PHOSPHORUS - Lambda User Controlled Infrastructure for European Research

The Phosphorus project focuses on delivering advanced network services to Grid users and applications interconnected by heterogeneous network infrastructures. The project is addressing some of the key technical challenges to enable on-demand end-to-end network services across multiple domains. The PHOSPHORUS network concept makes applications aware of their complete Grid resources (computational and networking) environment and capabilities, and enables dynamic, adaptive and optimized use of heterogeneous network infrastructures connecting various high-end resources.

After the first year of the project existence the PHOSPHORUS achieved the some mean-term objectives.

Distributed test-bed interconnecting European and worldwide optical infrastructures

The project aims to demonstrate on-demand service delivery across access-independent multi-domain/multi-vendor research network test-beds on a European and worldwide scale. The global test-bed in Phosphorus project is composed of a number of local test-beds interconnected using multiple optical international networks. These includes GÉANT2, Cross Border Dark Fibre, GLIF connections and NRENs. A set of highly demanding applications like WISDOM, KoDaViS, TOPS and DDSS are adapted and installed in particular test-beds and they will be used to demonstrate grid and network services delivery.

Open source GMPLS prototype

Grid-GMPLS is an enhancement of the ASON/GMPLS Control Plane architecture that implements the concept of Grid Network Services (GNS). In the PHOSPHORUS framework, GNS is a service that allows the provisioning of network and Grid resources in a single-step, through a set of seamlessly integrated procedures. To produce Grid-GMPLS software, called G^{2}MPLS, the PHOSPHORUS have produced open source GMPLS prototype with OSPF-TE and RSVP-TE protocols functionality.
In the near future GMPLS control plane will be enriched with Grid extensions providing Grid middleware with access to optical network resources as first-class Grid resources.

Network Resource Provisioning plane

The implementation of a Network Service Plane (NSP) layer with its set of interfaces to communicate and integrate the different Network Resource Provisioning Systems (NRPS) to allow multi-domain interoperability with PHOSPHORUS' network resources.The NRPSs supporting the framework of the project are:

- UCLP - User Controled Lightpath Provisioning
- Nortel's DRAC - Dynamic Resource Allocation Controller
- ARGON - Allocation and Reservation in Grid-enabled Optic Networks

In the next phase of the project, the G^{2}MPLS Control Plane will also be interoperable with the NPRS systems. This is possible thanks to the NSP, which is responsible for cooperation with the NRPSs in order to provide end-to-end paths, manage AAA issues, badwitdht management and advance reservation services. Moreover, the Network Service Plane will be enhanced to increase its scalability and provide easier future interoperation with other international projects like GEANT2 JRA3, EnLIGHTened Computing or G-Lambda.

<FACT BANNER>

Project acronym:
PHOSPHORUS

Contract n°:
034115

Project type:
Integrated Project

Start date:
01/10/2006

Duration:
30 months

Total budget:
6 868 969 €
EC Funding:
5 125 098 €

Total effort in person-month:
814

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IBBT	Belgium
CTI	Greece
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SARA	Nether lands
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