

# Signaling Architectures and Recovery Time Scaling for Grid Applications in IST Project MUPBED

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## ABSTRACT

It is now evident to the research community that local computational resources cannot keep up in an economical way with the demands generated by some users/applications. Therefore, distributed computing and the concept of a computational Grid are now emerging. Novel transport network concepts are needed to support such visions and high-speed intelligent optical networking may be the required infrastructure that will enable global Grids. Emerging Utility Grid applications like Business Continuity and Disaster Recovery have strong requirements on the dynamic optical networks connecting the distributed Grid resources. Supporting Grid networking with an Intelligent Optical Network (ION) infrastructure will permit to offer to Utility Grid applications the necessary flexibility with the required Quality of Service (e.g., high bandwidth, reliability, limited delay). Emerging QoS requirements, such as scalable recovery time, highly depend on the ION's signaling architecture. This article gives simple analytical models for the implementation options of the optical control plane signaling, shows simulation models for different resilience strategies and finally shows some illustrative numerical comparisons to support the aforementioned efforts. This research area is also discussed among others in the European research project MUPBED ("Multi-Partner European Test Beds for Research Networking").

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