

Dipartimento di Ingegneria e Scienza dell'Informazione

- KnowDive Group -

Operating System Integration

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1. Introduction

This document is a thesis proposal for a master degree in computer science or in a related field.

2. Master thesis proposal

Title: Operating System Integration

Abstract: Some operating systems provide useful features that don't exist in other systems. In the case of data storage in file systems, one operating system could provide advanced techniques in data and file manipulations and they are needed to be accessed from another operating system that doesn't support them. This thesis aims to integrate a semantics-enabled operating system with another operating system through virtualization technology and to address the issues that are related to data exchanging and synchronization between the host and the guest operating systems while optimizing the performance and resources usage like memory and desk space.

Keywords: operating systems, virtualization, integration, file systems, resources optimization.

Objectives of the thesis: the current thesis aims at:

1. Minimizing the resources required by the semantic operating system to work with other operating systems.
2. Handle the data importing, exporting and synchronizing between the host and the guest operating systems while make use of the special features in both systems.
3. Provide an easy way to install the integration layer on the host system.

Work plan: the effort required to deliver the current work is estimated as a 8 months full time activity of a master student. The work plan is presented below. The delivery dates are rather indicative than compulsory, however, the student is highly encouraged to follow the proposed timeline and s/he should notify the work advisor whenever a deadline cannot be met. In the list below, M stands for "month", e.g., M1 is the end of the first month after the work starting date.

- M0.5: Requirements analysis of the operating system integration.
- M2: Minimal semantic operating system
- M3: Importing data/files from host operating system
- M4: Exporting data/files from guest operating system
- M5: Synchronizing data/files between the two operating systems
- M6: First draft of the thesis report.
- M7: Installation of the integration layer and the guest semantic operating system.
- M8: final review of the thesis report, which summarizes the complete work.

Requirements: the candidate student for this thesis should meet the following requirements:

1. Bachelor degree in computer science or in a related field.
2. Good knowledge of OOP and the C++ programming language.
3. Programming experience in large projects is a plus.
4. Good knowledge of requirements analysis.
5. Good knowledge of systems integration.
6. Good knowledge of the internals of Microsoft Windows and FreeBSD operating systems.