Virtual Hellfire Hypervisor: Extending Hellfire Framework for Embedded Virtualization Support

Alexandra Aguiar
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Summary

- Introduction
- Virtualization
- The Hellfire Framework
- Extension for Virtualization Support
- Concluding Remarks and Future Work
Introduction

- Embedded Systems (ES) Variety
Introduction

- Increasing software complexity
- General purpose needs, ES restrictions
- MPSoC and RTOS
- Virtualization
  - Increase software design quality
  - Decrease costs
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Virtualization - Classic

- Hypervisor Type 1
- Hypervisor Type 2
Virtualization - Classic

- Ring de-privileging
- Para-virtualization
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Hellfire Framework

- GSE - PUCRS Project
- Design and Test of Embedded Systems
- RTOS, Debug, Test
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VHH – Virtual Hellfire Hypervisor

- Domain structure and memory management
VHH – Virtual Hellfire Hypervisor

- I/O Handling and VHH Architecture
VHH – Virtual Hellfire Hypervisor

- Hellfire Framework Integration
VHH – Use cases

[Diagram showing the relationship between different domains and their respective operating systems (Legacy OS, User OS, RTOS) and the concept of application migration.]
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Concluding Remarks Future Work

 Present:
   Virtualization helps increasing software design quality for ES
   Usefullness of Virtualization in ES

 Future:
   Comparison results for performance, area and energy against non-virtualized systems
   Overhead measurements
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