



Project no. IST-033576

XtreemOS

Integrated Project

BUILDING AND PROMOTING A LINUX-BASED OPERATING SYSTEM TO SUPPORT VIRTUAL ORGANIZATIONS FOR NEXT GENERATION GRIDS

Training report and plan D5.2.3

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T5.2.4	XtreemOS summer school	STFC*, INRIA, UDUS, CNR, BSC, ULM, VUA, XLAB, ZIB
T5.2.5	XtreemOS day for key players	XLAB*, INRIA, STFC, CNR, BSC, ULM, VUA, XLAB, ZIB, UDUS

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Executive Summary

This deliverable provides a report on training activities of the third year of the project and is also a planning document for future activities during the last year of the project. This document is based on Annex 1 and the two previous training deliverables provided in D5.2.1 and D5.1.2 (updated annually).

Internal training activities, e.g. how to install and configure XtreamOS were organized co-located with general technical meetings. External training activities include an XtreamOS contribution to the CoreGRID summer school and a security-related tutorial that has been given at the IPDPS 2008 conference. Finally, the XtreamOS summer school (September 2009) preparation has been started.

During the last year of the project, training activities will have to extend external training activities and reach external audiences with different profiles (users & developers) with training on the whole XtreamOS software stack. The first audience that will be targeted includes all related European ICT-/Grid-projects, the Linux and the Grid communities. One of the main external training events will be the XtreamOS summer school in September 2009.

Finally, key players from industry and research need to be “trained”, too. The courses planned for this target audience shall give an overview and a clear insight into the commercially interesting know-how and benefits of XtreamOS (scheduled for spring 2010).

1. Introduction

The main goal of the WP5.2 in XtreamOS is the implementation of training activities for internal and external purposes.

Internal training targets primarily the project partners who require additional expertise on particular topics in order to ensure an effective and efficient design, implementation and integration of the different parts of the system.

In contrast, external training targets parties, which are not members of the consortium, but are interested in the topics related to the project. External training includes educational activities (e.g., contribution in summer schools and training programs and organization of the XtreamOS first summer school) for potential users and developers. Finally, decisions makers need to be “trained” too, in order to learn about potentially interesting commercial benefits of the XtreamOS technology.

2. Training report

2.1 Internal training activities

During the last general technical meeting in Amsterdam (March 23-27, 2009), several tutorials were given by XtremOS members to other XtremOS colleagues: these internal trainings are essential to ensure a common understanding of the XtremOS mechanisms and practices.

The first release of the system highlighted a need for a tutorial on how to install XtremOS (installation and configuration procedures were difficult for inexperienced users and developers), on how to manage credentials in XtremOS and on how to better understand the security API. Members from INRIA, XLAB and STFC organized these tutorials that were plenary sessions (targeting all project members).

Other tutorials were given on specific topics and focused specific WPs and/or developers.

Yvon Jégou (INRIA) gave a specific tutorial on the XtremOS permanent testbed.

Nicolas Vigier and Antoine Giniès (EDGE) organized another tutorial about packaging for all the developers of the project. This tutorial was used for internal training.

It is also worth mentioning that EDGE had also previously visited different partners, e.g. CNR and STFC, training them on automated branching, testing and packaging scripts in the new SVN tree (December 2008).

2.2 External training activities

CoreGRID summer school

XtremOS was presented at the CoreGRID summer school (7.7–11.7.2008) at Technische Universitaet Dortmund, Germany (webpage: <http://www.it.irf.uni-dortmund.de/IT/CoreGRID/index.php>). XtremOS had a 45min. time slot and around 40 people attended the talk of Joerg Domaschka (ULM) entitled “Reliability and Availability in the XtremOS Project”. The slides of the presentation are available on the CoreGRID summer school webpage: <http://www.it.irf.uni-dortmund.de/IT/CoreGRID/talks/Domaschka.pdf>

Gridforum Netherlands

Christine Morin and Sylvain Jeuland (INRIA) gave a masterclass (including demo) at Vrije Universiteit Amsterdam in the framework of Gridforum Netherlands on October 23, 2008 (<http://isoc.nl/activ/2008-ChristineMorin.htm>). Around 55 persons (students, PhD, business etc.) attended this talk. The slides of the presentation by Christine Morin are available online: <http://isoc.nl/activ/2008-ChristineMorin.pdf>

ENVOL school

Furthermore, Christine Morin (INRIA) gave two talks on Kerrighed technology, which is leveraged in XtremOS, during the school on dEveloppement et la ValOrisation des Logiciels en environnement de recherche (ENVOL) organized by CNRS/PLUME, Annecy, France, October 2008. The audience was composed of software development managers and developers from research labs aiming at developing and promoting software developed in laboratories (namely in open source). Christine Morin took the opportunity to include some features of XtremOS in the presentation (kDFS for instance).

Kiberpipa event

On April 14th 2008 XLAB made an XtreamOS training session in the Kiberpipa slot. Kiberpipa ('Cyberpipe') is a hacker space in Ljubljana, Slovenia, established in 2001 as a part of the K6/4 Institute. The hacker space operates as a cultural centre, computer laboratory and Internet café (with free wireless access). Kiberpipa engages primarily in open source programming and the recycling of computer devices. It organises workshops, lectures, and entertainment and information events. Marjan Šterk and Matej Artač presented the XtreamOS project and its goals, and demonstrated its usage from the perspective of a VO administrator, a resource administrator, and a VO user. The audience consisted of Linux users, who showed interest in the project's results. The video of the presentation (in Slovenian) is available on Kiberpipa's website (http://video.kiberpipa.org/media/POT_XtreamOS/play.html).

Tutorial at ICS'09 conference

Beyond the above-mentioned talks a tutorial proposal titled "Security and VO Management in Grids" was submitted at various conferences (SC'08, IPDPS 2008) and accepted at ICS'09 (23rd International Conference on Supercomputing) taking place in New York, USA, June 2009.

This tutorial provided an overview of security and Virtual Organization management in established and new Grid systems. We surveyed the security and Virtual Organization management features provided by some major Grid middleware packages, and introduced the comparable functionality in XtreamOS, a Grid-based operating system. The training material was prepared by Corina Stratan (VUA), Alvaro Arenas (STFC), Christine Morin (INRIA), Haiyan Yu (ICT) and Yvon Jégou (INRIA).

The content and schedule of this tutorial is as follows:

Grid security and VO Management: concepts and issues - 1 hour

- Concepts of user identity/authentication, authorization & access control to resources
- Challenges to Grid security
- Single-Sign On and Federation
- VO concepts and models

Security and VO management in the state-of-the-art Grid systems - 1 hour

- Globus – authentication & Single-sign on, authorization, delegation, Community Authorization Service, plugins for VOMS
- gLite - authentication, authorization, delegation, VOMS
- UNICORE - clients and authentication Gateway
- VOMS Attribute Authority for UNICORE using SAML
- Security and VO management in XtreamOS

XtreamOS: a Grid-based Operating System – 1 hour

- XtreamOS objectives
- XtreamOS Foundation layer
(credential storage via Key Retention Service, mention use of PAM)
- UID/GID mapping from VO attributes
- XtreamOS Grid layer - Services and Applications
- Show a job submission workflow invoking XtreamOS services
- XtreamOS advantages
- XtreamOS roadmap for interoperability

This tutorial has been widely promoted and a dedicated webpage has been created on the project website: <http://www.xtreemos.eu/xtreemos-events>.

Other events

Sylvain Jeuland (INRIA) visited the Laboratoire Bordelais de Recherche en Informatique (LABRI) and gave a detailed presentation on XtremOS and presented a demonstration of XtremOS (Bordeaux, France, October 2008).

2.3 Preparation of the XtremOS summer school

The first XtremOS summer school will take place in Oxford, UK in September 7-11, 2009. This is the major event for the third period of the project in terms of training. The goal of this summer school is to attract potential developers and users for the XtremOS system. As a matter of fact summer schools target PhD students and master students who are good testers and could potentially become future developers and users of the technology.

The preparation of the XtremOS summer school (planned for M40) has been initiated by Alvaro Arenas (STFC): room rental, contact of potential invited speakers, draft programme and topics to be addressed, grants etc.

The organising committee is composed of:

- Alvaro Arenas, STFC Rutherford Appleton Laboratory (Organisation chair)
- Christine Morin, INRIA Rennes – Bretagne Atlantique (Scientific coordination)
- Sandrine L’Hermitte, INRIA Rennes – Bretagne Atlantique (Administrative support)
- Benjamin Aziz, STFC Rutherford Appleton Laboratory (Local organisation)
- Ian Johnson, STFC Rutherford Appleton Laboratory (Local organisation)

Promotional actions also started and the call for participation was widely disseminated (See D5.1.8).

A webpage was created on the project website: <http://www.xtreemos.eu/xtreemos-events/xtreemos-summer-school-2009> where registration has been opened. A dedicated flyer was also created is also downloadable from this webpage (<http://www.xtreemos.eu/xtreemos-events/xtreemos-summer-school-2009-2/2009-06-23.8405986064/download>).

3. Training plan

All training activities will be coordinated with communication (WP5.1) and liaison activities (WP5.3).

3.1 Training researchers and XtreamOS users (T5.2.3)

The existing training material will be refined and extended depending on the XtreamOS members' needs. We will continue to organize internal training sessions whenever necessary.

During the last year of the project, T5.2.3 will have to extend to external training activities. The first audience that will be targeted includes all related European ICT-/Grid-projects, the Linux and the Grid communities in general. One of the main external training events will be the XtreamOS summer school, see Section 3.2.

Beyond training engineers and researchers this task will also provide training courses for external and internal users after the second software release. The different requirements of users will be addressed by specific training material. User training is planned to be co-located with training engineers, e.g. ½ day at the beginning of a training workshop and tutorials will also be submitted at international and national events (Supercomputing, ISC, ...).

An initial course portfolio on various aspects of XtreamOS will be developed from tutorial submissions to conferences (e.g. ISC'09) and contributions to other EU project summer schools.

The consortium will organize a ½ day XtreamOS summit at EuroPar09 in August 2009, in Delft, The Netherlands. This summit will include talks from the consortium and demonstration sessions and discussions and it will aim at attracting people from the external world (raising interest, showing the appeal of the XtreamOS technology, discussing about XtreamOS-related topics etc.).

The programme and schedule of this XtreamOS summit is the following:

Time	Subject	Speaker	Type
14:30-15:00	Main objectives of XtreamOS	Thilo Kielmann Vrije universiteit Amsterdam, the Netherlands	Talk
15:00-15:30	Security model	Alvaro Arenas Science and Technology Facilities Council, the United Kingdom	Talk
15:30-16:00	Resource matching	Guillaume Pierre Vrije Universiteit Amsterdam, the Netherlands	Talk
16:00-16:30	Coffee break		
16:30-17:00	Parallel IO and replication in XtreamFS	Björn Kolbeck Zuse Institute Berlin, Germany	Talk
17:00-17:45	Applications and demonstrations	Peter Linnell INRIA Rennes, France	Demonstration
17:45-end	Open Q&A session	All	Discussion

3.2 XtreamOS summer school (T5.2.4)

The first XtreamOS summer school will take place in Oxford, UK in September 7-11, 2009.

The aims of the XtreamOS Summer School are:

- To introduce participants to emergent computing paradigms such as Grid computing and Cloud computing
- To provide lectures and practical courses on novel techniques to achieve scalability, highly availability and security in distributed systems
- To present Grid applications in the domains of E-science and business.
- To provide a forum for participants to discuss your research work and share experience with experience researchers.

The topics covered in the Summer School include:

- Introduction to Grids, Clouds, SOA and network-centric operating systems
- Grid programming interfaces
- VO Management and security
- Distributed data management
- Application execution management
- Scalability
- Grid Checkpointing

Both internal and external speakers will make lectures. The following external speakers have been invited:

- Paolo Costa, Microsoft Research Cambridge, UK
- Kate Keahey, Argonne National Laboratory, USA
- Cedric Le Goater, IBM, France
- Kathrin Peter, Konrad-Zuse-Zentrum für Informationstechnik Berlin (ZIB), Germany
- David Wallom, Oxford e-Research Centre, UK

Some XtreamOS members will also actively take part in the lectures:

- Christine Morin, INRIA Rennes-Bretagne Atlantique, France
- Tony Cortes, Barcelona Supercomputing Center, Spain
- Thilo Kielmann, Vrije Universiteit Amsterdam, The Netherlands
- Massimo Coppola, ISTI-CNR, Italy
- Bjorn Kolbeck, Konrad-Zuse-Zentrum für Informationstechnik Berlin (ZIB), Germany
- John Mehnert-Spahn, Heinrich-Heine Universitaet Duesseldorf, Germany
- Alvaro Arenas, STFC Rutherford Appleton Laboratory, UK

A preliminary program is available, as shown hereafter:

XtreemOS Summer School 2009					
Wadham College, Oxford University, Oxford, UK					
Time	Monday September 7	Tuesday September 8	Wednesday September 9	Thursday September 10	Friday September 11
09:00 – 10:30	Arrival of Participants	VO Management and Security Alvaro Arenas, STFC	Data Management in D-Grid Community Projects Kathrin Peter, ZIB	Invited Speaker Paolo Costa, MSR Cambridge	Grid Checkpointing John Mehnert-Spahn, U. Dusseldorf
10:30 – 11:00		Coffee Break			
11:00 – 12:30		Grid Programming Interface – SAGA Thilo Kielmann, VUA	Practical on XtreemFS Bjorn Kolbeck, ZIB	Virtual Nodes Jorg Domaschka, ULM Practical on Highly Scalable Services Massimo Coppola, CNR	Invited speaker Cedric Le Goater, IBM
13:00 – 14:00	Lunch Break				
14:00 – 15:30	Invited speaker Kate Keahey, Argonne Lab	Practical on Grid Programming Interface Thilo Kielmann, VUA	Application Execution Management Toni Cortes, BSC	Doctoral symposium	Departure of Participants
15:30 - 16:00	Coffee Break				
16:00 – 17:30	Introduction to Grids, SOA, and network-centric OS Christine Morin, INRIA	Invited speaker David Wallom, Oxford e-Research Centre	Practical on Application Execution Management Toni Cortes, BSC	Continuation Doctoral symposium	
19:00 -		Welcome reception, including poster session and project demos		XSS Dinner	

3.3 XtreamOS day for key players (T5.2.5, leader: XLAB)

The governing board decided to move this event to spring 2010. The major goal of this workshop is to raise awareness of XtreamOS to key players in the fields of grid systems, Linux, and operating systems and to demonstrate the value of our “products” (XtreamOS system and stand-alone components). The majority of participants of this workshop will be invited-only. It is planned to co-locate this XtreamOS major event with another major ICT fair/event and to invite decision makers. We also aim to produce a small book at the end of this workshop.

The workshop material content will partially emerge from the XtreamOS exploitation plans (WP5.1) and demo scenarios (WP4.4).

4. Conclusion

During the past year our external training activities have mostly targeted academic people (summer school participants, master class...) who can be seen as potential developers and users of the XtreamOS systems. The main training activity of the third year was the preparation of the first XtreamOS summer school.

During the last year of the project, we will focus on business key players and try to attract users and developers for the XtreamOS system and software components. The major events of the last year will be the XtreamOS summer school and the XtreamOS day for key players. XtreamOS members will in parallel continue to submit tutorials to summer schools and scientific conferences.