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PHOSPHORUS

Lambda User Controlled Infrastructure for European Research

Integrated Project

Strategic objective:
Research Networking Testbeds

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Report on Contribution to Standards

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Abstract

This deliverable presents information about Phosphorus project members' contribution to standardisation activities in the areas related to the project activities.

The report provides short information about the standard documents to which project members made contribution and lists individual contributors. This information is also provided about planned contribution resulted from the project developments

Table of Contents

0   Executive Summary

This report provides an assessment on Phosphorus' contribution to standards published or being developed in the framework of different standardisation bodies. The report provides a short information about standard documents to which project members have made contribution and lists individual contributors.

This report is considered as a complimentary to the Deliverable D7.2.2 that describes in details all standardisation bodies where the project members are active. This report summarises what standards the project member contributed to grouped by standardisation bodies and working groups.

1 Major Standardisation Bodies and Groups where Phosphorus Members are Active

The major standardisation body that fits the interests of most Phosphorus WPs is the Open Grid Forum (OGF). PHOSPHORUS partners are active in the following groups:

FI-RG	Firewall Issues Research Group
GHPN-RG	Grid High Performance Networking Research Group
GRAAP-WG	Grid Resource Allocation Agreement Protocol Working Group
GSA-RG	Grid Scheduling Architecture Research Group
NML-WG	Network Markup Language Working Group
OGSA-AUTHZ-WG	OGSA Authorisation Working Group

The project also maintains traditional links with the Internet Engineering Task Force (IETF) where few project members are active in the following groups:

IETF ForCES-WG Internet Engineering Task Force Work Group on Forwarding and Control Elements Separation

2 Open Grid Forum (OGF)

2.1 FI-RG – Firewall Research Group

2.1.1 Documents to which contribution was made

1) OGF Document GFD.83 "Firewall issues overview"

Link to document: `http://www.ogf.org/documents/GFD.83.pdf`

Authors: Ralph Niederberger (FZJ, Editor), William Allcock (ANL), Leon Gommans (UvA), Egon Grünter (FZJ), Thijs Metsch (DLR),Inder Monga (Nortel), Gian Luca Volpato (RRZN)

Type of document: Informational

Status: Published

Summary: The document provides an overview about network devices used in Grid environments to protect an institutional network against malicious attacks from the public Internet. Furthermore the document enumerates and illustrates a selected set of grid scenarios having to deal with those firewall types of devices. The knowledge and experience gathered through these use-cases is utilized to classify the different kinds of security obstacles grid application developers and management personnel have to deal with. These categories will be used to propose new or recommend existing academic and/or standards based solutions to the grid community.

2) OGF Draft "Requirements on operating Grids in Firewalled environments"

Link to document: http://forge.gridforum.org/sf/wiki/do/viewPage/projects.fi-rg/wiki/HomePage

Authors: Thijs Metsch (DLR, Editor), Leon Gommans (UvA), Egon Grünter (FZJ), Ralph Niederberger (FZJ), Alan De Smet, (UoWisconsin), Gian Luca Volpato (RRZN)

Type of document: Proposed recommendation, Draft

Status: Work in progress, Estimated publishing date - June 2008

Summary: The document describes and evaluates approaches and solutions for firewall issues, such as application level gateways, host based firewalls, VPN style gateways etc., which are currently available to solve some of the problems Grid applications may face when dealing with firewalls located between the source and the destination of their communication paths. Having found that dynamic opening of firewalls is an essential requirement for grid applications the FI-RG group has decided to start a new working group at OGF 23 which will provided a standardized way for grid applications to "open" automatically and securely firewalls for grid applications having the right permissions to do so. Providing automatic access to firewall rules is a necessary prerequisite for the access to grid resources like storage, compute power and network bandwidth.

2.2 GHPN-RG – Grid High Performance Networking Research Group

2.2.1 Documents to which contribution was made

1) OGF Draft "Grid Optical Burst Switched Networks - GOBS"

Link to document: `https://forge.gridforum.org/sf/go/doc14108?nav=1`

Authors: Lina Battestilli (MCNC), Gino Carrozzo (Nextworks s.r.l), Nicola Ciulli (Nextworks s.r.l), Pierro Castoldi (SSSUP), FrancoCallegati (University of Bologna), Piet Demeester (University of Gent), Marc De Leenheer (University of Gent), Bart Dhoedt (University of Gent), Yue feng Ji (BUPT), Ken-ichi Kitayama (Photonic Internet Forum), Gigi Karmous-Edwards (MCNC), Jintong Lin (BUPT), Dimitra Simeonidou (University of Essex), Anna Tzanakaki (AIT), Emmanuel Varvarigos (University of Patras), Kyriakos Vlachos (Uniiversity of Patras), Luca Valcarenghi (SSSUP), Jian Wu (BUPT), Georgios Zervas (University of Essex)

Type of document: Informational

Status: Work in progress. The document passed public comments and external review stages. It is due to be published by the end of March 2008.

2) OGF Draft - "Grid Optical User Network Interface (G.OUNI)".

Link to document: https://forge.gridforum.org/sf/go/doc15126?nav=1

Authors: Georgios Zervas (University of Essex), Eduard Escalona (University of Essex), Reza Nejabati (University of Essex), Dimitra Simeonidou (University of Essex), Nicola Ciulli (NXW), Gino Carrozzo (NXW), Artur Binczewski (PSNC), Damian Parniewicz (PSNC), Bartosz Belter (PSNC), Wolfgang Ziegler (FHG), Oliver Waeldrich (FHG), Gigi Karmous-Edwards (MCNC), Dominique Verchere (Alcatel-Lucent), Wei Guo (SJTU)

Status: Work in progress. The document was presented in OGF22 (Boston, Feb. 2008) A WG Charter will be submitted towards the formation of a new WG targeting the formal standardization of the interface. A BoF will be organized at OGF23 (Barcelona, June 2008) to consult the wider community.

Summary: This document proposes a standard set of functionalities of a Grid User Network Interface (GUNI) to serve distributed heterogeneous, dynamic Grid network environments. The GUNI will act as a Grid network service control interface between Grid users/applications/resources and Network Provisioning Systems (e.g., GMPLS, NRPS, Control Plane). The goal of this work is to describe GUNI requirements driven from use cases and in turn provide specific capabilities that meet these requirements. The various functionalities required to support Grid services and applications will also be determined. Key to the realization of this standardization vision is to embrace the OGF standards and provide enhancements to already defined UNI standards (OIF, IETF).

2.3 GRAAP-WG – Grid Resource Allocation Agreement Protocol Working Group

2.3.1 Documents to which contribution was made

1) OGF Document: GFD.107 Web Services Agreement Specification (WS-Agreement)

Link to document: http://www.ogf.org/documents/GFD.107.pdf

Contributors: Oliver Wäldrich (FHG), Wolfgang Ziegler (FHG), Philipp Wieder (FZJ)

Form of contribution: Providing requirements, feedback on implementation, document review, document writing

Type of document: Proposed recommendation

Status: Published May 2007

Summary: This document describes Web Services Agreement Specification (WS-Agreement), a Web Services protocol for establishing agreement between two parties, such as between a service provider and consumer, using an extensible XML language for specifying the nature of the agreement, and agreement templates to facilitate discovery of compatible agreement parties. The specification consists of three parts which may be used in a composable manner: a schema for specifying an agreement, a schema for specifying an agreement template, and a set of port types and operations for managing agreement life-cycle, including creation, expiration, and monitoring of agreement states.

2) OGF Draft: Web Services Agreement Negotiation Specification (WS-AgreementNegotiation)

Link to document: http://www.sics.se/~mariblue/WS-AgreementNegotiationSpecificationDraft.doc

Authors: Alain Andrieux, (Globus Alliance / USC/ISI), Karl Czajkowski, (Globus Alliance / USC/ISI), Asit Dan (IBM), Kate Keahey, (Globus Alliance / ANL), Heiko Ludwig (IBM), Jim Pruyne (HP), John Rofrano (IBM), Steve Tuecke (Globus Alliance / ANL), Ming Xu (Platform Computing)

Contributors: Wolfgang Ziegler (FHG), Volker Sander (FZJ)

Type of document: Proposed recommendation

Status: Suspended.

Form of contribution: Providing requirements, feedback on implementation, document review, document writing

Summary of contribution: FHG contributes to the document on use-cases for agreement negotiation and the existing negotiation approaches. There is an informational document in preparation that will be the basis for the following specification of WS-AgreementNegotiation, a negotiation protocol on top of WS-Agreement.

2.3.2 Expected contribution and tentative date

1) OGF draft: "Specification of the multi-step negotiation protocol"

Authors: Oliver Wäldrich (FHG), Wolfgang Ziegler (FHG), Dominic Battré (TU-Berlin), Philipp Wieder (TU-Dortmund), Ramin Yahyapout (TU-Dortmund), Michael Parkin (University of Manchester), Toshiyuki Nakata (NEC), Omer Rana (University of Cardiff)

Status: In progress

Expected publishing date: First draft document is expected at the end of 2008.

2.4 GSA-RG – Grid Scheduling Architecture Research Group

2.4.1 Documents to which contribution was made

1) OGF Draft: "Grid Scheduling Architecture – Requirements and Recommendations"

Link to documents: `https://forge.gridforum.org/sf/go/doc8640?nav=1`

Authors: Philipp Wieder (Dortmund UoT), Joachim Lepping (Dortmund UoT), Ariel Oleksiak (PSNC), Alexander Papaspyrou (Dortmund UoT), Nicola Tonellotto (ISTI), Ramin Yahyapour (Dortmund UoT)

Type of document: Proposed recommendation

Status: Work in progress

Summary: The document outlines the basic requirements a Grid scheduling architecture has to comply with, proposes a generic core component of this architecture, the Scheduling Instance, including its interfaces, and contextualizes the Grid scheduling-related requirements to other specifications by and efforts within OGF.

2) OGF Draft: "The Grid Scheduler Interaction"

Link to documents: `https://forge.gridforum.org/sf/docman/do/listDocuments/ projects.gsa-rg/docman.root.documents.grid_scheduler_interaction`

Authors: Oliver Wäldrich (FHG), Ariel Oleksyak (PSNC)

Type of document: Proposed recommendation

Status: Work in progress.

Summary: The document is a starting point for the JSDL profile needed for interaction of Grid schedulers. The goal is to agree on a basic set of attributes that MUST be handled by Grid schedulers. These attributes may be needed to be referenced in SLAs between Grid schedulers, to be used in scheduling, or finally to execute a job by a local resource management system. Since the main objectives of the JSDL profile is to enable interoperability in real environments, the JSDL profile attributes are examined by comparison with available Grid schedulers. We began our analysis with GRMS and VIOLA systems.

2.5 NML-WG - Network Mark-up Language Working Group

2.5.1 Documents to which contribution was made

1) OGF Draft: "Network topology descriptions in optical hybrid networks"

Link to document: `https://forge.gridforum.org/sf/go/doc14679?nav=1`

Authors: Paola Grosso (UvA), Anand Patil (DANTE), Pascale Primet (INRIA), Aurélien Ceyden (ENS-Lyon)

Type of document: Informational

Status: Work in progress

Summary: Network Description Language (NDL) is a network topology model suited for descriptions of lightpaths and hybrid networks; it is based on Semantic Web and uses RDF as the language syntax. The NML-WG goal is to define a schema for description of optical hybrid network topologies. This schema is to be used

Project:	Phosphorus
Deliverable Number:	<D7.2.3>
Date of Issue:	31/03/08
EC Contract No.:	034115
Document Code:	<Phosphorus-WP7-D7.2.3>

10

by lightpath provisioning application to exchange topology information intra and inter domain. This document provides a detailed overview of the framework in which the working group operates, detailing the already existing topology schemas and providing the basis for the integration of the various projects.

2.6   OGSA-AUTHZ-WG – OGSA Authorization Working Group

2.6.1   Documents to which contribution was made

1) Contributed Drafts and references:

XACML Request Context to Obtain an Authorization Decision, by Chadwick, David; Su, Linying; Laborde, Romain - https://forge.gridforum.org/sf/go/doc14565?nav=1

Use of WS-Trust and SAML to access a CVS, by Chadwick, David; Su, Linying - https://forge.gridforum.org/sf/go/doc14908?nav=1

Contributor: Yuri Demchenko (UvA)

Form of contribution: Current contribution is ensuring that OGSA AUTHZ-WG standardisation takes into account use cases and specific requirements to AAA/AuthZ infrastructure for on-demand Optical Networks.

Status: Work in progress.

2.6.2   Expected contribution and tentative date

1) Draft: Submit a draft on Authorisation session management and Obligations handling

Contributors/Authors: Demchenko, Yuri (UvA), et al

Form of contribution: Planned contribution will target on definition of authorisation session management functionality and mechanisms for Complex Resource Provisioning.

3 Internet Engineering Task Force (IETF)

3.1 ForCES

3.1.1 Documents (published standards and drafts) to which contribution was made

1) IETF Draft: ForCES Protocol Specification

Link to document: http://www.ietf.org/internet-drafts/draft-ietf-forces-protocol-14.txt

Authors: A. Doria (Ed.), R. Haas (Ed.), J. Hadi Salim (Ed.), H. Khosravi (Ed.), W. M. Wang (Ed.)

Type of document: Standard track

Contributors: Evangelos Haleplidis (RACTI/UoP)

Form of contribution: Comments on the protocol draft on the mailing list.

2) IETF Draft: ForCES Protocol Specification

Link to document: http://www.ietf.org/internet-drafts/draft-ietf-forces-protocol-14.txt

Authors: A. Doria (Ed.), R. Haas (Ed.), J. Hadi Salim (Ed.), H. Khosravi (Ed.), W. M. Wang (Ed.)

Contributors: Evangelos Haleplidis (RACTI/UoP), Mihai Cristea (UvA)

Form of contribution: Presented an implementation experience in the IETF-70 in Vancouver, regarding to the work done in Phosphorus project.

3) Document or Draft: ForCES Forwarding Element Model

Link to document: http://www.ietf.org/internet-drafts/draft-ietf-forces-model-11.txt

Authors: J. Halpern, E. Deleganes, J. Hadi Salim

Type of document: Standard track

Contributors: Evangelos Haleplidis (RACTI/UoP)

Form of contribution: Active participation in discussions. Comments on the model draft on the mailing list.

Project:	Phosphorus
Deliverable Number:	<D7.2.3>
Date of Issue:	31/03/08
EC Contract No.:	034115
Document Code:	<Phosphorus-WP7-D7.2.3>

13

4   Conclusions

The testbed and practical orientation of the project makes it is important for the project members to contribute to the standardisation activity to ensure long-term compatibility of the developed solutions, on one hand, and the practical experience with new technologies provides a valuable feedback to the standards development process. The presented report reflects only the most essential contribution of the project members to the standardisation activity. The project members are contributing actively to a number of standardisation groups at Open Grid Forum and continuing liaison with Internet Engineering Task Frosce.

5 Acronyms

AAA	Authentication, Authorisation, Accounting
DDSS	Distributed Data Storage Systems
e2e	end to end
FC	Fibre Channel
FC-SATA	Fibre Channel to SATA technology (mixed technology used in disk matrices: disk matrix have Fibre Channel ports for hosts connectivity, but contains SATA disk drives)
FI-RG	Firewall Issues Research Group
ForCES	Forwarding and Control Elements Separation
GMPLS	Generalized MPLS (MultiProtocol Label Switching)
G2MPLS	Grid-GMPLS (enhancements to GMPLS for Grid support)
GHPN-RG	Grid High Performance Networking Research Group
GRAAP-WG	Grid Resource Allocation Agreement Protocol Working Group
GSA-RG	Grid Scheduling Architecture Research Group
JSDL-WG	Job Submission Description Language Working Group
MSS	MetaScheduling Service
NML-WG	Network Markup Language Working Group
NRPS	Network Resource Provisioning System
OGF	Open Grid Forum
OGSA-AUTHZ-WG	OGSA Authorisation Working Group
OGSA-RSS-WG	Open Grid Service Architecture Resource Selection Working Group
QoS	Quality of Service
UNI	User to Network Interface
VLAN	Virtual LAN (as specified in IEEE 802.1p)
VIOLA	Vertically Integrated Optical Testbed for Large Applications in DFN
VPN	Virtual Private Network
WFM-RG	Workflow Management Research Group