

Caltech will be presenting three simultaneous, related, demonstrations at the post-CHEP06 workshop: MonALISA, EVO, and GAE. Together, these three technologies offer a valuable platform for enabling scientists and users to make effective use of computational, storage, and network resources in a Grid.

MonALISA will demonstrate the capabilities of end to end monitoring of large scale distributed systems to support physics analysis. The EVO demonstration will focus on collaboration of remote groups on physics analysis tasks. The GAE demonstration will show job submission, scheduling, monitoring, and analysis using the Clarens web-service based portal.

The MonALISA system is designed as an ensemble of autonomous multi-threaded, self-describing agent-based subsystems which are registered as dynamic services, and are able to collaborate and cooperate in performing a wide range of information gathering and processing tasks. These agents can analyze and process the information, in a distributed way, to provide optimization decisions in large scale distributed applications. An agent-based architecture provides the ability to invest the system with increasing degrees of intelligence, to reduce complexity and make global systems manageable

in real time. The scalability of the system derives from the use of multithreaded execution engine to host a variety of loosely coupled self-describing dynamic services or agents and the ability of each service to register itself and then to be discovered and used by any other services, or clients that require such information. The system is designed to easily integrate existing monitoring tools and procedures and to provide this information in a dynamic, customized, self describing way to any other services or clients.

This next generation system, EVO, is composed of a Java Client ("Koala" which runs on the client machine and is part of the infrastructure), a Server ("Panda" which is used to create an overlay network and provide an intelligent, secure and reliable communication channel between entities in the collaboration grid), and some other services (scheduler, directory services). Together, they provide a unique set of characteristics that include: Instant Messaging (IM); Rich Presence information; reserved and ad-hoc sessions for both multipoint and point to point modes; adaptive videoconferencing and collaboration experience based on local capacity and network connectivity; friendly statistics, and real-time information. H.323, SIP, Mbone, and AccessGrid/Multicast protocols are all supported and can be deployed on both IPv4 and IPv6 networks. This next generation

system provides global academic and research communities with a tool that integrates the best of current technologies in a unique infrastructure.

GAE is the Grid Analysis Environment, a set of grid middleware and end-user tools to enable interactive data analysis on decentralized grid systems. The GAE is underdevelopment to show the importance of a managed network infrastructure being developed by the Ultralight project. The goal of the Ultralight project is to help meet the data-intensive computing challenges of the next generation of particle physics experiments with a comprehensive, network-focused approach. UltraLight adopts a new approach to networking: instead of treating it traditionally, as a static, unchanging and unmanaged set of inter-computer links, we are developing and using it as a dynamic, configurable, and closely monitored resource that is managed from end-to-end. Thus we are constructing a next-generation global system that is able to meet the data processing, distribution, access and analysis needs of the particle physics community.