computing, data, and instrument systems that are distributed across organizations
- Services supporting science portals and application frameworks
- Persistent infrastructure for the Grid environment
 - Grid services on the compute and data systems of interest (Grid sysadmin)
 - authentication supporting single sign-on (PKI Certification Authorities)
 - resource discovery (Grid Information Service – distributed directory service)
- 200 people working on standards at the IETF-like Global Grid Forum (www.gridforum.org)

A DOE Science Grid Program: Three Strongly Linked Efforts

- Deployment and operation of a DOE Science Grid
 - A coordinated effort by multiple labs
 - Collaboration with ESnet for directory and certificate services
- Application partnerships linking computer scientists and application groups
 - Exploiting Grid infrastructure to facilitate DOE applications
- Enabling R&D focused on
 - Extending the technology base for Grids
 - Packaging Grid software for deployment
 - Developing application toolkits