

Management Servers for

GOATEE

a mexokernel based

Operating System



GOATEE

Team Members and Guide

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Mexokernel

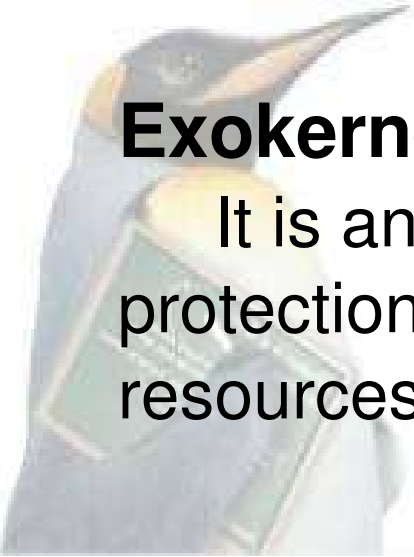
A kernel that resembles Microkernel and takes the advantages of Exokernel.

Microkernel

A small kernel with different servers running on the higher level layer (user space). The microkernel provides multitasking and the IPC facility for these servers.

Exokernel

It is an extremely small kernel with the provisions for protection functionality and multiplexing of different resources.



Mexokernel Architecture

- Minimum kernel with efficient multitasking and provides Inter Task Communication (ITC).
- Maintains the task table.
- Handles all the interrupts and exceptions.
- Completely relies on the first task on security issues.
- It opens the kernel memory to a set of privileged user space tasks.



First Task

- Runs in the kernel address space – can make changes to system tables.
- Security policies for the privileged tasks are set by this task.
- Loads the entries (TSS, priority, ..) in the task table for each server.
- Sets which tasks can use ITC and which cannot.
- Loads the device driver modules and puts an entry in the IDT.

Process Management Server

- One of the privileged task in the user space.
- Process vs Task.
- Maintains a separate process table for the user space process.
- Creation of process.
- Uses priority based scheduling.
- Sets the priorities for different processes.
- Swaps in and out the process to the task table while scheduling.



Memory Management Server

- Allocation of memory (data, stack..) to new processes.
- Uses Paging mechanism.
- x86 Page mapping :
 - PDBR --> Page Directory --> Page Table --> Page
- Can directly make changes in the page tables.
- Deallocation of unused memory space.
- Uses ITC for communicating with other privileged servers.

IPC Server

- Inter process communication takes care of the exchange of message.
- Uses shared buffer for IPC.
- Takes care of race conditions in these buffers.



Modules under consideration

- **File System Server.**
- **Porting glibc for goatee.**
- **...**



GOATEE

- **Development Tools**

- GCC (GNU Compiler Collection)
- GAS, GLD
- GDB (GNU Debugger)

- **Development Platform**

- Debian GNU/Linux (sarge)

- **Project Management**

- CVS (Concurrent Versioning System)

- **Others**

- Bochs (Pentium PC Emulator)

Thank You

..?

Free the code, Free the user



GOA TEE