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A Process Oriented Tool for Mobile Devices for Monitoring OSCAR Clusters

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Summary

- Introduction and Motivation
- Related Works
- Proposed Approach
- Experiments
- Conclusion and Future Works

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Introduction

- *The high availability feature of the HA-OSCAR, it is an interesting monitoring mechanism to provide a more reliable configuration for distributed and parallel applications.*

Objective

- *Design and implement a prototype which creates for mobile users an extra facility that can enhances the high availability scheme found inside the HA-OSCAR.*

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Related Works

Rista and Dantas – Oscar 2005

Baggio and Dantas – Oscar 2005

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Proposed Approach

- *Using a process oriented approach we create a tool that friendly allows a user with more facilities to monitor the cluster.*
- *Empirical case studies indicate that the prototype can be considered as an interesting approach to efficiently monitoring processes together with HA-OSCAR from mobile devices.*

Proposed Approach

- *A key aspect that we considered in the development of the prototype was that any user could in a friendly fashion inserts parameters from the mobile device to monitor the cluster environment.*

Proposed Approach

We decided to employ the components listed below, which have their main characteristics described:

- *Java language: portability, object oriented, open documentation and large number of APIs;*

Proposed Approach

- *Palm OS Emulator and Simulator: these two elements provide a powerful develop environment to design, implement and debug programs of the tool;*
- *Eclipse software package: open IDE, large plug-ins functionalities;*
- *SuperWaba Java Virtual Machine: it has an open version, large number of components; facility to build interfaces, includes almost all Java bytes codes.*

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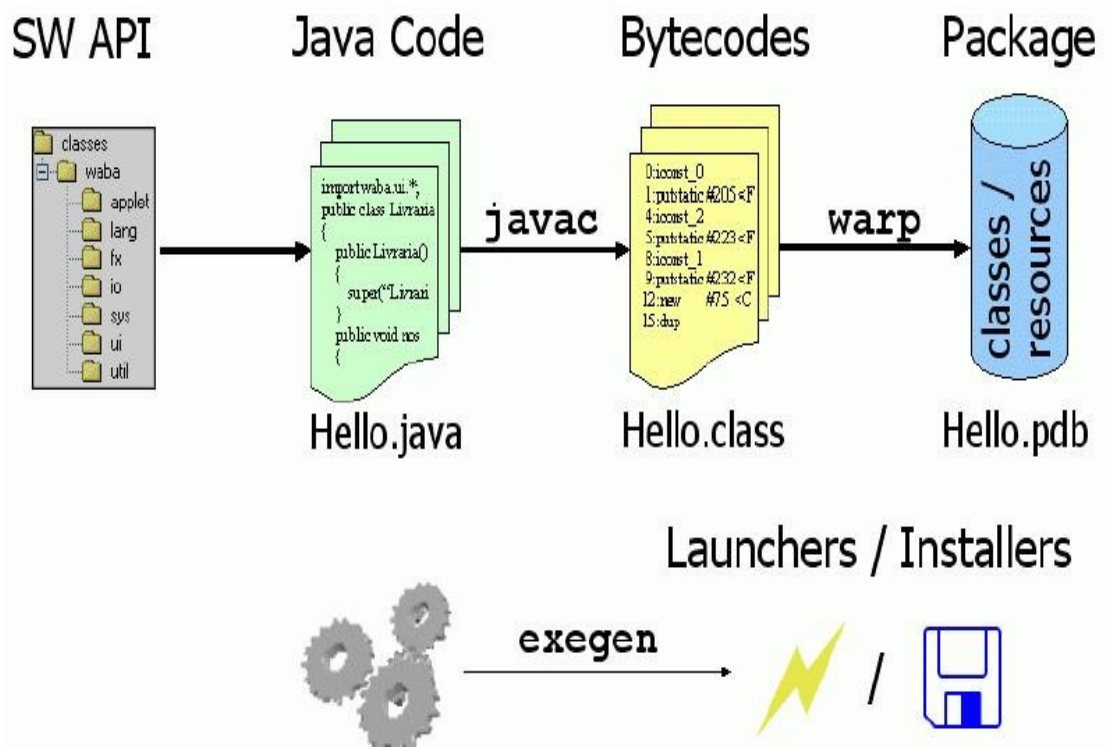


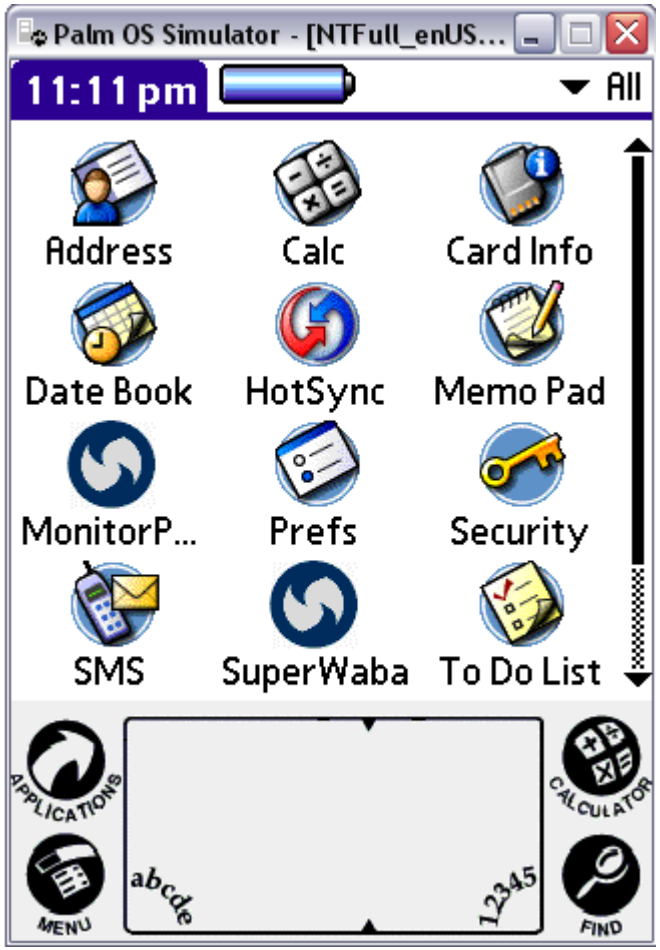
This figure shows a standard SuperWaba environment

The emulator which the figure shows, represents one hardware approach to consider as a mobile device to design our proposal.

In other words, without using a physical device during the tool design, this emulator helps to visualize how it will work.

Palm OS Emulator

The icon *MonitorP...* that appears in this figure and the previous, represents the access to the proposed tool.



Palm OS Simulator.

The tool software package allows to a user to choose the file, manager and configure modules.

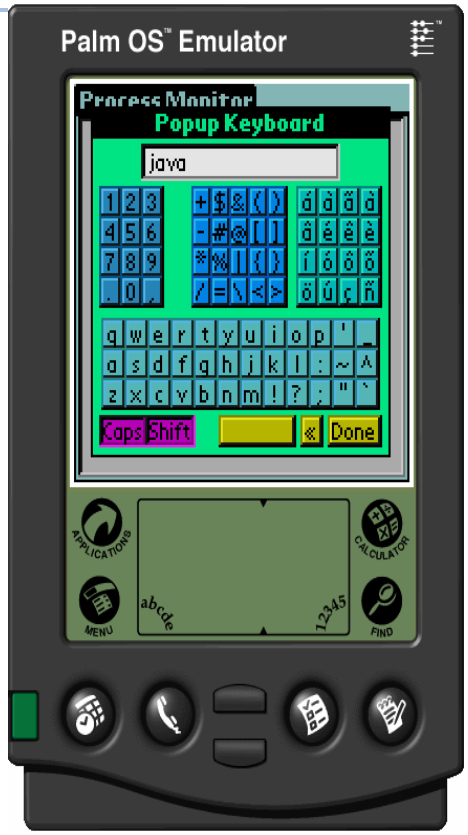
The file option allows the submission of existing test experiments.

The manager module provides ways for monitoring a process or a node. In addition, this component has the responsibility for starting and stopping a monitor procedure. Facilities available for monitoring process selection is illustrated in this figure.

One relevant aspect to propose the environment was to improve in a friendly manner how a mobile user could configure processes to be monitored.

This figure shows how a user can configure the monitor function.

This screen presents a keyboard simulator facility that helps a user to edit any file.



This figures illustrates, in the case of a node (or nodes) that should be monitored, a mobile user can easily choose which elements are going to be considered.

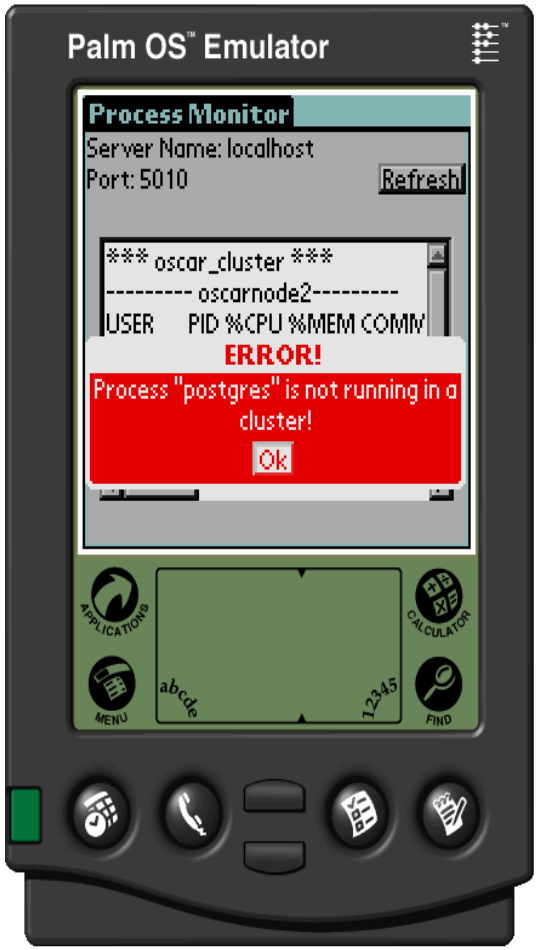
This case points out an example of how it is possible to select parameter of a server to be monitored.

This example shows a conventional procedure of monitoring of an OSCAR cluster.

In this case, all processes are executing as expected.

On the other hand, the case study presented in this figure, shows an alert is generated to the mobile user, because a specific process it is not executing.

In this example a process called as *pico* was no running in any node of the OSCAR nodes.



The present experiment presents a double alert of specific processes that were expected to be executing in different OSCAR nodes.

In this experiment, the JAVA process has the *zombie* status in OSCAR node 1. The mysqld process generates the second alert because it has the *zombie* status in OSCAR node 2.

After the stage of design, development, software implementation and testing we install our tool in a Palm Tungsten C with a 400MHz processor and 128 Mbytes memory executing Palm OS 5.2.1.

The Palm OS Emulator and Simulator have proved to be reliable packages to be considered during the development phase of the project.

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Conclusion and Future Work

• In this article we have presented a tool that was designed and implemented to improve the monitoring function of the HA-OSCAR software environment.

• Our prototype considers a number of facilities to provide to a mobile device user using a wireless network to monitor any process executing in a OSCAR cluster.

Conclusion and Future Work

- Empirical case studies were primarily characterized by the utilization of a simulator and emulator components from the Palm OS environment.

- After testing the tool, the software package was migrated to a real mobile device and works as expected.

Conclusion and Future Work

• As a future work we are going to implement the tool under an *ad-hoc* network approach, considering problems related to cache consistency, targeting to provide information of the configuration for a group of managers.

•Other feature that we already started to test was the integration with a message SMS (Short Message Service) package that we previous developed.

Questions?

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