

POK(kernelpart)

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Chapter 3

Data Structure Documentation

3.1 `__attribute__` Struct Reference

```
#include <event.h>
```

Data Fields

- [uint32_t offset_low](#):16
- [uint32_t segsel](#):16
- [uint32_t res0](#):8
- [uint32_t type](#):3
- [uint32_t d](#):1
- [uint32_t res1](#):1
- [uint32_t dpl](#):2
- [uint32_t present](#):1
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- [uint32_t s](#):1
- [uint32_t limit_high](#):4
- [uint32_t available](#):2
- [uint32_t op_size](#):1
- [uint32_t granularity](#):1
- [uint32_t base_high](#):8
- [uint16_t limit](#)
- [uint32_t base](#)
- [uint16_t padding](#)
- [uint32_t back_link](#)
- [uint32_t esp0](#)
- [uint32_t ss0](#)
- [uint32_t esp1](#)
- [uint32_t ss1](#)
- [uint32_t esp2](#)
- [uint32_t ss2](#)
- [uint32_t cr3](#)
- [uint32_t eip](#)
- [uint32_t eflags](#)
- [uint32_t eax](#)
- [uint32_t ecx](#)

- [uint32_t edx](#)
- [uint32_t ebx](#)
- [uint32_t esp](#)
- [uint32_t ebp](#)
- [uint32_t esi](#)
- [uint32_t edi](#)
- [uint32_t es](#)
- [uint32_t cs](#)
- [uint32_t ss](#)
- [uint32_t ds](#)
- [uint32_t fs](#)
- [uint32_t gs](#)
- [uint32_t ldt](#)
- [uint16_t trace_trap](#)
- [uint16_t io_bit_map_offset](#)

3.1.1 Detailed Description

Definition at line 33 of file event.h.

3.1.2 Field Documentation

3.1.2.1 `uint32_t __attribute__((available))`

Definition at line 39 of file gdt.h.

3.1.2.2 `uint32_t __attribute__((back_link))`

Definition at line 25 of file tss.h.

3.1.2.3 `uint32_t __attribute__((base))`

Definition at line 24 of file sysdesc.h.

3.1.2.4 `uint32_t __attribute__((base_high))`

Definition at line 42 of file gdt.h.

3.1.2.5 `uint32_t __attribute__((base_low))`

Definition at line 33 of file gdt.h.

3.1.2.6 `uint32_t __attribute__((cr3))`

Definition at line 32 of file tss.h.

3.1.2.7 `uint32_t __attribute__((cs))`

Definition at line 44 of file tss.h.

3.1.2.8 `uint32_t __attribute__((d))`

Definition at line 39 of file `event.h`.

3.1.2.9 `uint32_t __attribute__((dpl))`

Definition at line 41 of file `event.h`.

3.1.2.10 `uint32_t __attribute__((ds))`

Definition at line 46 of file `tss.h`.

3.1.2.11 `uint32_t __attribute__((eax))`

Definition at line 35 of file `tss.h`.

3.1.2.12 `uint32_t __attribute__((ebp))`

Definition at line 40 of file `tss.h`.

3.1.2.13 `uint32_t __attribute__((ebx))`

Definition at line 38 of file `tss.h`.

3.1.2.14 `uint32_t __attribute__((ecx))`

Definition at line 36 of file `tss.h`.

3.1.2.15 `uint32_t __attribute__((edi))`

Definition at line 42 of file `tss.h`.

3.1.2.16 `uint32_t __attribute__((edx))`

Definition at line 37 of file `tss.h`.

3.1.2.17 `uint32_t __attribute__((eflags))`

Definition at line 34 of file `tss.h`.

3.1.2.18 `uint32_t __attribute__((eip))`

Definition at line 33 of file `tss.h`.

3.1.2.19 `uint32_t __attribute__((es))`

Definition at line 43 of file `tss.h`.

3.1.2.20 uint32_t __attribute__((:esi

Definition at line 41 of file tss.h.

3.1.2.21 uint32_t __attribute__((:esp

Definition at line 39 of file tss.h.

3.1.2.22 uint32_t __attribute__((:esp0

Definition at line 26 of file tss.h.

3.1.2.23 uint32_t __attribute__((:esp1

Definition at line 28 of file tss.h.

3.1.2.24 uint32_t __attribute__((:esp2

Definition at line 30 of file tss.h.

3.1.2.25 uint32_t __attribute__((:fs

Definition at line 47 of file tss.h.

3.1.2.26 uint32_t __attribute__((:granularity

Definition at line 41 of file gdt.h.

3.1.2.27 uint32_t __attribute__((:gs

Definition at line 48 of file tss.h.

3.1.2.28 uint16_t __attribute__((:io_bit_map_offset

Definition at line 51 of file tss.h.

3.1.2.29 uint32_t __attribute__((:ldt

Definition at line 49 of file tss.h.

3.1.2.30 uint16_t __attribute__((:limit

Definition at line 23 of file sysdesc.h.

3.1.2.31 uint32_t __attribute__((:limit_high

Definition at line 38 of file gdt.h.

3.1.2.32 `uint32_t __attribute__((limit_low))`

Definition at line 32 of file `gdt.h`.

3.1.2.33 `uint32_t __attribute__((offset_high))`

Definition at line 43 of file `event.h`.

3.1.2.34 `uint32_t __attribute__((offset_low))`

Definition at line 35 of file `event.h`.

3.1.2.35 `uint32_t __attribute__((op_size))`

Definition at line 40 of file `gdt.h`.

3.1.2.36 `uint16_t __attribute__((padding))`

Definition at line 25 of file `sysdesc.h`.

3.1.2.37 `uint32_t __attribute__((present))`

Definition at line 42 of file `event.h`.

3.1.2.38 `uint32_t __attribute__((res0))`

Definition at line 37 of file `event.h`.

3.1.2.39 `uint32_t __attribute__((res1))`

Definition at line 40 of file `event.h`.

3.1.2.40 `uint32_t __attribute__((s))`

Definition at line 35 of file `gdt.h`.

3.1.2.41 `uint32_t __attribute__((segssel))`

Definition at line 36 of file `event.h`.

3.1.2.42 `uint32_t __attribute__((ss))`

Definition at line 45 of file `tss.h`.

3.1.2.43 `uint32_t __attribute__((ss0))`

Definition at line 27 of file `tss.h`.

3.1.2.44 uint32_t __attribute__((ss1))

Definition at line 29 of file tss.h.

3.1.2.45 uint32_t __attribute__((ss2))

Definition at line 31 of file tss.h.

3.1.2.46 uint16_t __attribute__((trace_trap))

Definition at line 50 of file tss.h.

3.1.2.47 uint32_t __attribute__((type))

Definition at line 38 of file event.h.

The documentation for this struct was generated from the following files:

- [/home/hipse/git-repos/pok/trunk/kernel/arch/x86/event.h](#)
- [/home/hipse/git-repos/pok/trunk/kernel/arch/x86/gdt.h](#)
- [/home/hipse/git-repos/pok/trunk/kernel/arch/x86/sysdesc.h](#)
- [/home/hipse/git-repos/pok/trunk/kernel/arch/x86/tss.h](#)

3.2 context_t Struct Reference

```
#include <thread.h>
```

Data Fields

- [uint32_t sp](#)
- [uint32_t unused_lr](#)
- [uint32_t cr](#)
- [uint32_t r2](#)
- [uint32_t r13](#)
- [uint32_t r14](#)
- [uint32_t r15](#)
- [uint32_t r16](#)
- [uint32_t r17](#)
- [uint32_t r18](#)
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- [uint32_t r22](#)
- [uint32_t r23](#)
- [uint32_t r24](#)
- [uint32_t r25](#)
- [uint32_t r26](#)
- [uint32_t r27](#)
- [uint32_t r28](#)
- [uint32_t r29](#)
- [uint32_t r30](#)
- [uint32_t r31](#)

- [uint32_t pad](#)
- [uint32_t back_chain](#)
- [uint32_t lr](#)
- [uint32_t edi](#)
- [uint32_t esi](#)
- [uint32_t ebp](#)
- [uint32_t __esp](#)
- [uint32_t ebx](#)
- [uint32_t edx](#)
- [uint32_t ecx](#)
- [uint32_t eax](#)
- [uint32_t eip](#)
- [uint32_t cs](#)
- [uint32_t eflags](#)

3.2.1 Detailed Description

Definition at line 23 of file thread.h.

3.2.2 Field Documentation

3.2.2.1 uint32_t context.t::_esp

Definition at line 28 of file thread.h.

3.2.2.2 uint32_t context.t::back_chain

Definition at line 54 of file thread.h.

3.2.2.3 uint32_t context.t::cr

Definition at line 28 of file thread.h.

3.2.2.4 uint32_t context.t::cs

Definition at line 35 of file thread.h.

3.2.2.5 uint32_t context.t::eax

Definition at line 32 of file thread.h.

3.2.2.6 uint32_t context.t::ebp

Definition at line 27 of file thread.h.

3.2.2.7 uint32_t context.t::ebx

Definition at line 29 of file thread.h.

3.2.2.8 uint32_t context_t::ecx

Definition at line 31 of file thread.h.

3.2.2.9 uint32_t context_t::edi

Definition at line 25 of file thread.h.

3.2.2.10 uint32_t context_t::edx

Definition at line 30 of file thread.h.

3.2.2.11 uint32_t context_t::eflags

Definition at line 36 of file thread.h.

3.2.2.12 uint32_t context_t::eip

Definition at line 34 of file thread.h.

3.2.2.13 uint32_t context_t::esi

Definition at line 26 of file thread.h.

3.2.2.14 uint32_t context_t::lr

Definition at line 55 of file thread.h.

3.2.2.15 uint32_t context_t::pad

Definition at line 51 of file thread.h.

3.2.2.16 uint32_t context_t::r13

Definition at line 30 of file thread.h.

3.2.2.17 uint32_t context_t::r14

Definition at line 31 of file thread.h.

3.2.2.18 uint32_t context_t::r15

Definition at line 32 of file thread.h.

3.2.2.19 uint32_t context_t::r16

Definition at line 34 of file thread.h.

3.2.2.20 uint32_t context_t::r17

Definition at line 35 of file thread.h.

3.2.2.21 uint32_t context_t::r18

Definition at line 36 of file thread.h.

3.2.2.22 uint32_t context_t::r19

Definition at line 37 of file thread.h.

3.2.2.23 uint32_t context_t::r2

Definition at line 29 of file thread.h.

3.2.2.24 uint32_t context_t::r20

Definition at line 38 of file thread.h.

3.2.2.25 uint32_t context_t::r21

Definition at line 39 of file thread.h.

3.2.2.26 uint32_t context_t::r22

Definition at line 40 of file thread.h.

3.2.2.27 uint32_t context_t::r23

Definition at line 41 of file thread.h.

3.2.2.28 uint32_t context_t::r24

Definition at line 42 of file thread.h.

3.2.2.29 uint32_t context_t::r25

Definition at line 43 of file thread.h.

3.2.2.30 uint32_t context_t::r26

Definition at line 44 of file thread.h.

3.2.2.31 uint32_t context_t::r27

Definition at line 45 of file thread.h.

3.2.2.32 uint32_t context_t::r28

Definition at line 46 of file thread.h.

3.2.2.33 uint32_t context_t::r29

Definition at line 47 of file thread.h.

3.2.2.34 uint32_t context_t::r30

Definition at line 48 of file thread.h.

3.2.2.35 uint32_t context_t::r31

Definition at line 49 of file thread.h.

3.2.2.36 uint32_t context_t::sp

Definition at line 25 of file thread.h.

3.2.2.37 uint32_t context_t::unused_lr

Definition at line 26 of file thread.h.

The documentation for this struct was generated from the following files:

- [/home/hipse/git-repos/pok/trunk/kernel/arch/ppc/thread.h](#)
- [/home/hipse/git-repos/pok/trunk/kernel/arch/x86/thread.h](#)

3.3 cpio_bin_header Struct Reference

```
#include <cpio.h>
```

Data Fields

- unsigned short [c_magic](#)
- unsigned short [c_dev](#)
- unsigned short [c_ino](#)
- unsigned short [c_mode](#)
- unsigned short [c_uid](#)
- unsigned short [c_gid](#)
- unsigned short [c_nlink](#)
- unsigned short [c_rdev](#)
- unsigned short [c_mtime](#) [2]
- unsigned short [c_namesize](#)
- unsigned short [c_filesize](#) [2]

3.3.1 Detailed Description

Definition at line 33 of file cpio.h.

3.3.2 Field Documentation

3.3.2.1 `unsigned short cpio_bin_header::c_dev`

Definition at line 36 of file `cpio.h`.

3.3.2.2 `unsigned short cpio_bin_header::c_filesize[2]`

Definition at line 45 of file `cpio.h`.

3.3.2.3 `unsigned short cpio_bin_header::c_gid`

Definition at line 40 of file `cpio.h`.

3.3.2.4 `unsigned short cpio_bin_header::c_ino`

Definition at line 37 of file `cpio.h`.

3.3.2.5 `unsigned short cpio_bin_header::c_magic`

Definition at line 35 of file `cpio.h`.

3.3.2.6 `unsigned short cpio_bin_header::c_mode`

Definition at line 38 of file `cpio.h`.

3.3.2.7 `unsigned short cpio_bin_header::c_mtime[2]`

Definition at line 43 of file `cpio.h`.

3.3.2.8 `unsigned short cpio_bin_header::c_namesize`

Definition at line 44 of file `cpio.h`.

3.3.2.9 `unsigned short cpio_bin_header::c_nlink`

Definition at line 41 of file `cpio.h`.

3.3.2.10 `unsigned short cpio_bin_header::c_rdev`

Definition at line 42 of file `cpio.h`.

3.3.2.11 `unsigned short cpio_bin_header::c_uid`

Definition at line 39 of file `cpio.h`.

The documentation for this struct was generated from the following file:

- `/home/hipse/git-repos/pok/trunk/kernel/include/core/cpio.h`

3.4 cpio_file Struct Reference

```
#include <cpio.h>
```

Data Fields

- int [cpio_fmt](#)
- void * [cpio_addr](#)
- void * [curr_header](#)
- void * [curr_fileaddr](#)
- unsigned int [curr_filesz](#)
- char * [curr_filename](#)
- unsigned int [curr_filename_len](#)
- int(* [next_header](#))(struct [cpio_file](#) *cpio)

3.4.1 Detailed Description

Definition at line 48 of file cpio.h.

3.4.2 Field Documentation

3.4.2.1 void* cpio_file::cpio_addr

Definition at line 51 of file cpio.h.

3.4.2.2 int cpio_file::cpio_fmt

Definition at line 50 of file cpio.h.

3.4.2.3 void* cpio_file::curr_fileaddr

Definition at line 53 of file cpio.h.

3.4.2.4 char* cpio_file::curr_filename

Definition at line 55 of file cpio.h.

3.4.2.5 unsigned int cpio_file::curr_filename_len

Definition at line 56 of file cpio.h.

3.4.2.6 unsigned int cpio_file::curr_filesz

Definition at line 54 of file cpio.h.

3.4.2.7 void* cpio_file::curr_header

Definition at line 52 of file cpio.h.

3.4.2.8 `int(* cpio_file::next_header)(struct cpio_file *cpio)`

Definition at line 57 of file `cpio.h`.

The documentation for this struct was generated from the following file:

- [/home/hiphse/git-repos/pok/trunk/kernel/include/core/cpio.h](#)

3.5 Elf32_Ehdr Struct Reference

```
#include <elf.h>
```

Data Fields

- unsigned char `e_ident` [`EI_NIDENT`]
- `Elf32_Half` `e_type`
- `Elf32_Half` `e_machine`
- `Elf32_Word` `e_version`
- `Elf32_Addr` `e_entry`
- `Elf32_Off` `e_phoff`
- `Elf32_Off` `e_shoff`
- `Elf32_Word` `e_flags`
- `Elf32_Half` `e_ehsize`
- `Elf32_Half` `e_phentsize`
- `Elf32_Half` `e_phnum`
- `Elf32_Half` `e_shentsize`
- `Elf32_Half` `e_shnum`
- `Elf32_Half` `e_shstrndx`

3.5.1 Detailed Description

Definition at line 28 of file `elf.h`.

3.5.2 Field Documentation

3.5.2.1 `Elf32_Half` `Elf32_Ehdr::e_ehsize`

Definition at line 38 of file `elf.h`.

3.5.2.2 `Elf32_Addr` `Elf32_Ehdr::e_entry`

Definition at line 34 of file `elf.h`.

3.5.2.3 `Elf32_Word` `Elf32_Ehdr::e_flags`

Definition at line 37 of file `elf.h`.

3.5.2.4 unsigned char `Elf32_Ehdr::e_ident[EI_NIDENT]`

Definition at line 30 of file `elf.h`.

3.5.2.5 Elf32_Half Elf32_Ehdr::e_machine

Definition at line 32 of file elf.h.

3.5.2.6 Elf32_Half Elf32_Ehdr::e_phentsize

Definition at line 39 of file elf.h.

3.5.2.7 Elf32_Half Elf32_Ehdr::e_phnum

Definition at line 40 of file elf.h.

3.5.2.8 Elf32_Off Elf32_Ehdr::e_phoff

Definition at line 35 of file elf.h.

3.5.2.9 Elf32_Half Elf32_Ehdr::e_shentsize

Definition at line 41 of file elf.h.

3.5.2.10 Elf32_Half Elf32_Ehdr::e_shnum

Definition at line 42 of file elf.h.

3.5.2.11 Elf32_Off Elf32_Ehdr::e_shoff

Definition at line 36 of file elf.h.

3.5.2.12 Elf32_Half Elf32_Ehdr::e_shstrndx

Definition at line 43 of file elf.h.

3.5.2.13 Elf32_Half Elf32_Ehdr::e_type

Definition at line 31 of file elf.h.

3.5.2.14 Elf32_Word Elf32_Ehdr::e_version

Definition at line 33 of file elf.h.

The documentation for this struct was generated from the following file:

- [/home/hipse/git-repos/pok/trunk/kernel/include/elf.h](#)

3.6 Elf32_Phdr Struct Reference

```
#include <elf.h>
```

Data Fields

- [Elf32_Word p_type](#)
- [Elf32_Off p_offset](#)
- [Elf32_Addr p_vaddr](#)
- [Elf32_Addr p_paddr](#)
- [Elf32_Word p_filesz](#)
- [Elf32_Word p_memsz](#)
- [Elf32_Word p_flags](#)
- [Elf32_Word p_align](#)

3.6.1 Detailed Description

Definition at line 48 of file elf.h.

3.6.2 Field Documentation

3.6.2.1 Elf32_Word Elf32_Phdr::p_align

Definition at line 57 of file elf.h.

3.6.2.2 Elf32_Word Elf32_Phdr::p_filesz

Definition at line 54 of file elf.h.

3.6.2.3 Elf32_Word Elf32_Phdr::p_flags

Definition at line 56 of file elf.h.

3.6.2.4 Elf32_Word Elf32_Phdr::p_memsz

Definition at line 55 of file elf.h.

3.6.2.5 Elf32_Off Elf32_Phdr::p_offset

Definition at line 51 of file elf.h.

3.6.2.6 Elf32_Addr Elf32_Phdr::p_paddr

Definition at line 53 of file elf.h.

3.6.2.7 Elf32_Word Elf32_Phdr::p_type

Definition at line 50 of file elf.h.

3.6.2.8 Elf32_Addr Elf32_Phdr::p_vaddr

Definition at line 52 of file elf.h.

The documentation for this struct was generated from the following file:

- [/home/phipse/git-repos/pok/trunk/kernel/include/elf.h](#)

3.7 interrupt_frame Struct Reference

```
#include <interrupt.h>
```

Data Fields

- [uint32_t es](#)
- [uint32_t ds](#)
- [uint32_t edi](#)
- [uint32_t esi](#)
- [uint32_t ebp](#)
- [uint32_t __esp](#)
- [uint32_t ebx](#)
- [uint32_t edx](#)
- [uint32_t ecx](#)
- [uint32_t eax](#)
- [uint32_t error](#)
- [uint32_t eip](#)
- [uint32_t cs](#)
- [uint32_t eflags](#)
- [uint32_t esp](#)
- [uint32_t ss](#)

3.7.1 Detailed Description

Definition at line 24 of file `interrupt.h`.

3.7.2 Field Documentation

3.7.2.1 `uint32_t interrupt_frame::__esp`

Definition at line 31 of file `interrupt.h`.

3.7.2.2 `uint32_t interrupt_frame::cs`

Definition at line 40 of file `interrupt.h`.

3.7.2.3 `uint32_t interrupt_frame::ds`

Definition at line 27 of file `interrupt.h`.

3.7.2.4 `uint32_t interrupt_frame::eax`

Definition at line 35 of file `interrupt.h`.

3.7.2.5 `uint32_t interrupt_frame::ebp`

Definition at line 30 of file `interrupt.h`.

3.7.2.6 uint32_t interrupt_frame::ebx

Definition at line 32 of file interrupt.h.

3.7.2.7 uint32_t interrupt_frame::ecx

Definition at line 34 of file interrupt.h.

3.7.2.8 uint32_t interrupt_frame::edi

Definition at line 28 of file interrupt.h.

3.7.2.9 uint32_t interrupt_frame::edx

Definition at line 33 of file interrupt.h.

3.7.2.10 uint32_t interrupt_frame::eflags

Definition at line 41 of file interrupt.h.

3.7.2.11 uint32_t interrupt_frame::eip

Definition at line 39 of file interrupt.h.

3.7.2.12 uint32_t interrupt_frame::error

Definition at line 38 of file interrupt.h.

3.7.2.13 uint32_t interrupt_frame::es

Definition at line 26 of file interrupt.h.

3.7.2.14 uint32_t interrupt_frame::esi

Definition at line 29 of file interrupt.h.

3.7.2.15 uint32_t interrupt_frame::esp

Definition at line 45 of file interrupt.h.

3.7.2.16 uint32_t interrupt_frame::ss

Definition at line 46 of file interrupt.h.

The documentation for this struct was generated from the following file:

- [/home/hiphse/git-repos/pok/trunk/kernel/include/arch/x86/interrupt.h](#)

3.8 pok_aout_symbol_table_t Struct Reference

```
#include <multiboot.h>
```

Data Fields

- unsigned int [tabsize](#)
- unsigned int [strsize](#)
- unsigned int [addr](#)
- unsigned int [reserved](#)

3.8.1 Detailed Description

Definition at line 76 of file multiboot.h.

3.8.2 Field Documentation

3.8.2.1 unsigned int pok_aout_symbol_table_t::addr

Definition at line 80 of file multiboot.h.

3.8.2.2 unsigned int pok_aout_symbol_table_t::reserved

Definition at line 81 of file multiboot.h.

3.8.2.3 unsigned int pok_aout_symbol_table_t::strsize

Definition at line 79 of file multiboot.h.

3.8.2.4 unsigned int pok_aout_symbol_table_t::tabsize

Definition at line 78 of file multiboot.h.

The documentation for this struct was generated from the following file:

- [/home/phipse/git-repos/pok/trunk/kernel/include/arch/x86/multiboot.h](#)

3.9 pok_elf_section_header_table_t Struct Reference

```
#include <multiboot.h>
```

Data Fields

- unsigned int [num](#)
- unsigned int [size](#)
- unsigned int [addr](#)
- unsigned int [shndx](#)

3.9.1 Detailed Description

Definition at line 84 of file multiboot.h.

3.9.2 Field Documentation

3.9.2.1 unsigned int pok_elf_section_header_table_t::addr

Definition at line 88 of file multiboot.h.

3.9.2.2 unsigned int pok_elf_section_header_table_t::num

Definition at line 86 of file multiboot.h.

3.9.2.3 unsigned int pok_elf_section_header_table_t::shndx

Definition at line 89 of file multiboot.h.

3.9.2.4 unsigned int pok_elf_section_header_table_t::size

Definition at line 87 of file multiboot.h.

The documentation for this struct was generated from the following file:

- [/home/hiphse/git-repos/pok/trunk/kernel/include/arch/x86/multiboot.h](#)

3.10 pok_lockobj_attr_t Struct Reference

```
#include <lockobj.h>
```

Data Fields

- [pok_lockobj_kind_t kind](#)
- [pok_locking_policy_t locking_policy](#)
- [pok_queueing_discipline_t queueing_policy](#)
- [pok_sem_value_t initial_value](#)
- [pok_sem_value_t max_value](#)

3.10.1 Detailed Description

Definition at line 63 of file lockobj.h.

3.10.2 Field Documentation

3.10.2.1 pok_sem_value_t pok_lockobj_attr_t::initial_value

Definition at line 68 of file lockobj.h.

3.10.2.2 `pok_lockobj_kind_t` `pok_lockobj_attr_t::kind`

Definition at line 65 of file `lockobj.h`.

3.10.2.3 `pok_locking_policy_t` `pok_lockobj_attr_t::locking_policy`

Definition at line 66 of file `lockobj.h`.

3.10.2.4 `pok_sem_value_t` `pok_lockobj_attr_t::max_value`

Definition at line 69 of file `lockobj.h`.

3.10.2.5 `pok_queueing_discipline_t` `pok_lockobj_attr_t::queueing_policy`

Definition at line 67 of file `lockobj.h`.

The documentation for this struct was generated from the following file:

- </home/hiphse/git-repos/pok/trunk/kernel/include/core/lockobj.h>

3.11 `pok_lockobj_lockattr_t` Struct Reference

```
#include <lockobj.h>
```

Data Fields

- [pok_lockobj_operation_t](#) `operation`
- [pok_lockobj_kind_t](#) `obj_kind`
- [pok_lockobj_lock_kind_t](#) `lock_kind`
- [uint64_t](#) `time`

3.11.1 Detailed Description

Definition at line 115 of file `lockobj.h`.

3.11.2 Field Documentation

3.11.2.1 `pok_lockobj_lock_kind_t` `pok_lockobj_lockattr_t::lock_kind`

Definition at line 119 of file `lockobj.h`.

3.11.2.2 `pok_lockobj_kind_t` `pok_lockobj_lockattr_t::obj_kind`

Definition at line 118 of file `lockobj.h`.

3.11.2.3 `pok_lockobj_operation_t` `pok_lockobj_lockattr_t::operation`

Definition at line 117 of file `lockobj.h`.

3.11.2.4 uint64_t pok_lockobj.lockattr.t::time

Definition at line 120 of file lockobj.h.

The documentation for this struct was generated from the following file:

- [/home/hiphse/git-repos/pok/trunk/kernel/include/core/lockobj.h](#)

3.12 pok_lockobj_t Struct Reference

```
#include <lockobj.h>
```

Data Fields

- [pok_spinlock_t spin](#)
- [pok_spinlock_t eventspin](#)
- [bool_t is_locked](#)
- [pok_mutex_state_t thread_state](#) [POK_CONFIG_NB_THREADS+2]
- [pok_locking_policy_t locking_policy](#)
- [pok_queueing_discipline_t queueing_policy](#)
- [pok_lockobj_kind_t kind](#)
- [bool_t initialized](#)
- [uint16_t current_value](#)
- [uint16_t max_value](#)

3.12.1 Detailed Description

Definition at line 72 of file lockobj.h.

3.12.2 Field Documentation

3.12.2.1 uint16_t pok_lockobj.t::current_value

Definition at line 95 of file lockobj.h.

3.12.2.2 pok_spinlock_t pok_lockobj.t::eventspin

Definition at line 75 of file lockobj.h.

3.12.2.3 bool_t pok_lockobj.t::initialized

Definition at line 92 of file lockobj.h.

3.12.2.4 bool_t pok_lockobj.t::is_locked

Definition at line 78 of file lockobj.h.

3.12.2.5 pok_lockobj_kind_t pok_lockobj.t::kind

Definition at line 90 of file lockobj.h.

3.12.2.6 pok_locking_policy_t pok_lockobj_t::locking_policy

Definition at line 84 of file lockobj.h.

3.12.2.7 uint16_t pok_lockobj_t::max_value

Definition at line 96 of file lockobj.h.

3.12.2.8 pok_queueing_discipline_t pok_lockobj_t::queueing_policy

Definition at line 87 of file lockobj.h.

3.12.2.9 pok_spinlock_t pok_lockobj_t::spin

Definition at line 74 of file lockobj.h.

3.12.2.10 pok_mutex_state_t pok_lockobj_t::thread_state[POK_CONFIG_NB_THREADS+2]

Definition at line 81 of file lockobj.h.

The documentation for this struct was generated from the following file:

- </home/hipse/git-repos/pok/trunk/kernel/include/core/lockobj.h>

3.13 pok_memory_map_t Struct Reference

```
#include <multiboot.h>
```

Data Fields

- unsigned int [size](#)
- unsigned int [base_addr_low](#)
- unsigned int [base_addr_high](#)
- unsigned int [length_low](#)
- unsigned int [length_high](#)
- unsigned int [type](#)

3.13.1 Detailed Description

Definition at line 120 of file multiboot.h.

3.13.2 Field Documentation

3.13.2.1 unsigned int pok_memory_map_t::base_addr_high

Definition at line 124 of file multiboot.h.

3.13.2.2 unsigned int pok_memory_map_t::base_addr_low

Definition at line 123 of file multiboot.h.

3.13.2.3 unsigned int pok_memory_map_t::length_high

Definition at line 126 of file multiboot.h.

3.13.2.4 unsigned int pok_memory_map_t::length_low

Definition at line 125 of file multiboot.h.

3.13.2.5 unsigned int pok_memory_map_t::size

Definition at line 122 of file multiboot.h.

3.13.2.6 unsigned int pok_memory_map_t::type

Definition at line 127 of file multiboot.h.

The documentation for this struct was generated from the following file:

- </home/hipse/git-repos/pok/trunk/kernel/include/arch/x86/multiboot.h>

3.14 pok_module_t Struct Reference

```
#include <multiboot.h>
```

Data Fields

- unsigned int [mod_start](#)
- unsigned int [mod_end](#)
- unsigned int [string](#)
- unsigned int [reserved](#)

3.14.1 Detailed Description

Definition at line 112 of file multiboot.h.

3.14.2 Field Documentation

3.14.2.1 unsigned int pok_module_t::mod_end

Definition at line 115 of file multiboot.h.

3.14.2.2 unsigned int pok_module_t::mod_start

Definition at line 114 of file multiboot.h.

3.14.2.3 unsigned int pok_module_t::reserved

Definition at line 117 of file multiboot.h.

3.14.2.4 unsigned int pok_module_t::string

Definition at line 116 of file multiboot.h.

The documentation for this struct was generated from the following file:

- </home/hipse/git-repos/pok/trunk/kernel/include/arch/x86/multiboot.h>

3.15 pok_multiboot_header_t Struct Reference

```
#include <multiboot.h>
```

Data Fields

- unsigned int [magic](#)
- unsigned int [flags](#)
- unsigned int [checksum](#)
- unsigned int [header_addr](#)
- unsigned int [load_addr](#)
- unsigned int [load_end_addr](#)
- unsigned int [bss_end_addr](#)
- unsigned int [entry_addr](#)

3.15.1 Detailed Description

Definition at line 64 of file multiboot.h.

3.15.2 Field Documentation

3.15.2.1 unsigned int pok_multiboot_header_t::bss_end_addr

Definition at line 72 of file multiboot.h.

3.15.2.2 unsigned int pok_multiboot_header_t::checksum

Definition at line 68 of file multiboot.h.

3.15.2.3 unsigned int pok_multiboot_header_t::entry_addr

Definition at line 73 of file multiboot.h.

3.15.2.4 unsigned int pok_multiboot_header_t::flags

Definition at line 67 of file multiboot.h.

3.15.2.5 unsigned int pok_multiboot_header_t::header_addr

Definition at line 69 of file multiboot.h.

3.15.2.6 unsigned int pok_multiboot_header_t::load_addr

Definition at line 70 of file multiboot.h.

3.15.2.7 unsigned int pok_multiboot_header_t::load_end_addr

Definition at line 71 of file multiboot.h.

3.15.2.8 unsigned int pok_multiboot_header_t::magic

Definition at line 66 of file multiboot.h.

The documentation for this struct was generated from the following file:

- [/home/hiphse/git-repos/pok/trunk/kernel/include/arch/x86/multiboot.h](#)

3.16 pok_multiboot_info_t Struct Reference

```
#include <multiboot.h>
```

Data Fields

- unsigned int [flags](#)
- unsigned int [mem_lower](#)
- unsigned int [mem_upper](#)
- unsigned int [boot_device](#)
- unsigned int [cmdline](#)
- unsigned int [mods_count](#)
- unsigned int [mods_addr](#)
- union {
 - [pok_aout_symbol_table_t](#) aout_sym
 - [pok_elf_section_header_table_t](#) elf_sec
- unsigned int [mmap_length](#)
- unsigned int [mmap_addr](#)

3.16.1 Detailed Description

Definition at line 92 of file multiboot.h.

3.16.2 Field Documentation

3.16.2.1 pok_aout_symbol_table_t pok_multiboot_info_t::aout_sym

Definition at line 104 of file multiboot.h.

3.16.2.2 unsigned int pok_multiboot_info_t::boot_device

Definition at line 97 of file multiboot.h.

3.16.2.3 unsigned int pok_multiboot_info_t::cmdline

Definition at line 98 of file multiboot.h.

3.16.2.4 pok_elf_section_header_table_t pok_multiboot_info_t::elf_sec

Definition at line 105 of file multiboot.h.

3.16.2.5 unsigned int pok_multiboot_info_t::flags

Definition at line 94 of file multiboot.h.

3.16.2.6 unsigned int pok_multiboot_info_t::mem_lower

Definition at line 95 of file multiboot.h.

3.16.2.7 unsigned int pok_multiboot_info_t::mem_upper

Definition at line 96 of file multiboot.h.

3.16.2.8 unsigned int pok_multiboot_info_t::mmap_addr

Definition at line 109 of file multiboot.h.

3.16.2.9 unsigned int pok_multiboot_info_t::mmap_length

Definition at line 108 of file multiboot.h.

3.16.2.10 unsigned int pok_multiboot_info_t::mods_addr

Definition at line 100 of file multiboot.h.

3.16.2.11 unsigned int pok_multiboot_info_t::mods_count

Definition at line 99 of file multiboot.h.

3.16.2.12 union { ... } pok_multiboot_info_t::u

The documentation for this struct was generated from the following file:

- [/home/hipse/git-repos/pok/trunk/kernel/include/arch/x86/multiboot.h](#)

3.17 pok_port_t Struct Reference

```
#include <port.h>
```

Data Fields

- [pok_port_id_t](#) identifier
- [pok_partition_id_t](#) partition
- [pok_port_size_t](#) index
- [bool_t](#) full
- [pok_port_size_t](#) size
- [pok_port_size_t](#) off_b
- [pok_port_size_t](#) off_e
- [pok_port_direction_t](#) direction
- [pok_port_queueing_discipline_t](#) discipline
- [pok_bool_t](#) ready
- [bool_t](#) empty
- [uint8_t](#) kind
- [uint64_t](#) refresh
- [uint64_t](#) last_receive
- [pok_lockobj_t](#) lock
- [bool_t](#) must_be_flushed

3.17.1 Detailed Description

Definition at line 57 of file port.h.

3.17.2 Field Documentation

3.17.2.1 [pok_port_direction_t](#) pok_port_t::direction

Definition at line 66 of file port.h.

3.17.2.2 [pok_port_queueing_discipline_t](#) pok_port_t::discipline

Definition at line 67 of file port.h.

3.17.2.3 [bool_t](#) pok_port_t::empty

Definition at line 69 of file port.h.

3.17.2.4 [bool_t](#) pok_port_t::full

Definition at line 62 of file port.h.

3.17.2.5 [pok_port_id_t](#) pok_port_t::identifier

Definition at line 59 of file port.h.

3.17.2.6 [pok_port_size_t](#) pok_port_t::index

Definition at line 61 of file port.h.

3.17.2.7 `uint8_t pok_port_t::kind`

Definition at line 70 of file port.h.

3.17.2.8 `uint64_t pok_port_t::last_receive`

Definition at line 72 of file port.h.

3.17.2.9 `pok_lockobj_t pok_port_t::lock`

Definition at line 73 of file port.h.

3.17.2.10 `bool_t pok_port_t::must_be_flushed`

Definition at line 74 of file port.h.

3.17.2.11 `pok_port_size_t pok_port_t::off_b`

Definition at line 64 of file port.h.

3.17.2.12 `pok_port_size_t pok_port_t::off_e`

Definition at line 65 of file port.h.

3.17.2.13 `pok_partition_id_t pok_port_t::partition`

Definition at line 60 of file port.h.

3.17.2.14 `pok_bool_t pok_port_t::ready`

Definition at line 68 of file port.h.

3.17.2.15 `uint64_t pok_port_t::refresh`

Definition at line 71 of file port.h.

3.17.2.16 `pok_port_size_t pok_port_t::size`

Definition at line 63 of file port.h.

The documentation for this struct was generated from the following file:

- [/home/hiphse/git-repos/pok/trunk/kernel/include/middleware/port.h](#)

3.18 `pok_space` Struct Reference

Data Fields

- [uint32_t phys_base](#)
- [uint32_t size](#)

3.18.1 Detailed Description

Basic partitions information needed for memory management.

Definition at line 34 of file space.c.

3.18.2 Field Documentation

3.18.2.1 uint32_t pok_space::phys_base

Physical address of the partition.

Definition at line 36 of file space.c.

3.18.2.2 uint32_t pok_space::size

Size of the partition.

Definition at line 37 of file space.c.

The documentation for this struct was generated from the following files:

- [/home/hipse/git-repos/pok/trunk/kernel/arch/ppc/space.c](#)
- [/home/hipse/git-repos/pok/trunk/kernel/arch/sparc/space.c](#)

3.19 pok_syscall_args_t Struct Reference

```
#include <syscall.h>
```

Data Fields

- [uint32_t nargs](#)
- [uint32_t arg1](#)
- [uint32_t arg2](#)
- [uint32_t arg3](#)
- [uint32_t arg4](#)
- [uint32_t arg5](#)

3.19.1 Detailed Description

Definition at line 92 of file syscall.h.

3.19.2 Field Documentation

3.19.2.1 uint32_t pok_syscall_args_t::arg1

Definition at line 95 of file syscall.h.

3.19.2.2 uint32_t pok_syscall_args_t::arg2

Definition at line 96 of file syscall.h.

3.19.2.3 `uint32_t pok_syscall_args_t::arg3`

Definition at line 97 of file `syscall.h`.

3.19.2.4 `uint32_t pok_syscall_args_t::arg4`

Definition at line 98 of file `syscall.h`.

3.19.2.5 `uint32_t pok_syscall_args_t::arg5`

Definition at line 99 of file `syscall.h`.

3.19.2.6 `uint32_t pok_syscall_args_t::nargs`

Definition at line 94 of file `syscall.h`.

The documentation for this struct was generated from the following file:

- </home/hiphse/git-repos/pok/trunk/kernel/include/core/syscall.h>

3.20 `pok_syscall_info_t` Struct Reference

```
#include <syscall.h>
```

Data Fields

- [pok_partition_id_t partition](#)
- [uint32_t thread](#)
- [uint32_t base_addr](#)

3.20.1 Detailed Description

Definition at line 102 of file `syscall.h`.

3.20.2 Field Documentation

3.20.2.1 `uint32_t pok_syscall_info_t::base_addr`

Definition at line 106 of file `syscall.h`.

3.20.2.2 `pok_partition_id_t pok_syscall_info_t::partition`

Definition at line 104 of file `syscall.h`.

3.20.2.3 `uint32_t pok_syscall_info_t::thread`

Definition at line 105 of file `syscall.h`.

The documentation for this struct was generated from the following file:

- </home/hiphse/git-repos/pok/trunk/kernel/include/core/syscall.h>

3.21 ppc_pte_t Struct Reference

Data Fields

- [uint32_t vsid_api](#)
- [uint32_t rpn_flags](#)

3.21.1 Detailed Description

Definition at line 109 of file space.c.

3.21.2 Field Documentation

3.21.2.1 uint32_t ppc_pte_t::rpn_flags

Definition at line 112 of file space.c.

3.21.2.2 uint32_t ppc_pte_t::vsid_api

Definition at line 111 of file space.c.

The documentation for this struct was generated from the following file:

- [/home/hipse/git-repos/pok/trunk/kernel/arch/ppc/space.c](#)

3.22 space_context_t Struct Reference

```
#include <space.h>
```

Data Fields

- [context_t ctx](#)
- [uint32_t fake_ret](#)
- unsigned int [partition_id](#)
- [uint32_t user_pc](#)
- [uint32_t user_sp](#)
- [uint32_t kernel_sp](#)
- [uint32_t arg1](#)
- [uint32_t arg2](#)

3.22.1 Detailed Description

Definition at line 29 of file space.h.

3.22.2 Field Documentation

3.22.2.1 uint32_t space_context_t::arg1

Definition at line 37 of file space.h.

3.22.2.2 `uint32_t space_context_t::arg2`

Definition at line 38 of file `space.h`.

3.22.2.3 `context_t space_context_t::ctx`

Definition at line 31 of file `space.h`.

3.22.2.4 `uint32_t space_context_t::fake_ret`

Definition at line 32 of file `space.h`.

3.22.2.5 `uint32_t space_context_t::kernel_sp`

Definition at line 36 of file `space.h`.

3.22.2.6 `unsigned int space_context_t::partition_id`

Definition at line 33 of file `space.h`.

3.22.2.7 `uint32_t space_context_t::user_pc`

Definition at line 34 of file `space.h`.

3.22.2.8 `uint32_t space_context_t::user_sp`

Definition at line 35 of file `space.h`.

The documentation for this struct was generated from the following file:

- </home/hiphse/git-repos/pok/trunk/kernel/arch/x86/space.h>

3.23 `start_context_t` Struct Reference

```
#include <thread.h>
```

Data Fields

- [context_t ctx](#)
- [uint32_t fake_ret](#)
- [uint32_t entry](#)
- [uint32_t id](#)

3.23.1 Detailed Description

Definition at line 40 of file `thread.h`.

3.23.2 Field Documentation

3.23.2.1 context_t start_context_t::ctx

Definition at line 42 of file thread.h.

3.23.2.2 uint32_t start_context_t::entry

Definition at line 44 of file thread.h.

3.23.2.3 uint32_t start_context_t::fake_ret

Definition at line 43 of file thread.h.

3.23.2.4 uint32_t start_context_t::id

Definition at line 45 of file thread.h.

The documentation for this struct was generated from the following file:

- </home/hiphse/git-repos/pok/trunk/kernel/arch/x86/thread.h>

3.24 volatile_context_t Struct Reference

```
#include <thread.h>
```

Data Fields

- [uint32_t sp](#)
- [uint32_t unused_lr](#)
- [uint32_t cr](#)
- [uint32_t r0](#)
- [uint32_t r2](#)
- [uint32_t r3](#)
- [uint32_t r4](#)
- [uint32_t r5](#)
- [uint32_t r6](#)
- [uint32_t r7](#)
- [uint32_t r8](#)
- [uint32_t r9](#)
- [uint32_t r10](#)
- [uint32_t r11](#)
- [uint32_t r12](#)
- [uint32_t r13](#)
- [uint32_t ctr](#)
- [uint32_t xer](#)
- [uint32_t srr0](#)
- [uint32_t srr1](#)
- [uint32_t back_chain](#)
- [uint32_t lr](#)
- [uint32_t pad0](#)
- [uint32_t pad1](#)

3.24.1 Detailed Description

Definition at line 58 of file thread.h.

3.24.2 Field Documentation

3.24.2.1 `uint32_t volatile_context_t::back_chain`

Definition at line 83 of file thread.h.

3.24.2.2 `uint32_t volatile_context_t::cr`

Definition at line 63 of file thread.h.

3.24.2.3 `uint32_t volatile_context_t::ctr`

Definition at line 77 of file thread.h.

3.24.2.4 `uint32_t volatile_context_t::lr`

Definition at line 84 of file thread.h.

3.24.2.5 `uint32_t volatile_context_t::pad0`

Definition at line 87 of file thread.h.

3.24.2.6 `uint32_t volatile_context_t::pad1`

Definition at line 88 of file thread.h.

3.24.2.7 `uint32_t volatile_context_t::r0`

Definition at line 64 of file thread.h.

3.24.2.8 `uint32_t volatile_context_t::r10`

Definition at line 73 of file thread.h.

3.24.2.9 `uint32_t volatile_context_t::r11`

Definition at line 74 of file thread.h.

3.24.2.10 `uint32_t volatile_context_t::r12`

Definition at line 75 of file thread.h.

3.24.2.11 `uint32_t volatile_context_t::r13`

Definition at line 76 of file thread.h.

3.24.2.12 uint32_t volatile_context_t::r2

Definition at line 65 of file thread.h.

3.24.2.13 uint32_t volatile_context_t::r3

Definition at line 66 of file thread.h.

3.24.2.14 uint32_t volatile_context_t::r4

Definition at line 67 of file thread.h.

3.24.2.15 uint32_t volatile_context_t::r5

Definition at line 68 of file thread.h.

3.24.2.16 uint32_t volatile_context_t::r6

Definition at line 69 of file thread.h.

3.24.2.17 uint32_t volatile_context_t::r7

Definition at line 70 of file thread.h.

3.24.2.18 uint32_t volatile_context_t::r8

Definition at line 71 of file thread.h.

3.24.2.19 uint32_t volatile_context_t::r9

Definition at line 72 of file thread.h.

3.24.2.20 uint32_t volatile_context_t::sp

Definition at line 60 of file thread.h.

3.24.2.21 uint32_t volatile_context_t::srr0

Definition at line 79 of file thread.h.

3.24.2.22 uint32_t volatile_context_t::srr1

Definition at line 80 of file thread.h.

3.24.2.23 uint32_t volatile_context_t::unused_lr

Definition at line 61 of file thread.h.

3.24.2.24 uint32_t volatile_context_t::xer

Definition at line 78 of file thread.h.

The documentation for this struct was generated from the following file:

- </home/phipse/git-repos/pok/trunk/kernel/arch/ppc/thread.h>

Chapter 4

File Documentation

4.1 /home/hipse/git-repos/pok/trunk/kernel/arch/ppc/arch.c File Reference

Provide generic architecture access for PPC architecture.

```
#include <types.h>
#include <errno.h>
#include <core/partition.h>
#include "msr.h"
```

Functions

- void [pok_arch_space_init](#) (void)
- [pok_ret_t](#) [pok_arch_init](#) ()
- [pok_ret_t](#) [pok_arch_preempt_disable](#) ()
- [pok_ret_t](#) [pok_arch_preempt_enable](#) ()
- [pok_ret_t](#) [pok_arch_idle](#) ()
- [pok_ret_t](#) [pok_arch_event_register](#) (uint8_t vector, void(*handler)(void))
- [uint32_t](#) [pok_thread_stack_addr](#) (const [uint8_t](#) partition_id, const [uint32_t](#) local_thread_id)

4.1.1 Detailed Description

Provide generic architecture access for PPC architecture.

Author

Tristan Gingold

Date

2009

Definition in file [arch.c](#).

4.1.2 Function Documentation

4.1.2.1 [pok_ret_t](#) [pok_arch_event_register](#) ([uint8_t](#) vector, void(*)*(void)* handler)

Register an event (for example, an interruption)

Definition at line 83 of file [arch.c](#).

```

84 {
85     (void) vector;
86     (void) handler;
87
88     return (POK_ERRNO_OK);
89 }

```

4.1.2.2 pok_ret_t pok_arch_idle ()

Function that do nothing. Useful for the idle task for example.

Definition at line 74 of file arch.c.

```

75 {
76     while (1)
77     {
78     }
79
80     return (POK_ERRNO_OK);
81 }

```

4.1.2.3 pok_ret_t pok_arch_init ()

Function that initializes architecture concerns.

Definition at line 43 of file arch.c.

```

44 {
45     set_msr (MSR_IP);
46 #if POK_NEEDS_PARTITIONS
47     pok_arch_space_init();
48 #endif
49
50     return (POK_ERRNO_OK);
51 }

```

4.1.2.4 pok_ret_t pok_arch_preempt_disable ()

Disable interruptions

Definition at line 53 of file arch.c.

```

54 {
55     unsigned int msr;
56
57     msr = get_msr();
58     msr &= ~MSR_EE;
59     set_msr(msr);
60     return (POK_ERRNO_OK);
61 }

```

4.1.2.5 pok_ret_t pok_arch_preempt_enable ()

Enable interruptions

Definition at line 63 of file arch.c.

```

64 {
65     unsigned int msr;
66
67     msr = get_msr();
68     msr |= MSR_EE;
69     set_msr(msr);
70
71     return (POK_ERRNO_OK);
72 }

```

4.1.2.6 void pok_arch_space_init (void)

Initialize MMU tables.

Definition at line 132 of file space.c.

```

133 {
134     uint32_t sdr1;
135
136     pt_base = 0;
137     pt_mask = 0x3ff;
138
139     sdr1 = pt_base | (pt_mask >> 10);
140     asm volatile ("mtsdr1 %0" : : "r"(sdr1));
141 }

```

4.1.2.7 uint32_t pok_thread_stack_addr (const uint8_t partition_id, const uint32_t local_thread_id)

Returns the stack address for a the thread number N in a partition.

- partition_id indicates the partition that contains the thread.
- local_thread_id the thread-id of the thread inside the partition.

Returns

the stack address of the thread.

Definition at line 92 of file arch.c.

```

94 {
95     return pok_partitions[partition_id].size - 16 - (local_thread_id * POK_USER_STACK_SIZE);
96 }

```

4.2 /home/hiphse/git-repos/pok/trunk/kernel/arch/sparc/arch.c File Reference

```

#include <types.h>
#include <errno.h>
#include <core/partition.h>
#include "traps.h"
#include "space.h"
#include "psr.h"
#include "sparc_conf.h"
#include "syscalls.h"

```

Functions

- [pok_ret_t pok_arch_init \(\)](#)
- [pok_ret_t pok_arch_preempt_disable \(\)](#)
- [pok_ret_t pok_arch_preempt_enable \(\)](#)
- [pok_ret_t pok_arch_idle \(\)](#)
- [pok_ret_t pok_arch_event_register \(uint8_t vector, void\(*handler\)\(void\)\)](#)
- [uint32_t pok_thread_stack_addr \(const uint8_t partition_id, const uint32_t local_thread_id\)](#)

4.2.1 Detailed Description

Author

Fabien Chouteau

Definition in file [arch.c](#).

4.2.2 Function Documentation

4.2.2.1 `pok_ret_t pok_arch_event_register (uint8_t vector, void(*)(void) handler)`

Attach the handler to the given trap number (vector).

See Also

[pok_sparc_isr](#)

Definition at line 75 of file arch.c.

```

76 {
77     if (pok_sparc_isr[vector] == NULL)
78     {
79         pok_sparc_isr[vector] = handler;
80         return (POK_ERRNO_OK);
81     }
82     else
83     {
84         return (POK_ERRNO_UNAVAILABLE);
85     }
86 }
```

4.2.2.2 `pok_ret_t pok_arch_idle ()`

Function that do nothing. Useful for the idle task for example.

Definition at line 60 of file arch.c.

```

61 {
62     while (1)
63     {
64         /* Leon3 Only ? */
65         asm volatile ("wr %g0, %asr19");
66     }
67
68     return (POK_ERRNO_OK);
69 }
```

4.2.2.3 `pok_ret_t pok_arch_init ()`

Initialize all SPARC managers (traps, syscalls, space).

Definition at line 34 of file arch.c.

```

35 {
36     traps_init();
37     psr_disable_interrupt();
38     psr_enable_traps();
39
40     pok_arch_space_init();
41     pok_syscalls_init();
42
43     return (POK_ERRNO_OK);
44 }
```

4.2.2.4 pok_ret_t pok_arch_preempt_disable ()

Disable interruptions

Definition at line 46 of file arch.c.

```

47 {
48     psr_disable_interupt();
49
50     return (POK_ERRNO_OK);
51 }

```

4.2.2.5 pok_ret_t pok_arch_preempt_enable ()

Enable interruptions

Definition at line 53 of file arch.c.

```

54 {
55     psr_enable_interupt();
56
57     return (POK_ERRNO_OK);
58 }

```

4.2.2.6 uint32_t pok_thread_stack_addr (const uint8_t partition_id, const uint32_t local_thread_id)

Compute the stack address for the given thread.

Definition at line 91 of file arch.c.

```

93 {
94     return pok_partitions[partition_id].size - (local_thread_id * POK_USER_STACK_SIZE);
95 }

```

4.3 /home/hipse/git-repos/pok/trunk/kernel/arch/x86/arch.c File Reference

Provides generic architecture interface for x86 architecture.

```

#include <errno.h>
#include <core/partition.h>
#include "event.h"
#include "gdt.h"

```

Functions

- [pok_ret_t pok_arch_init \(\)](#)
- [pok_ret_t pok_arch_preempt_disable \(\)](#)
- [pok_ret_t pok_arch_preempt_enable \(\)](#)
- [pok_ret_t pok_arch_idle \(\)](#)
- [pok_ret_t pok_arch_event_register \(uint8_t vector, void\(*handler\)\(void\)\)](#)
- [uint32_t pok_thread_stack_addr \(const uint8_t partition_id, const uint32_t local_thread_id\)](#)

4.3.1 Detailed Description

Provides generic architecture interface for x86 architecture.

Author

Julian Pidancet
Julien Delange

Definition in file [arch.c](#).

4.3.2 Function Documentation**4.3.2.1 `pok_ret_t pok_arch_event_register (uint8_t vector, void(*)(void) handler)`**

Register an event (for example, an interruption)

Attach the handler to the given trap number (vector).

See Also

[pok_sparc_isr](#)

Definition at line 60 of file arch.c.

```

62 {
63     pok_idt_set_gate (vector,
64                     GDT_CORE_CODE_SEGMENT << 3,
65                     (uint32_t)handler,
66                     IDTE_TRAP,
67                     3);
68
69     return (POK_ERRNO_OK);
70 }
```

4.3.2.2 `pok_ret_t pok_arch_idle ()`

Function that do nothing. Useful for the idle task for example.

Definition at line 50 of file arch.c.

```

51 {
52     while (1)
53     {
54         asm ("hlt");
55     }
56
57     return (POK_ERRNO_OK);
58 }
```

4.3.2.3 `pok_ret_t pok_arch_init ()`

Function that initializes architecture concerns.

Initialize all SPARC managers (traps, syscalls, space).

Definition at line 30 of file arch.c.

```

31 {
32     pok_gdt_init ();
33     pok_event_init ();
34
35     return (POK_ERRNO_OK);
36 }
```

4.3.2.4 pok_ret_t pok_arch_preempt_disable ()

Disable interruptions

Definition at line 38 of file arch.c.

```

39 {
40     asm ("cli");
41     return (POK_ERRNO_OK);
42 }

```

4.3.2.5 pok_ret_t pok_arch_preempt_enable ()

Enable interruptions

Definition at line 44 of file arch.c.

```

45 {
46     asm ("sti");
47     return (POK_ERRNO_OK);
48 }

```

4.3.2.6 uint32_t pok_thread_stack_addr (const uint8_t partition_id, const uint32_t local_thread_id)

Returns the stack address for a the thread number N in a partition.

- partition_id indicates the partition that contains the thread.
- local_thread_id the thread-id of the thread inside the partition.

Returns

the stack address of the thread.

Compute the stack adress for the given thread.

Definition at line 72 of file arch.c.

```

74 {
75     return pok_partitions[partition_id].size - 4 - (local_thread_id * POK_USER_STACK_SIZE);
76 }

```

4.4 /home/hipse/git-repos/pok/trunk/kernel/arch/ppc/msr.h File Reference

Macros

- #define [MSR_DR](#) (1 << 4)
- #define [MSR_IR](#) (1 << 5)
- #define [MSR_IP](#) (1 << 6)
- #define [MSR_PR](#) (1 << 14)
- #define [MSR_EE](#) (1 << 15)

4.4.1 Macro Definition Documentation

4.4.1.1 #define MSR_DR (1 << 4)

Definition at line 21 of file msr.h.

4.4.1.2 #define MSR_EE (1 << 15)

Definition at line 26 of file msr.h.

4.4.1.3 #define MSR_IP (1 << 6)

Definition at line 23 of file msr.h.

4.4.1.4 #define MSR_IR (1 << 5)

Definition at line 22 of file msr.h.

4.4.1.5 #define MSR_PR (1 << 14)

Definition at line 25 of file msr.h.

4.5 /home/hipse/git-repos/pok/trunk/kernel/arch/ppc/prep/bsp.c File Reference

```
#include <errno.h>
#include <arch.h>
#include "cons.h"
```

Functions

- int [pok_bsp_init](#) (void)
- void * [pok_bsp_mem_alloc](#) (size_t sz)

Variables

- char [_end](#) []

4.5.1 Function Documentation

4.5.1.1 int pok_bsp_init (void)

Definition at line 22 of file bsp.c.

```
23 {
24     pok_cons_init ();
25
26     return (POK_ERRNO_OK);
27 }
```

4.5.1.2 void* pok_bsp_mem_alloc (size_t sz)

Definition at line 34 of file bsp.c.

```
35 {
36     char *res;
37
38     res = (char *)(((unsigned int)heap_end + 4095) & ~4095);
39     heap_end = res + sz;
40     return res;
41 }
```

4.5.2 Variable Documentation

4.5.2.1 char _end[]

4.6 /home/hipse/git-repos/pok/trunk/kernel/arch/sparc/leon3/bsp.c File Reference

```
#include <errno.h>
#include <arch.h>
#include <core/debug.h>
#include "cons.h"
#include "sparc_conf.h"
```

Functions

- int [pok_bsp_init](#) (void)
- void * [pok_bsp_mem_alloc](#) (size_t sz)

Variables

- char [_end](#) []

4.6.1 Detailed Description

Author

Fabien Chouteau

Definition in file [bsp.c](#).

4.6.2 Function Documentation

4.6.2.1 int pok_bsp_init (void)

Definition at line 32 of file [bsp.c](#).

```
33 {
34     pok_cons_init ();
35     return (POK_ERRNO_OK);
36 }
```

4.6.2.2 void* pok_bsp_mem_alloc (size_t sz)

Used for partition allocation. For SPARC support, all partitions are aligned on page size and all partition sizes have to be less than page size.

See Also

[SPARC_PAGE_SIZE](#)

Definition at line 44 of file [bsp.c](#).

```

45 {
46   char *res;
47
48   /* Aligned on page size */
49   res = (char *)(((uint32_t)heap_end + SPARC_PAGE_SIZE) & ~ (
      SPARC_PAGE_SIZE - 1));
50   heap_end = res + sz;
51   return res;
52 }

```

4.6.3 Variable Documentation

4.6.3.1 char_end[]

4.7 /home/hipse/git-repos/pok/trunk/kernel/arch/x86/x86-qemu/bsp.c File Reference

```

#include <errno.h>
#include <arch.h>
#include "cons.h"
#include "pm.h"
#include "pit.h"
#include "pic.h"

```

Functions

- [pok_ret_t pok_bsp_init](#) (void)
- [pok_ret_t pok_bsp_irq_acknowledge](#) (uint8_t irq)
- [pok_ret_t pok_bsp_irq_register](#) (uint8_t irq, void(*handler)(void))
- void * [pok_bsp_mem_alloc](#) (size_t size)
- [pok_ret_t pok_bsp_time_init](#) ()

4.7.1 Function Documentation

4.7.1.1 pok_ret_t pok_bsp_init (void)

Definition at line 26 of file bsp.c.

```

27 {
28   pok_cons_init ();
29   pok_pm_init ();
30   pok_pic_init ();
31
32   return (POK_ERRNO_OK);
33 }

```

4.7.1.2 pok_ret_t pok_bsp_irq_acknowledge (uint8_t irq)

Definition at line 35 of file bsp.c.

```

36 {
37   pok_pic_eoi (irq);
38
39   return (POK_ERRNO_OK);
40 }

```

4.7.1.3 pok_ret_t pok_bsp_irq_register (uint8_t irq, void(*)(void) handler)

Definition at line 42 of file bsp.c.

```

44 {
45     pok_pic_unmask (irq);
46
47     pok_arch_event_register (32 + irq, handler);
48
49     return (POK_ERRNO_OK);
50 }

```

4.7.1.4 void* pok_bsp_mem_alloc (size_t size)

Allocate data. At this time, the pok_pm_sbrk function only increment size each time we allocate memory and was not designed to free previously allocated memory.

Definition at line 58 of file bsp.c.

```

59 {
60     return ((void *)pok_pm_sbrk(size));
61 }

```

4.7.1.5 pok_ret_t pok_bsp_time_init ()

Init time. *freq* is the frequency of the oscillator.

Definition at line 67 of file bsp.c.

```

68 {
69     return (pok_x86_qemu_timer_init ());
70 }

```

4.8 /home/hipse/git-repos/pok/trunk/kernel/arch/ppc/prep/cons.c File Reference

```

#include <errno.h>
#include "ioports.h"
#include <libc.h>
#include <core/debug.h>
#include <core/cons.h>
#include "cons.h"

```

Functions

- int [pok_cons_init](#) (void)

4.8.1 Function Documentation

4.8.1.1 int pok_cons_init (void)

Definition at line 68 of file cons.c.

```

69 {
70     return 0;
71 }

```

4.9 /home/hiphse/git-repos/pok/trunk/kernel/arch/sparc/leon3/cons.c File Reference

Leon3 UART driver.

```
#include <errno.h>
#include "ioports.h"
#include <libc.h>
#include <core/debug.h>
#include <core/cons.h>
#include "cons.h"
```

Functions

- int [pok_cons_init](#) (void)

4.9.1 Detailed Description

Leon3 UART driver.

Author

Fabien Chouteau

Definition in file [cons.c](#).

4.9.2 Function Documentation

4.9.2.1 int pok_cons_init(void)

Definition at line 62 of file [cons.c](#).

```
63 {
64     return 0;
65 }
```

4.10 /home/hiphse/git-repos/pok/trunk/kernel/arch/x86/x86-qemu/cons.c File Reference

```
#include <errno.h>
#include <arch/x86/ioports.h>
#include <libc.h>
#include <core/debug.h>
#include <core/cons.h>
#include "cons.h"
```

Functions

- int [pok_cons_init](#) (void)

4.10.1 Function Documentation

4.10.1.1 int pok_cons_init (void)

Definition at line 235 of file cons.c.

```
236 {  
237     return 0;  
238 }
```

4.11 /home/hipse/git-repos/pok/trunk/kernel/core/cons.c File Reference

4.12 /home/hipse/git-repos/pok/trunk/kernel/arch/ppc/prep/cons.h File Reference

Functions

- int [pok_cons_init](#) (void)

4.12.1 Function Documentation

4.12.1.1 int pok_cons_init (void)

Definition at line 68 of file cons.c.

```
69 {  
70     return 0;  
71 }
```

4.13 /home/hipse/git-repos/pok/trunk/kernel/arch/sparc/leon3/cons.h File Reference

Macros

- #define [UART_STATUS_DR](#) 0x00000001
- #define [UART_STATUS_TSE](#) 0x00000002
- #define [UART_STATUS_THE](#) 0x00000004
- #define [UART_STATUS_BR](#) 0x00000008
- #define [UART_STATUS_OE](#) 0x00000010
- #define [UART_STATUS_PE](#) 0x00000020
- #define [UART_STATUS_FE](#) 0x00000040
- #define [UART_STATUS_ERR](#) 0x00000078
- #define [UART_CTRL_RE](#) 0x00000001
- #define [UART_CTRL_TE](#) 0x00000002
- #define [UART_CTRL_RI](#) 0x00000004
- #define [UART_CTRL_TI](#) 0x00000008
- #define [UART_CTRL_PS](#) 0x00000010
- #define [UART_CTRL_PE](#) 0x00000020
- #define [UART_CTRL_FL](#) 0x00000040
- #define [UART_CTRL_LB](#) 0x00000080
- #define [UART_DATA_OFFSET](#) 0x0
- #define [UART_STAT_OFFSET](#) 0x4
- #define [UART_CTRL_OFFSET](#) 0x8
- #define [UART_SCALER_OFFSET](#) 0xc
- #define [UART1](#) 0x80000100

Functions

- int [pok_cons_init](#) (void)

4.13.1 Detailed Description

Author

Fabien Chouteau

Definition in file [cons.h](#).

4.13.2 Macro Definition Documentation

4.13.2.1 #define UART1 0x80000100

First Leon3 UART IO adress

Definition at line 48 of file [cons.h](#).

4.13.2.2 #define UART_CTRL_FL 0x00000040

Flow control enable

Definition at line 40 of file [cons.h](#).

4.13.2.3 #define UART_CTRL_LB 0x00000080

Loop Back enable

Definition at line 41 of file [cons.h](#).

4.13.2.4 #define UART_CTRL_OFFSET 0x8

Control register offset

Definition at line 45 of file [cons.h](#).

4.13.2.5 #define UART_CTRL_PE 0x00000020

Parity enable

Definition at line 39 of file [cons.h](#).

4.13.2.6 #define UART_CTRL_PS 0x00000010

Parity select

Definition at line 38 of file [cons.h](#).

4.13.2.7 #define UART_CTRL_RE 0x00000001

Receiver enable

Definition at line 34 of file [cons.h](#).

4.13.2.8 #define UART_CTRL_RI 0x00000004

Receiver interrupt enable

Definition at line 36 of file cons.h.

4.13.2.9 #define UART_CTRL_TE 0x00000002

Transmitter enable

Definition at line 35 of file cons.h.

4.13.2.10 #define UART_CTRL_TI 0x00000008

Transmitter interrupt enable

Definition at line 37 of file cons.h.

4.13.2.11 #define UART_DATA_OFFSET 0x0

Data register offset

Definition at line 43 of file cons.h.

4.13.2.12 #define UART_SCALER_OFFSET 0xc

Scaler register offset

Definition at line 46 of file cons.h.

4.13.2.13 #define UART_STAT_OFFSET 0x4

Stat register offset

Definition at line 44 of file cons.h.

4.13.2.14 #define UART_STATUS_BR 0x00000008

Break Error

Definition at line 28 of file cons.h.

4.13.2.15 #define UART_STATUS_DR 0x00000001

Data Ready

Definition at line 25 of file cons.h.

4.13.2.16 #define UART_STATUS_ERR 0x00000078

Error Mask

Definition at line 32 of file cons.h.

4.13.2.17 `#define UART_STATUS_FE 0x00000040`

RX Framing Error

Definition at line 31 of file cons.h.

4.13.2.18 `#define UART_STATUS_OE 0x00000010`

RX Overrun Error

Definition at line 29 of file cons.h.

4.13.2.19 `#define UART_STATUS_PE 0x00000020`

RX Parity Error

Definition at line 30 of file cons.h.

4.13.2.20 `#define UART_STATUS_THE 0x00000004`

TX Hold Register Empty

Definition at line 27 of file cons.h.

4.13.2.21 `#define UART_STATUS_TSE 0x00000002`

TX Send Register Empty

Definition at line 26 of file cons.h.

4.13.3 Function Documentation

4.13.3.1 `int pok_cons_init (void)`

Definition at line 68 of file cons.c.

```
69 {  
70     return 0;  
71 }
```

4.14 /home/hipse/git-repos/pok/trunk/kernel/arch/x86/x86-qemu/cons.h File Reference

Functions

- `int pok_cons_init (void)`

4.14.1 Function Documentation

4.14.1.1 `int pok_cons_init (void)`

Definition at line 68 of file cons.c.

```
69 {  
70     return 0;  
71 }
```

4.15 /home/hipse/git-repos/pok/trunk/kernel/include/core/cons.h File Reference

4.16 /home/hipse/git-repos/pok/trunk/kernel/arch/ppc/prep/ioports.h File Reference

Macros

- #define `POK_PREP_IOBASE` 0x80000000
- #define `outb`(port, data) *((volatile unsigned char *) (POK_PREP_IOBASE + port)) = data
- #define `inb`(port) *((volatile unsigned char *) (POK_PREP_IOBASE + port))

4.16.1 Macro Definition Documentation

4.16.1.1 #define `inb`(port) *((volatile unsigned char *) (POK_PREP_IOBASE + port))

Definition at line 26 of file `ioports.h`.

4.16.1.2 #define `outb`(port, data) *((volatile unsigned char *) (POK_PREP_IOBASE + port)) = data

Definition at line 23 of file `ioports.h`.

4.16.1.3 #define `POK_PREP_IOBASE` 0x80000000

Definition at line 21 of file `ioports.h`.

4.17 /home/hipse/git-repos/pok/trunk/kernel/arch/sparc/leon3/ioports.h File Reference

SPARC "ioports". Use MMU bypass to access IO memory.

```
#include <types.h>
#include "sparc_conf.h"
```

4.17.1 Detailed Description

SPARC "ioports". Use MMU bypass to access IO memory.

Author

Fabien Chouteau

Definition in file `ioports.h`.

4.18 /home/hipse/git-repos/pok/trunk/kernel/include/arch/x86/ioports.h File Reference

```
#include <core/syscall.h>
```

Macros

- #define `outb`(port, data)
- #define `inb`(port)
- #define `outl`(port, data)
- #define `inl`(port)

4.18.1 Macro Definition Documentation

4.18.1.1 #define `inb`(port)

Value:

```
{
  unsigned char res;
  asm volatile ("inb %w1,%0"
               : "=a" (res)
               : "d" (port));
  res;
}
```

Definition at line 28 of file `ioports.h`.

4.18.1.2 #define `inl`(port)

Value:

```
{
  unsigned int res;
  asm volatile ("inl %w1,%0"
               : "=a" (res)
               : "d" (port));
  res;
}
```

Definition at line 42 of file `ioports.h`.

4.18.1.3 #define `outb`(port, data)

Value:

```
asm volatile ("outb %b0,%w1"
             :
             : "a" (data), "d" (port))
```

Definition at line 23 of file `ioports.h`.

4.18.1.4 #define `outl`(port, data)

Value:

```
asm volatile ("outl %0,%w1"
             :
             : "a" (data), "d" (port))
```

Definition at line 37 of file `ioports.h`.

4.19 /home/hipse/git-repos/pok/trunk/kernel/arch/ppc/space.c File Reference

```
#include <types.h>
#include <errno.h>
#include <libc.h>
#include <bsp.h>
#include <core/sched.h>
#include <arch.h>
#include "thread.h"
#include "msr.h"
```

Data Structures

- struct [pok_space](#)
- struct [ppc_pte_t](#)

Macros

- #define [KERNEL_STACK_SIZE](#) 8192
- #define [PPC_SR_KP](#) (1 << 29)
- #define [PPC_SR_Ks](#) (1 << 30)
- #define [PPC_SR_T](#) (1 << 31)
- #define [PPC_PTE_V](#) (1 << 31)
- #define [POK_PAGE_SIZE](#) (1 << 12)
- #define [POK_PAGE_MASK](#) (~([POK_PAGE_SIZE](#) - 1))
- #define [PPC_PTE_H](#) (1 << 6)
- #define [PPC_PTE_R](#) (1 << 8)
- #define [PPC_PTE_C](#) (1 << 7)
- #define [PPC_PTE_W](#) (1 << 6)
- #define [PPC_PTE_I](#) (1 << 5)
- #define [PPC_PTE_M](#) (1 << 4)
- #define [PPC_PTE_G](#) (1 << 3)
- #define [PPC_PTE_PP_NO](#) 0
- #define [PPC_PTE_PP_RO](#) 1
- #define [PPC_PTE_PP_RW](#) 2

Functions

- [pok_ret_t pok_create_space](#) ([uint8_t](#) partition_id, [uint32_t](#) addr, [uint32_t](#) size)
- [pok_ret_t pok_space_switch](#) ([uint8_t](#) old_partition_id, [uint8_t](#) new_partition_id)
- [uint32_t pok_space_base_vaddr](#) ([uint32_t](#) addr)
- void [pok_arch_rfi](#) (void)
- [uint32_t pok_space_context_create](#) ([uint8_t](#) partition_id, [uint32_t](#) entry_rel, [uint32_t](#) stack_rel, [uint32_t](#) arg1, [uint32_t](#) arg2)
- void [pok_arch_space_init](#) (void)
- void [pok_arch_isi_int](#) ([uint32_t](#) pc, [uint32_t](#) msr)
- void [pok_arch_dsi_int](#) ([uint32_t](#) dar, [uint32_t](#) dsisr)

Variables

- struct [pok_space](#) spaces [[POK_CONFIG_NB_PARTITIONS](#)]

4.19.1 Macro Definition Documentation

4.19.1.1 #define KERNEL_STACK_SIZE 8192

Definition at line 28 of file space.c.

4.19.1.2 #define POK_PAGE_MASK (~(POK_PAGE_SIZE - 1))

Definition at line 120 of file space.c.

4.19.1.3 #define POK_PAGE_SIZE (1 << 12)

Definition at line 119 of file space.c.

4.19.1.4 #define PPC_PTE_C (1 << 7)

Definition at line 123 of file space.c.

4.19.1.5 #define PPC_PTE_G (1 << 3)

Definition at line 127 of file space.c.

4.19.1.6 #define PPC_PTE_H (1 << 6)

Definition at line 121 of file space.c.

4.19.1.7 #define PPC_PTE_I (1 << 5)

Definition at line 125 of file space.c.

4.19.1.8 #define PPC_PTE_M (1 << 4)

Definition at line 126 of file space.c.

4.19.1.9 #define PPC_PTE_PP_NO 0

Definition at line 128 of file space.c.

4.19.1.10 #define PPC_PTE_PP_RO 1

Definition at line 129 of file space.c.

4.19.1.11 #define PPC_PTE_PP_RW 2

Definition at line 130 of file space.c.

4.19.1.12 #define PPC_PTE_R (1 << 8)

Definition at line 122 of file space.c.

4.19.1.13 #define PPC_PTE_V (1 << 31)

Definition at line 118 of file space.c.

4.19.1.14 #define PPC_PTE_W (1 << 6)

Definition at line 124 of file space.c.

4.19.1.15 #define PPC_SR_KP (1 << 29)

Definition at line 30 of file space.c.

4.19.1.16 #define PPC_SR_Ks (1 << 30)

Definition at line 31 of file space.c.

4.19.1.17 #define PPC_SR_T (1 << 31)

Definition at line 32 of file space.c.

4.19.2 Function Documentation**4.19.2.1 void pok_arch_dsi_int (uint32_t dar, uint32_t dsisr)**

Definition at line 203 of file space.c.

```

204 {
205 #ifdef POK_NEEDS_DEBUG
206     printf("dsi_int: part=%d, dar=%x dsisr=%x\n",
207           pok_current_partition, dar, dsisr);
208 #endif
209
210     if (dsisr & (1 << 30))
211     {
212         /* Page fault */
213         if (dar < spaces[pok_current_partition].size)
214         {
215             uint32_t vaddr = dar & POK_PAGE_MASK;
216             uint32_t v;
217             v = (spaces[pok_current_partition].phys_base + vaddr) & POK_PAGE_MASK;
218             v |= PPC_PTE_R | PPC_PTE_C | PPC_PTE_PP_RW;
219             pok_insert_pte (pok_current_partition, vaddr, v);
220             return;
221         }
222     }
223 #ifdef POK_NEEDS_DEBUG
224     printf("[DEBUG] Infinite loop in pok_arch_dsi_int\n");
225 #endif
226     while (1)
227         ;
228 }

```

4.19.2.2 void pok_arch_isi_int (uint32_t pc, uint32_t msr)

Definition at line 168 of file space.c.

```

169 {
170
171 #ifdef POK_NEEDS_DEBUG
172     printf("isi_int: part=%d, pc=%x msr=%x\n",
173           pok_current_partition, pc, msr);
174
175     if (msr & ((1 << 28) | (1 << 27)))

```

```

176 {
177     printf (" Bad access\n");
178 }
179 #endif
180
181 if (msr & (1 << 30))
182 {
183     /* Page fault */
184     if (pc < spaces[pok_current_partition].size)
185     {
186         uint32_t vaddr = pc & POK_PAGE_MASK;
187         uint32_t v;
188         v = (spaces[pok_current_partition].phys_base + vaddr) & POK_PAGE_MASK;
189         v |= PPC_PTE_R | PPC_PTE_C | PPC_PTE_PP_RW;
190         pok_insert_pte (pok_current_partition, vaddr, v);
191         return;
192     }
193 }
194
195 #ifdef POK_NEEDS_DEBUG
196     printf("[DEBUG] Infinite loop in pok_arch_isi_int\n");
197 #endif
198
199 while (1)
200     ;
201 }

```

4.19.2.3 void pok_arch_rfi (void)

4.19.2.4 void pok_arch_space_init (void)

Definition at line 132 of file space.c.

```

133 {
134     uint32_t sdr1;
135
136     pt_base = 0;
137     pt_mask = 0x3fff;
138
139     sdr1 = pt_base | (pt_mask >> 10);
140     asm volatile ("mtsdr1 %0" : : "r"(sdr1));
141 }

```

4.19.2.5 pok_ret_t pok_create_space (uint8_t partition_id, uint32_t addr, uint32_t size)

Definition at line 42 of file space.c.

```

45 {
46 #ifdef POK_NEEDS_DEBUG
47     printf ("pok_create_space: %d: %x %x\n", partition_id, addr, size);
48 #endif
49     spaces[partition_id].phys_base = addr;
50     spaces[partition_id].size = size;
51
52     return (POK_ERRNO_OK);
53 }

```

4.19.2.6 uint32_t pok_space_base_vaddr (uint32_t addr)

Definition at line 64 of file space.c.

```

65 {
66     (void) addr;
67     return (0);
68 }

```

4.19.2.7 uint32_t pok_space_context_create (uint8_t partition_id, uint32_t entry_rel, uint32_t stack_rel, uint32_t arg1, uint32_t arg2)

Create a new context in the given space

Definition at line 72 of file space.c.

```

77 {
78     context_t* ctx;
79     volatile_context_t* vctx;
80     char*      stack_addr;
81     (void) partition_id;
82
83     stack_addr = pok_bsp_mem_alloc (KERNEL_STACK_SIZE);
84
85     vctx = (volatile_context_t *)
86         (stack_addr + KERNEL_STACK_SIZE - sizeof (
87             volatile_context_t));
88     ctx = (context_t *) ((char *)vctx - sizeof (context_t) + 8);
89     memset (ctx, 0, sizeof (*ctx));
90     memset (vctx, 0, sizeof (*vctx));
91
92     vctx->r3      = arg1;
93     vctx->r4      = arg2;
94     vctx->sp      = stack_rel - 12;
95     vctx->srr0    = entry_rel;
96     vctx->srr1    = MSR_EE | MSR_IP | MSR_DR | MSR_IR |
97                 MSR_PR;
98     ctx->lr       = (uint32_t) pok_arch_rfi;
99     ctx->sp       = (uint32_t) &vctx->sp;
100
101 #ifdef POK_NEEDS_DEBUG
102     printf ("space_context_create %d: entry=%x stack=%x arg1=%x arg2=%x ksp=%x\n",
103         partition_id, entry_rel, stack_rel, arg1, arg2, &vctx->sp);
104 #endif
105
106     return (uint32_t)ctx;
107 }

```

4.19.2.8 pok_ret_t pok_space_switch (uint8_t old_partition_id, uint8_t new_partition_id)

Switch from one space to another

Definition at line 55 of file space.c.

```

57 {
58     (void) old_partition_id;
59     /* printf ("space_switch %u -> %u\n", old_partition_id, new_partition_id); */
60     asm volatile ("mtsr %0,%1" : : "r"(0), "r"(PPC_SR_KP | new_partition_id));
61     return (POK_ERRNO_OK);
62 }

```

4.19.3 Variable Documentation

4.19.3.1 struct pok_space spaces[POK_CONFIG_NB_PARTITIONS]

Definition at line 40 of file space.c.

4.20 /home/hiphse/git-repos/pok/trunk/kernel/arch/sparc/space.c File Reference

Memory management in SPARC.

```
#include <types.h>
#include <errno.h>
#include <libc.h>
#include <bsp.h>
#include <core/sched.h>
#include <arch.h>
#include "thread.h"
#include "space.h"
#include "sparc_conf.h"
#include "context_offset.h"
#include "ioports.h"
```

Data Structures

- struct [pok_space](#)

Macros

- `#define` [KERNEL_STACK_SIZE](#) 8192

Functions

- `ptd` `mmu_contexts_tab`[[POK_CONFIG_NB_PARTITIONS](#)] `__attribute__` ((aligned([POK_CONFIG_NB_PARTITIONS](#) *`sizeof`(`ptd`))))
- `ptd` `mmu_level1_tab`[[POK_CONFIG_NB_PARTITIONS](#)][[MM_LVL1_ENTRIES_NBR](#)] `__attribute__` ((aligned([MM_LVL1_ENTRIES_NBR](#) *`sizeof`(`ptd`))))
- `pte` `mmu_level2_tab`[[POK_CONFIG_NB_PARTITIONS](#)][[MM_LVL2_ENTRIES_NBR](#)] `__attribute__` ((aligned([MM_LVL2_ENTRIES_NBR](#) *`sizeof`(`pte`))))
- `pok_ret_t` `pok_create_space` (`uint8_t` `partition_id`, `uint32_t` `addr`, `uint32_t` `size`)
- `pok_ret_t` `pok_space_switch` (`uint8_t` `old_partition_id`, `uint8_t` `new_partition_id`)
- `uint32_t` `pok_space_base_vaddr` (`uint32_t` `addr`)
- `uint32_t` `pok_space_context_create` (`uint8_t` `id`, `uint32_t` `entry_rel`, `uint32_t` `stack_rel`, `uint32_t` `arg1`, `uint32_t` `arg2`)
- void `pok_arch_space_init` (void)

Variables

- struct [pok_space](#) `spaces` [[POK_CONFIG_NB_PARTITIONS](#)]

4.20.1 Detailed Description

Memory management in SPARC.

Author

Fabien Chouteau

Definition in file [space.c](#).

4.20.2 Macro Definition Documentation

4.20.2.1 `#define` [KERNEL_STACK_SIZE](#) 8192

Definition at line 36 of file [space.c](#).

4.20.3 Function Documentation

4.20.3.1 `ptd mmu_contexts_tab [POK_CONFIG_NB_PARTITIONS] __attribute__ (aligned(POK_CONFIG_NB_PARTITIONS * sizeof(ptd))))`

MMU contexts table. (cf SPARC V8 Manual, page 243)

4.20.3.2 `ptd mmu_level1_tab [POK_CONFIG_NB_PARTITIONS][MM_LVL1_ENTRIES_NBR] __attribute__ (aligned(MM_LVL1_ENTRIES_NBR * sizeof(ptd))))`

MMU level 1 table. (cf SPARC V8 Manual, page 243)

4.20.3.3 `pte mmu_level2_tab [POK_CONFIG_NB_PARTITIONS][MM_LVL2_ENTRIES_NBR] __attribute__ (aligned(MM_LVL2_ENTRIES_NBR * sizeof(pte))))`

MMU level 2 table. (cf SPARC V8 Manual, page 243)

4.20.3.4 `void pok_arch_space_init (void)`

Initilize MMU tables.

Definition at line 159 of file space.c.

```

160 {
161     int i = 0;
162     int j = 0;
163
164     for (i = 0; i < POK_CONFIG_NB_PARTITIONS; i++)
165         mmu_contexts_tab[i] = MM_ET_INVALID;
166
167     for (i = 0; i < POK_CONFIG_NB_PARTITIONS; i++)
168     {
169         mmu_contexts_tab[i] = (unsigned int)&(mmu_level1_tab[i]) >> 4 | MM_ET_PTD;
170
171         for (j = 0; j < MM_LVL1_ENTRIES_NBR; j++)
172         {
173             mmu_level1_tab[i][j] = MM_ET_INVALID;
174         }
175
176         for (j = 0; j < MM_LVL2_ENTRIES_NBR; j++)
177         {
178             mmu_level2_tab[i][j] = MM_ET_INVALID;
179         }
180     }
181
182     unsigned int kernel_pte = mm_index1(SPARC_RAM_ADDR);
183
184     /* the kernel code is always mapped on a 16Mb page (including all partitions) */
185     for (i = 0; i < POK_CONFIG_NB_PARTITIONS; i++)
186     {
187         mmu_level1_tab[i][kernel_pte] = (SPARC_RAM_ADDR >> 4) |
188         MM_ACC_S_RWE | MM_ET_PTE | MM_CACHEABLE;
189     }
190
191     /* set context table */
192     asm volatile ("sta %0, [%1] %2;\n"
193                 : /* no output */
194                 : "r" (((unsigned int) mmu_contexts_tab) >> 4), "r" (
195                 MMU_CTXTBL_PTR), "i" (ASI_M_MMUREGS)
196                 : "memory");
197
198     /* set context number */
199     pok_space_switch(0, 0);
200
201     asm volatile ("flush\n"
202                 "sta %0, [%1] %2;\n"
203                 : /* no output */
204                 : "r" (0x1), "r" (MMU_CTRL_REG), "i" (ASI_M_MMUREGS)
205                 : "memory");
206
207     #ifdef POK_NEEDS_DEBUG

```

```

208     printf ("pok_arch_space_init: ctx nbr=%u\n", POK_CONFIG_NB_PARTITIONS);
209 #endif
210 }

```

4.20.3.5 `uint8_t pok_create_space (uint8_t partition_id, uint32_t addr, uint32_t size)`

Set ptd and pte for the given partition.

Definition at line 70 of file space.c.

```

73 {
74     if (size > SPARC_PARTITION_SIZE)
75     {
76 #ifdef POK_NEEDS_DEBUG
77         printf ("pok_create_space: %d: partition size too big 0x%x\n", partition_id, size);
78 #endif
79         return (POK_ERRNO_SIZE);
80     }
81
82     if ((addr & (SPARC_PAGE_SIZE - 1)) != 0)
83     {
84 #ifdef POK_NEEDS_DEBUG
85         printf ("pok_create_space: %d: partition address not aligned 0x%x\n", partition_id, addr);
86 #endif
87         return (POK_ERRNO_EFAULT);
88     }
89 #ifdef POK_NEEDS_DEBUG
90     printf ("pok_create_space: %d: %x %x\n", partition_id, addr, size);
91 #endif
92     spaces[partition_id].phys_base = addr;
93     spaces[partition_id].size = size;
94
95     unsigned int as_ptd = mm_index1 (SPARC_PARTITION_BASE_VADDR);
96     unsigned int as_pte = mm_index2 (SPARC_PARTITION_BASE_VADDR);
97
98     mmu_level1_tab[partition_id][as_ptd] = ((unsigned int) &(mmu_level2_tab[partition_id]) >> 4) |
99     MM_ET_PTD;
100    /* partition as */
101    mmu_level2_tab[partition_id][as_pte] = ((addr) >> 4) | MM_ACC_RWE |
102    MM_ET_PTE | MM_CACHEABLE;
103    return (POK_ERRNO_OK);
104 }

```

4.20.3.6 `uint32_t pok_space_base_vaddr (uint32_t addr)`

Returns

partition virtual base address.

See Also

[SPARC_PARTITION_BASE_VADDR](#)

Definition at line 125 of file space.c.

```

126 {
127     (void) addr;
128     return (SPARC_PARTITION_BASE_VADDR);
129 }

```

4.20.3.7 `uint32_t pok_space_context_create (uint8_t id, uint32_t entry_rel, uint32_t stack_rel, uint32_t arg1, uint32_t arg2)`

Initilize thread stack.

Definition at line 134 of file space.c.

```

139 {
140     uint32_t ctx = spaces[id].phys_base + stack_rel - 0x40;
141
142     outw(ctx - RESTORE_CNT_OFFSET, 1); /* Only 1 register window needed */
143     outw(ctx - PC_OFFSET, entry_rel);
144     outw(ctx - NPC_OFFSET, entry_rel + 4);
145     outw(ctx - IO_OFFSET, arg1);
146     outw(ctx - I1_OFFSET, arg2);
147
148 #ifdef POK_NEEDS_DEBUG
149     printf ("space_context_create part_id=%d entry=%x stack=%x arg1=%x arg2=%x\n",
150           id, entry_rel, stack_rel, arg1, arg2);
151 #endif
152
153     return SPARC_PARTITION_BASE_VADDR + stack_rel - 0x40;
154 }

```

4.20.3.8 pok_ret_t pok_space_switch (uint8_t old_partition_id, uint8_t new_partition_id)

Switch address space in MMU (context register).

Definition at line 108 of file space.c.

```

110 {
111     (void) old_partition_id;
112
113     asm volatile ("flush\n"
114                 "sta %0, [%1] %2;\n"
115                 : /* no output */
116                 : "r" (new_partition_id), "r" (MMU_CTX_REG), "i" (
117                   ASI_M_MMUREGS)
118                 : "memory");
119     return (POK_ERRNO_OK);
120 }

```

4.20.4 Variable Documentation

4.20.4.1 struct pok_space spaces[POK_CONFIG_NB_PARTITIONS]

Definition at line 47 of file space.c.

4.21 /home/hiphse/git-repos/pok/trunk/kernel/arch/x86/space.c File Reference

Handle address spaces.

```

#include <types.h>
#include <errno.h>
#include <libc.h>
#include <bsp.h>
#include <arch.h>
#include <arch/x86/interrupt.h>
#include "gdt.h"
#include "tss.h"
#include "space.h"

```

Macros

- #define [KERNEL_STACK_SIZE](#) 8192

Functions

- [pok_ret_t pok_create_space](#) (uint8_t partition_id, uint32_t addr, uint32_t size)

- `pok_ret_t pok_space_switch (uint8_t old_partition_id, uint8_t new_partition_id)`
- `uint32_t pok_space_base_vaddr (uint32_t addr)`
- `uint32_t pok_space_context_create (uint8_t partition_id, uint32_t entry_rel, uint32_t stack_rel, uint32_t arg1, uint32_t arg2)`
- `void pok_dispatch_space (uint8_t partition_id, uint32_t user_pc, uint32_t user_sp, uint32_t kernel_sp, uint32_t arg1, uint32_t arg2)`

4.21.1 Detailed Description

Handle address spaces.

Author

Julian Pidancet

Definition in file [space.c](#).

4.21.2 Macro Definition Documentation

4.21.2.1 #define KERNEL_STACK_SIZE 8192

Definition at line 38 of file [space.c](#).

4.21.3 Function Documentation

4.21.3.1 `pok_ret_t pok_create_space (uint8_t partition_id, uint32_t addr, uint32_t size)`

Set ptd and pte for the given partition.

Definition at line 40 of file [space.c](#).

```

43 {
44     gdt_set_segment (GDT_PARTITION_CODE_SEGMENT (partition_id),
45                     addr, size, GDTE_CODE, 3);
46
47     gdt_set_segment (GDT_PARTITION_DATA_SEGMENT (partition_id),
48                     addr, size, GDTE_DATA, 3);
49
50     return (POK_ERRNO_OK);
51 }
```

4.21.3.2 `void pok_dispatch_space (uint8_t partition_id, uint32_t user_pc, uint32_t user_sp, uint32_t kernel_sp, uint32_t arg1, uint32_t arg2)`

Definition at line 114 of file [space.c](#).

```

120 {
121     interrupt_frame   ctx;
122     uint32_t          code_sel;
123     uint32_t          data_sel;
124     uint32_t          sp;
125
126     code_sel = GDT_BUILD_SELECTOR (GDT_PARTITION_CODE_SEGMENT (
127     partition_id), 0, 3);
127     data_sel = GDT_BUILD_SELECTOR (GDT_PARTITION_DATA_SEGMENT (
128     partition_id), 0, 3);
128
129     sp = (uint32_t) &ctx;
130
131     memset (&ctx, 0, sizeof (interrupt_frame));
132
133     pok_arch_preempt_disable ();
```

```

134
135     ctx.es = ctx.ds = ctx.ss = data_sel;
136
137     ctx.__esp = (uint32_t) (&ctx.error); /* for pusha */
138     ctx.eip = user_pc;
139     ctx.eax = arg1;
140     ctx.ebx = arg2;
141     ctx.cs = code_sel;
142     ctx.eflags = 1 << 9;
143     ctx.esp = user_sp;
144
145     tss_set_esp0 (kernel_sp);
146
147     asm ("mov %0, %%esp      \n"
148         "pop %%es           \n"
149         "pop %%ds           \n"
150         "popa              \n"
151         "addl $4, %%esp     \n"
152         "iret              \n"
153         :
154         : "m" (sp)
155         );
156 }

```

4.21.3.3 uint32_t pok_space_base_vaddr (uint32_t addr)

Returns

partition virtual base address.

See Also

[SPARC_PARTITION_BASE_VADDR](#)

Definition at line 64 of file space.c.

```

65 {
66     (void) addr;
67     return (0);
68 }

```

4.21.3.4 uint32_t pok_space_context_create (uint8_t partition_id, uint32_t entry_rel, uint32_t stack_rel, uint32_t arg1, uint32_t arg2)

Create a new context in the given space

Initilize thread stack.

Definition at line 70 of file space.c.

```

75 {
76     char*          stack_addr;
77     space_context_t* sp;
78
79     stack_addr = pok_bsp_mem_alloc (KERNEL_STACK_SIZE);
80
81     sp = (space_context_t *)
82         (stack_addr + KERNEL_STACK_SIZE - 4 - sizeof (
83             space_context_t));
84     memset (sp, 0, sizeof (space_context_t));
85
86     sp->ctx.__esp = (uint32_t) (&sp->ctx.eip); /* for pusha */
87     sp->ctx.eip = (uint32_t) pok_dispatch_space;
88     sp->ctx.cs = GDT_CORE_CODE_SEGMENT << 3;
89     sp->ctx.eflags = 1 << 9;
90
91     sp->arg1 = arg1;
92     sp->arg2 = arg2;
93     sp->kernel_sp = (uint32_t) sp;
94     sp->user_sp = stack_rel;
95     sp->user_pc = entry_rel;

```

```

96     sp->partition_id = partition_id;
97
98     return ((uint32_t) sp);
99 }

```

4.21.3.5 pok_ret_t pok_space_switch (uint8_t old_partition_id, uint8_t new_partition_id)

Switch from one space to another

Switch address space in MMU (context register).

Definition at line 53 of file space.c.

```

55 {
56     gdt_disable (GDT_PARTITION_CODE_SEGMENT (old_partition_id));
57     gdt_disable (GDT_PARTITION_DATA_SEGMENT (old_partition_id));
58     gdt_enable (GDT_PARTITION_CODE_SEGMENT (new_partition_id));
59     gdt_enable (GDT_PARTITION_DATA_SEGMENT (new_partition_id));
60
61     return (POK_ERRNO_OK);
62 }

```

4.22 /home/hipse/git-repos/pok/trunk/kernel/arch/ppc/syscalls.c File Reference

```

#include <errno.h>
#include <core/debug.h>
#include <core/syscall.h>
#include <core/partition.h>
#include <types.h>
#include <libc.h>

```

Functions

- void [pok_arch_sc_int](#) (uint32_t num, uint32_t arg1, uint32_t arg2, uint32_t arg3, uint32_t arg4, uint32_t arg5)

4.22.1 Function Documentation

4.22.1.1 void pok_arch_sc_int (uint32_t num, uint32_t arg1, uint32_t arg2, uint32_t arg3, uint32_t arg4, uint32_t arg5)

Definition at line 26 of file syscalls.c.

```

28 {
29     uint8_t          part_id;
30
31     pok_syscall_info_t  syscall_info;
32     pok_syscall_args_t  syscall_args;
33     pok_syscall_id_t    syscall_id;
34
35     part_id = pok_current_partition;
36
37     /* prepare syscall_info */
38     syscall_info.partition = part_id;
39     syscall_info.base_addr = pok_partitions[part_id].base_addr;
40     syscall_info.thread    = POK_SCHED_CURRENT_THREAD;
41
42     /* prepare syscall_args */
43     syscall_args.arg1 = arg1;
44     syscall_args.arg2 = arg2;
45     syscall_args.arg3 = arg3;
46     syscall_args.arg4 = arg4;
47     syscall_args.arg5 = arg5;
48
49     syscall_args.nargs = 5;

```

```

50
51  /* prepare syscall_id */
52  syscall_id = (pok_syscall_id_t) num;
53
54  if (POK_CHECK_PTR_IN_PARTITION(syscall_info.partition, &syscall_args) != 0)
55  {
56      /*
57       * Perform the syscall baby !
58       */
59      pok_core_syscall (syscall_id, &syscall_args, &syscall_info);
60  }
61 }

```

4.23 /home/hipse/git-repos/pok/trunk/kernel/arch/sparc/syscalls.c File Reference

Syscalls management in SPARC.

```

#include <errno.h>
#include <core/debug.h>
#include <core/syscall.h>
#include <core/partition.h>
#include <types.h>
#include <libc.h>
#include "thread.h"
#include "context_offset.h"
#include "traps.h"
#include "arch.h"

```

Functions

- void [pok_arch_sc_int](#) (void)
- void [pok_syscalls_init](#) (void)

4.23.1 Detailed Description

Syscalls management in SPARC.

Author

Fabien Chouteau

Definition in file [syscalls.c](#).

4.23.2 Function Documentation

4.23.2.1 void [pok_arch_sc_int](#) (void)

Syscalls handler.

Definition at line 39 of file [syscalls.c](#).

```

40 {
41  uint8_t *ctx = (uint8_t *)pok_arch_sp;
42  uint32_t num = *(uint32_t *)((char *)ctx - IO_OFFSET);
43  uint8_t      part_id;
44  pok_syscall_info_t  syscall_info;
45  pok_ret_t      syscall_ret;
46  pok_syscall_args_t  syscall_args;
47  pok_syscall_id_t   syscall_id;
48
49

```

```

50 part_id = pok_current_partition;
51
52 /* prepare syscall_info */
53 syscall_info.partition = part_id;
54 syscall_info.base_addr = pok_partitions[part_id].base_addr;
55 syscall_info.thread = POK_SCHED_CURRENT_THREAD;
56
57 /* prepare syscall_args */
58 syscall_args.arg1 = *(uint32_t *) (ctx - I1_OFFSET);
59 syscall_args.arg2 = *(uint32_t *) (ctx - I2_OFFSET);
60 syscall_args.arg3 = *(uint32_t *) (ctx - I3_OFFSET);
61 syscall_args.arg4 = *(uint32_t *) (ctx - I4_OFFSET);
62 syscall_args.arg5 = *(uint32_t *) (ctx - I5_OFFSET);
63
64 syscall_args.nargs = 5;
65
66 /* prepare syscall_id */
67 syscall_id = (pok_syscall_id_t) num;
68
69 /*
70  * No pointer check needed, syscall_args is allocated in kernel stack.
71  */
72 syscall_ret = pok_core_syscall (syscall_id, &syscall_args, &syscall_info);
73
74 *(uint32_t *) (ctx - I0_OFFSET) = syscall_ret;
75 *(uint32_t *) (ctx - PC_OFFSET) += 4; // skip "ta" instruction
76 *(uint32_t *) (ctx - NPC_OFFSET) += 4;
77 }

```

4.23.2.2 void pok_syscalls_init (void)

Syscalls initialization. Just register the syscall handler.

Definition at line 83 of file syscalls.c.

```

84 {
85     pok_arch_event_register (SPARC_TRAP_SYSCALL_BASE + 0x2,
86                             pok_arch_sc_int);
86 }

```

4.24 /home/hipse/git-repos/pok/trunk/kernel/arch/x86/syscalls.c File Reference

This file implement system-calls for x86 platform.

```

#include <errno.h>
#include <core/debug.h>
#include <core/partition.h>
#include <core/syscall.h>
#include "gdt.h"
#include "event.h"

```

Macros

- #define [PARTITION_ID](#)(cs) (((cs >> 3) - 4) / 2)

Functions

- [INTERRUPT_HANDLER_syscall](#) (syscall_gate)
- [pok_ret_t pok_syscall_init](#) ()

4.24.1 Detailed Description

This file implement system-calls for x86 platform.

Author

Julian Pidancet
 Julien Delange
 Laurent Lec

Definition in file [syscalls.c](#).

4.24.2 Macro Definition Documentation**4.24.2.1 #define PARTITION_ID(cs)(((cs >> 3) - 4) / 2)**

Definition at line 33 of file [syscalls.c](#).

4.24.3 Function Documentation**4.24.3.1 INTERRUPT_HANDLER_syscall (syscall_gate)**

Definition at line 35 of file [syscalls.c](#).

```

36 {
37     pok_syscall_info_t   syscall_info;
38     pok_ret_t           syscall_ret;
39     pok_syscall_args_t* syscall_args;
40     pok_syscall_id_t    syscall_id;
41
42     /*
43      * Give informations about syscalls: which partition, thread
44      * initiates the syscall, the base addr of the partition and so on.
45      */
46     syscall_info.partition = PARTITION_ID (frame->cs);
47     syscall_info.base_addr = pok_partitions[syscall_info.partition].base_addr;
48     syscall_info.thread    = POK_SCHED_CURRENT_THREAD;
49
50     syscall_args = (pok_syscall_args_t*) (frame->ebx + syscall_info.
51     base_addr);
52
53     /*
54      * Get the syscall id in the eax register
55      */
56     syscall_id = (pok_syscall_id_t) frame->eax;
57
58     /*
59      * Check that pointer is inside the address space
60      */
61     if (POK_CHECK_PTR_IN_PARTITION(syscall_info.partition, syscall_args) == 0)
62     {
63         syscall_ret = POK_ERRNO_EINVAL;
64     }
65     else
66     {
67         /*
68          * Perform the syscall baby !
69          */
70         syscall_ret = pok_core_syscall (syscall_id, syscall_args, &syscall_info);
71     }
72
73     /*
74      * And finally, put the return value in eax register
75      */
76     asm ("movl %0, %%eax \n"
77         :
78         : "m" (syscall_ret));
79 }

```

4.24.3.2 pok_ret_t pok_syscall_init ()

Init system calls

Definition at line 83 of file [syscalls.c](#).

```
84 {
85     pok_idt_set_gate (POK_SYSCALL_INT_NUMBER,
86                     GDT_CORE_CODE_SEGMENT << 3,
87                     (uint32_t) syscall_gate,
88                     IDTE_INTERRUPT,
89                     3);
90
91     return (POK_ERRNO_OK);
92 }
```

4.25 /home/hipse/git-repos/pok/trunk/kernel/arch/ppc/thread.c File Reference

```
#include <bsp.h>
#include <libc.h>
#include <errno.h>
#include <core/thread.h>
#include "thread.h"
```

4.26 /home/hipse/git-repos/pok/trunk/kernel/arch/sparc/thread.c File Reference

Thread management.

```
#include <bsp.h>
#include <libc.h>
#include <errno.h>
#include <core/thread.h>
#include "thread.h"
#include "context_offset.h"
#include "ioports.h"
```

4.26.1 Detailed Description

Thread management.

Author

Fabien Chouteau

Definition in file [thread.c](#).

4.27 /home/hipse/git-repos/pok/trunk/kernel/arch/x86/thread.c File Reference

```
#include <bsp.h>
#include <libc.h>
#include <errno.h>
#include <core/thread.h>
#include "gdt.h"
#include "thread.h"
```

4.28 /home/hipse/git-repos/pok/trunk/kernel/core/thread.c File Reference

Thread management in kernel.

```
#include <types.h>
#include <arch.h>
#include <core/debug.h>
#include <core/error.h>
#include <core/thread.h>
#include <core/sched.h>
#include <core/partition.h>
#include <core/time.h>
#include <core/instrumentation.h>
```

4.28.1 Detailed Description

Thread management in kernel.

Author

Julien Delange

Date

2008-2009

Definition in file [thread.c](#).

4.29 /home/hipse/git-repos/pok/trunk/kernel/arch/ppc/thread.h File Reference

```
#include <types.h>
```

Data Structures

- struct [context_t](#)
- struct [volatile_context_t](#)

Functions

- [uint32_t pok_context_create](#) ([uint32_t](#) id, [uint32_t](#) stack_size, [uint32_t](#) entry)
- void [pok_context_switch](#) ([uint32_t](#) *old_sp, [uint32_t](#) new_sp)

4.29.1 Function Documentation

4.29.1.1 [uint32_t pok_context_create](#) ([uint32_t](#) id, [uint32_t](#) stack_size, [uint32_t](#) entry)

4.29.1.2 void [pok_context_switch](#) ([uint32_t](#) * old_sp, [uint32_t](#) new_sp)

4.30 /home/hipse/git-repos/pok/trunk/kernel/arch/sparc/thread.h File Reference

```
#include <types.h>
```

Functions

- [uint32_t pok_context_create](#) ([uint32_t](#) id, [uint32_t](#) stack_size, [uint32_t](#) entry)
- void [pok_context_switch](#) ([uint32_t](#) *old_sp, [uint32_t](#) new_sp)

Variables

- [uint32_t pok_arch_sp](#)

4.30.1 Detailed Description

Author

Fabien Chouteau

Definition in file [thread.h](#).

4.30.2 Function Documentation

4.30.2.1 [uint32_t pok_context_create](#) ([uint32_t](#) id, [uint32_t](#) stack_size, [uint32_t](#) entry)

4.30.2.2 void [pok_context_switch](#) ([uint32_t](#) * old_sp, [uint32_t](#) new_sp)

4.30.3 Variable Documentation

4.30.3.1 [uint32_t pok_arch_sp](#)

4.31 /home/hipse/git-repos/pok/trunk/kernel/arch/x86/thread.h File Reference

```
#include <types.h>
```

Data Structures

- struct [context_t](#)
- struct [start_context_t](#)

Functions

- [uint32_t pok_context_create](#) ([uint32_t](#) id, [uint32_t](#) stack_size, [uint32_t](#) entry)
- void [pok_context_switch](#) ([uint32_t](#) *old_sp, [uint32_t](#) new_sp)
- void [pok_context_reset](#) ([uint32_t](#) stack_size, [uint32_t](#) stack_addr)

4.31.1 Function Documentation

4.31.1.1 [uint32_t pok_context_create](#) ([uint32_t](#) id, [uint32_t](#) stack_size, [uint32_t](#) entry)

4.31.1.2 void [pok_context_reset](#) ([uint32_t](#) stack_size, [uint32_t](#) stack_addr)

4.31.1.3 void [pok_context_switch](#) ([uint32_t](#) * old_sp, [uint32_t](#) new_sp)

4.32 /home/hipse/git-repos/pok/trunk/kernel/include/core/thread.h File Reference

4.33 /home/hipse/git-repos/pok/trunk/kernel/arch/ppc/timer.c File Reference

```
#include <errno.h>
#include <bsp.h>
#include <core/time.h>
#include <core/sched.h>
```

Macros

- #define [BUS_FREQ](#) (100 * 1000000U)
- #define [FREQ_DIV](#) 40

Functions

- void [pok_arch_decr_int](#) (void)
- [pok_ret_t](#) [pok_bsp_time_init](#) ()

4.33.1 Macro Definition Documentation

4.33.1.1 #define [BUS_FREQ](#) (100 * 1000000U)

Definition at line 24 of file timer.c.

4.33.1.2 #define [FREQ_DIV](#) 40

Definition at line 26 of file timer.c.

4.33.2 Function Documentation

4.33.2.1 void [pok_arch_decr_int](#) (void)

Definition at line 73 of file timer.c.

```
74 {
75     int err;
76
77     do
78     {
79         err = pok_arch_set_decr();
80
81         pok_tick_counter += FREQ_DIV;
82     } while (err != POK_ERRNO_OK);
83
84     pok_sched ();
85 }
```

4.33.2.2 [pok_ret_t](#) [pok_bsp_time_init](#) ()

Definition at line 87 of file timer.c.

```

88 {
89     time_inter = (BUS_FREQ * FREQ_DIV) / POK_TIMER_FREQUENCY;
90     time_last = get_ppc_tb ();
91     pok_arch_set_decr ();
92
93     return (POK_ERRNO_OK);
94 }

```

4.34 /home/hipse/git-repos/pok/trunk/kernel/arch/sparc/leon3/timer.c File Reference

Leon3 timer management.

```

#include <errno.h>
#include <bsp.h>
#include <core/time.h>
#include <core/sched.h>
#include <arch.h>
#include "ioports.h"
#include "sparc_conf.h"
#include "timer.h"
#include "irq.h"
#include "../traps.h"

```

Functions

- void [timer_isr](#) (void)
- [pok_ret_t pok_bsp_time_init](#) ()

4.34.1 Detailed Description

Leon3 timer management.

Author

Fabien Chouteau

Definition in file [timer.c](#).

4.34.2 Function Documentation

4.34.2.1 [pok_ret_t pok_bsp_time_init](#) ()

Initialize the timer, register the ISR and unmask the interrupt.

See Also

[unmask_irq\(irq_nbr\)](#)

Definition at line 50 of file [timer.c](#).

```

51 {
52     outw(TIMER1 + TIMER_SCALER_OFFSET, 1);
53     outw(TIMER1 + TIMER_SCAL_RELOAD_OFFSET, 1);
54
55     outw(TIMER1 + TIMER_CNT_VAL_OFFSET, 1);
56     outw(TIMER1 + TIMER_RELOAD_OFFSET, SPARC_PROC_FREQ /
57         POK_TIMER_FREQUENCY);
57     outw(TIMER1 + TIMER_CTRL_OFFSET,

```

```
58     TIMER_CTRL_EN | TIMER_CTRL_RS | TIMER_CTRL_LD |
    TIMER_CTRL_IE);
59
60 pok_arch_event_register (SPARC_TRAP_IRQ_BASE +
    TIMER_IRQ, timer_isr);
61 unmask_irq (TIMER_IRQ);
62 return (POK_ERRNO_OK);
63 }
```

4.34.2.2 void timer_isr (void)

Timer interrupt subroutine.

See Also

[ack_irq\(irq_nbr\)](#)

Definition at line 39 of file timer.c.

```
40 {
41     ack_irq (TIMER_IRQ);
42     CLOCK_HANDLER
43     return;
44 }
```

4.35 /home/hipse/git-repos/pok/trunk/kernel/arch/sparc/context_offset.h File Reference

Define registers offset in context stack.

Macros

- `#define L0_OFFSET 0x00`
- `#define L1_OFFSET 0x04`
- `#define L2_OFFSET 0x08`
- `#define L3_OFFSET 0x0c`
- `#define L4_OFFSET 0x10`
- `#define L5_OFFSET 0x14`
- `#define L6_OFFSET 0x18`
- `#define L7_OFFSET 0x1c`
- `#define I0_OFFSET 0x20`
- `#define I1_OFFSET 0x24`
- `#define I2_OFFSET 0x28`
- `#define I3_OFFSET 0x2c`
- `#define I4_OFFSET 0x30`
- `#define I5_OFFSET 0x34`
- `#define I6_OFFSET 0x38`
- `#define I7_OFFSET 0x3c`
- `#define G7_OFFSET 0x04`
- `#define G6_OFFSET 0x08`
- `#define G5_OFFSET 0x0c`
- `#define G4_OFFSET 0x10`
- `#define G3_OFFSET 0x14`
- `#define G2_OFFSET 0x18`
- `#define G1_OFFSET 0x1c`
- `#define WIM_OFFSET 0x40`
- `#define PSR_OFFSET 0x44`
- `#define Y_OFFSET 0x48`
- `#define PC_OFFSET 0x4c`
- `#define NPC_OFFSET 0x50`
- `#define RESTORE_CNT_OFFSET 0x54`

4.35.1 Detailed Description

Define registers offset in context stack.

Author

Fabien Chouteau

Definition in file [context_offset.h](#).

4.35.2 Macro Definition Documentation

4.35.2.1 #define G1_OFFSET 0x1c

Definition at line 57 of file [context_offset.h](#).

4.35.2.2 #define G2_OFFSET 0x18

Definition at line 56 of file [context_offset.h](#).

4.35.2.3 #define G3_OFFSET 0x14

Definition at line 55 of file [context_offset.h](#).

4.35.2.4 #define G4_OFFSET 0x10

Definition at line 54 of file [context_offset.h](#).

4.35.2.5 #define G5_OFFSET 0x0c

Definition at line 53 of file [context_offset.h](#).

4.35.2.6 #define G6_OFFSET 0x08

Definition at line 52 of file [context_offset.h](#).

4.35.2.7 #define G7_OFFSET 0x04

Definition at line 51 of file [context_offset.h](#).

4.35.2.8 #define I0_OFFSET 0x20

Definition at line 38 of file [context_offset.h](#).

4.35.2.9 #define I1_OFFSET 0x24

Definition at line 39 of file [context_offset.h](#).

4.35.2.10 #define I2_OFFSET 0x28

Definition at line 40 of file [context_offset.h](#).

4.35.2.11 `#define I3_OFFSET 0x2c`

Definition at line 41 of file context_offset.h.

4.35.2.12 `#define I4_OFFSET 0x30`

Definition at line 42 of file context_offset.h.

4.35.2.13 `#define I5_OFFSET 0x34`

Definition at line 43 of file context_offset.h.

4.35.2.14 `#define I6_OFFSET 0x38`

Definition at line 44 of file context_offset.h.

4.35.2.15 `#define I7_OFFSET 0x3c`

Definition at line 45 of file context_offset.h.

4.35.2.16 `#define L0_OFFSET 0x00`

Definition at line 30 of file context_offset.h.

4.35.2.17 `#define L1_OFFSET 0x04`

Definition at line 31 of file context_offset.h.

4.35.2.18 `#define L2_OFFSET 0x08`

Definition at line 32 of file context_offset.h.

4.35.2.19 `#define L3_OFFSET 0x0c`

Definition at line 33 of file context_offset.h.

4.35.2.20 `#define L4_OFFSET 0x10`

Definition at line 34 of file context_offset.h.

4.35.2.21 `#define L5_OFFSET 0x14`

Definition at line 35 of file context_offset.h.

4.35.2.22 `#define L6_OFFSET 0x18`

Definition at line 36 of file context_offset.h.

4.35.2.23 #define L7_OFFSET 0x1c

Definition at line 37 of file context_offset.h.

4.35.2.24 #define NPC_OFFSET 0x50

Definition at line 66 of file context_offset.h.

4.35.2.25 #define PC_OFFSET 0x4c

Definition at line 65 of file context_offset.h.

4.35.2.26 #define PSR_OFFSET 0x44

Definition at line 63 of file context_offset.h.

4.35.2.27 #define RESTORE_CNT_OFFSET 0x54

Definition at line 67 of file context_offset.h.

4.35.2.28 #define WIM_OFFSET 0x40

Definition at line 62 of file context_offset.h.

4.35.2.29 #define Y_OFFSET 0x48

Definition at line 64 of file context_offset.h.

4.36 /home/hiphse/git-repos/pok/trunk/kernel/arch/sparc/leon3/irq.h File Reference

Leon3 IRQ management.

```
#include "ioports.h"
```

Macros

- #define [IRQMP_BASE](#) 0x80000200
- #define [IRQMP_CLEAR_OFFSET](#) 0x10U
- #define [IRQMP_MASK0_OFFSET](#) 0x40U
- #define [unmask_irq](#)(irq_nbr)
- #define [ack_irq](#)(irq_nbr) outw([IRQMP_BASE](#) + [IRQMP_CLEAR_OFFSET](#), (1 << (irq_nbr)))

4.36.1 Detailed Description

Leon3 IRQ management.

Author

Fabien Chouteau

Definition in file [irq.h](#).

4.36.2 Macro Definition Documentation

4.36.2.1 #define ack_irq(irq_nbr) outw(IRQMP_BASE + IRQMP_CLEAR_OFFSET, (1 << (irq_nbr)))

Acknowledge the given irq.

Definition at line 44 of file irq.h.

4.36.2.2 #define IRQMP_BASE 0x80000200

Leon3 IRQMP IO adress

Definition at line 28 of file irq.h.

4.36.2.3 #define IRQMP_CLEAR_OFFSET 0x10U

Clear register offset

Definition at line 30 of file irq.h.

4.36.2.4 #define IRQMP_MASK0_OFFSET 0x40U

Mask register offset

Definition at line 31 of file irq.h.

4.36.2.5 #define unmask_irq(irq_nbr)

Value:

```
outw(IRQMP_BASE + IRQMP_MASK0_OFFSET, \
      inb(IRQMP_BASE + \
          IRQMP_MASK0_OFFSET) | (1 << (irq_nbr)))
```

Unmask the given irq.

Definition at line 37 of file irq.h.

4.37 /home/hipse/git-repos/pok/trunk/kernel/arch/sparc/leon3/sparc_conf.h File Reference

Define all constant values for a SPARC bsp.

Macros

- #define SPARC_RAM_ADDR 0x40000000
- #define SPARC_PROC_FREQ 50000000U
- #define WINDOWS_NBR 8
- #define ASI_MMU_BYPASS 0x1c /* not sparc v8 compliant */
- #define SPARC_PAGE_SIZE (256 * 1024)
- #define SPARC_PARTITION_SIZE SPARC_PAGE_SIZE
- #define SPARC_PARTITION_BASE_VADDR 0x0

4.37.1 Detailed Description

Define all constant values for a SPARC bsp.

Author

Fabien Chouteau

Definition in file [sparc_conf.h](#).

4.37.2 Macro Definition Documentation

4.37.2.1 `#define ASI_MMU_BYPASS 0x1c /* not sparc v8 compliant */`

Definition at line 32 of file [sparc_conf.h](#).

4.37.2.2 `#define SPARC_PAGE_SIZE (256 * 1024)`

Page size (256 Kbytes)

Definition at line 34 of file [sparc_conf.h](#).

4.37.2.3 `#define SPARC_PARTITION_BASE_VADDR 0x0`

Partition virtual base adress. Should always be 0x0

Definition at line 37 of file [sparc_conf.h](#).

4.37.2.4 `#define SPARC_PARTITION_SIZE SPARC_PAGE_SIZE`

Maximum partition size

Definition at line 35 of file [sparc_conf.h](#).

4.37.2.5 `#define SPARC_PROC_FREQ 50000000U`

Processor frequency (in Hz)

Definition at line 28 of file [sparc_conf.h](#).

4.37.2.6 `#define SPARC_RAM_ADDR 0x40000000`

RAM base adress

Definition at line 26 of file [sparc_conf.h](#).

4.37.2.7 `#define WINDOWS_NBR 8`

Number of register windows

Definition at line 30 of file [sparc_conf.h](#).

4.38 /home/hipse/git-repos/pok/trunk/kernel/arch/sparc/leon3/timer.h File Reference

Macros

- #define [TIMER_CTRL_EN](#) (1 << 0)
- #define [TIMER_CTRL_RS](#) (1 << 1)
- #define [TIMER_CTRL_LD](#) (1 << 2)
- #define [TIMER_CTRL_IE](#) (1 << 3)
- #define [TIMER_CTRL_IP](#) (1 << 4)
- #define [TIMER_CTRL_CH](#) (1 << 5)
- #define [TIMER_CTRL_DH](#) (1 << 6)
- #define [TIMER_SCALER_OFFSET](#) 0x00
- #define [TIMER_SCAL_RELOAD_OFFSET](#) 0x04
- #define [TIMER_CNT_VAL_OFFSET](#) 0x10
- #define [TIMER_RELOAD_OFFSET](#) 0x14
- #define [TIMER_CTRL_OFFSET](#) 0x18
- #define [TIMER_IRQ](#) 0x8U
- #define [TIMER1](#) 0x80000300

4.38.1 Detailed Description

Author

Fabien Chouteau

Definition in file [timer.h](#).

4.38.2 Macro Definition Documentation

4.38.2.1 #define [TIMER1](#) 0x80000300

first Leon3 TIMER IO adress

Definition at line 42 of file [timer.h](#).

4.38.2.2 #define [TIMER_CNT_VAL_OFFSET](#) 0x10

Counter value register offset

Definition at line 36 of file [timer.h](#).

4.38.2.3 #define [TIMER_CTRL_CH](#) (1 << 5)

Chain

Definition at line 30 of file [timer.h](#).

4.38.2.4 #define [TIMER_CTRL_DH](#) (1 << 6)

Debug Halt

Definition at line 31 of file [timer.h](#).

4.38.2.5 #define TIMER_CTRL_EN (1 << 0)

Enable

Definition at line 25 of file timer.h.

4.38.2.6 #define TIMER_CTRL_IE (1 << 3)

Interrupt enable

Definition at line 28 of file timer.h.

4.38.2.7 #define TIMER_CTRL_IP (1 << 4)

Interrupt Pending

Definition at line 29 of file timer.h.

4.38.2.8 #define TIMER_CTRL_LD (1 << 2)

Load

Definition at line 27 of file timer.h.

4.38.2.9 #define TIMER_CTRL_OFFSET 0x18

Control register offset

Definition at line 38 of file timer.h.

4.38.2.10 #define TIMER_CTRL_RS (1 << 1)

Restart

Definition at line 26 of file timer.h.

4.38.2.11 #define TIMER_IRQ 0x8U

Definition at line 40 of file timer.h.

4.38.2.12 #define TIMER_RELOAD_OFFSET 0x14

Counter reload register offset

Definition at line 37 of file timer.h.

4.38.2.13 #define TIMER_SCAL_RELOAD_OFFSET 0x04

Scaler reload register offset

Definition at line 34 of file timer.h.

4.38.2.14 #define TIMER_SCALER_OFFSET 0x00

Scaler value register offset

Definition at line 33 of file timer.h.

4.39 /home/hiphse/git-repos/pok/trunk/kernel/arch/sparc/psr.h File Reference

Processor State Register utils.

Macros

- #define [PSR_ET](#) 0x20
- #define [PSR_PS](#) 0x40
- #define [PSR_S](#) 0x80
- #define [PSR_CWP_MASK](#) 0x1F
- #define [PSR_PIL](#)(pil) (((pil) & 0xF) << 8)

4.39.1 Detailed Description

Processor State Register utils.

Author

Fabien Chouteau

Definition in file [psr.h](#).

4.39.2 Macro Definition Documentation

4.39.2.1 #define PSR_CWP_MASK 0x1F

Current Window Pointer Mask

Definition at line 29 of file psr.h.

4.39.2.2 #define PSR_ET 0x20

enable traps

Definition at line 26 of file psr.h.

4.39.2.3 #define PSR_PIL(pil) (((pil) & 0xF) << 8)

Proc Interrupt Level

Definition at line 30 of file psr.h.

4.39.2.4 #define PSR_PS 0x40

previous supervisor

Definition at line 27 of file psr.h.

4.39.2.5 #define PSR_S 0x80

supervisor

Definition at line 28 of file psr.h.

4.40 /home/hiphse/git-repos/pok/trunk/kernel/arch/sparc/space.h File Reference

```
#include <types.h>
```

Macros

- #define [LEON_CTX_NBR](#) 256

PTD/PTE ET field

(*cf SPARC V8 Manual, page 247*)

- #define [MM_ET_INVALID](#) 0x0
- #define [MM_ET_PTD](#) 0x1
- #define [MM_ET_PTE](#) 0x2

PTE ACC field

Acces permissions. (cf SPARC V8 Manual, page 248)

- #define [MM_ACC_R](#) (0x0 << 2)
- #define [MM_ACC_RW](#) (0x1 << 2)
- #define [MM_ACC_RE](#) (0x2 << 2)
- #define [MM_ACC_RWE](#) (0x3 << 2)
- #define [MM_ACC_E](#) (0x4 << 2)
- #define [MM_ACC_R_S_RW](#) (0x5 << 2)
- #define [MM_ACC_S_RE](#) (0x6 << 2)
- #define [MM_ACC_S_RWE](#) (0x7 << 2)

PTE misc fields

(*cf SPARC V8 Manual, page 248*)

- #define [MM_CACHEABLE](#) (1 << 7)
- #define [MM_MODIFIED](#) (1 << 6)
- #define [MM_REFERENCED](#) (1 << 5)

MMU levels utils

- #define [MM_LVL1_ENTRIES_NBR](#) 256
- #define [MM_LVL1_PAGE_SIZE](#) (64 * 64 * 4 * 1024)
- #define [mm_index1\(addr\)](#) (((addr) >> 24) & 0xFF)
- #define [MM_LVL2_ENTRIES_NBR](#) 64
- #define [MM_LVL2_PAGE_SIZE](#) (64 * 4 * 1024)
- #define [mm_index2\(addr\)](#) (((addr) >> 18) & 0x3F)
- #define [MM_LVL3_ENTRIES_NBR](#) 64
- #define [MM_LVL3_PAGE_SIZE](#) (4 * 1024)
- #define [mm_index3\(addr\)](#) (((addr) >> 12) & 0x3F)

MMU ASI and registers

- #define [ASI_M_MMUREGS](#) 0x19 /* not sparc v8 compliant */
- #define [MMU_CTRL_REG](#) 0x00000000
- #define [MMU_CTXTBL_PTR](#) 0x00000100
- #define [MMU_CTX_REG](#) 0x00000200
- #define [MMU_FAULT_STATUS](#) 0x00000300
- #define [MMU_FAULT_ADDR](#) 0x00000400

Typedefs

- typedef [uint32_t](#) [pte](#)
- typedef [uint32_t](#) [ptd](#)

Functions

- void [pok_arch_space_init](#) (void)

4.40.1 Detailed Description

Author

Fabien Chouteau

Definition in file [space.h](#).

4.40.2 Macro Definition Documentation

4.40.2.1 `#define ASI_M_MMUREGS 0x19 /* not sparc v8 compliant */`

Definition at line 97 of file [space.h](#).

4.40.2.2 `#define LEON_CTX_NBR 256`

Maximum number of contexts

Definition at line 105 of file [space.h](#).

4.40.2.3 `#define MM_ACC_E (0x4 << 2)`

All Execute only

Definition at line 46 of file [space.h](#).

4.40.2.4 `#define MM_ACC_R (0x0 << 2)`

All Read only

Definition at line 42 of file [space.h](#).

4.40.2.5 `#define MM_ACC_R_S_RW (0x5 << 2)`

User Read only, Supervisor Read Write

Definition at line 47 of file [space.h](#).

4.40.2.6 `#define MM_ACC_RE (0x2 << 2)`

All Read Execute

Definition at line 44 of file [space.h](#).

4.40.2.7 #define MM_ACC_RW (0x1 << 2)

All Read Write

Definition at line 43 of file space.h.

4.40.2.8 #define MM_ACC_RWE (0x3 << 2)

All Read Write Execute

Definition at line 45 of file space.h.

4.40.2.9 #define MM_ACC_S_RE (0x6 << 2)

Supervisor Read Write Execute

Definition at line 49 of file space.h.

4.40.2.10 #define MM_ACC_S_RWE (0x7 << 2)

Supervisor Read Execute

Definition at line 50 of file space.h.

4.40.2.11 #define MM_CACHEABLE (1 << 7)

Definition at line 58 of file space.h.

4.40.2.12 #define MM_ET_INVALID 0x0

Invalid

Definition at line 32 of file space.h.

4.40.2.13 #define MM_ET_PTD 0x1

Page Table Descriptor

Definition at line 33 of file space.h.

4.40.2.14 #define MM_ET_PTE 0x2

Page Table Entry

Definition at line 34 of file space.h.

4.40.2.15 #define mm_index1(addr) (((addr) >> 24) & 0xFF)

Compute the index in 1st level table for the given adress.

Definition at line 73 of file space.h.

4.40.2.16 `#define mm_index2(addr) (((addr) >> 18) & 0x3F)`

Compute the index in 2nd level table for the given address.

Definition at line 81 of file space.h.

4.40.2.17 `#define mm_index3(addr) (((addr) >> 12) & 0x3F)`

Compute the index in 3rd level table for the given address.

Definition at line 89 of file space.h.

4.40.2.18 `#define MM_LVL1_ENTRIES_NBR 256`

Number of entries in 1st level table

Definition at line 67 of file space.h.

4.40.2.19 `#define MM_LVL1_PAGE_SIZE (64 * 64 * 4 * 1024)`

16 MegaBytes

Definition at line 68 of file space.h.

4.40.2.20 `#define MM_LVL2_ENTRIES_NBR 64`

Number of entries in 2nd level table

Definition at line 75 of file space.h.

4.40.2.21 `#define MM_LVL2_PAGE_SIZE (64 * 4 * 1024)`

256 KiloBytes

Definition at line 76 of file space.h.

4.40.2.22 `#define MM_LVL3_ENTRIES_NBR 64`

Number of entries in 3rd level table

Definition at line 83 of file space.h.

4.40.2.23 `#define MM_LVL3_PAGE_SIZE (4 * 1024)`

4 KiloBytes

Definition at line 84 of file space.h.

4.40.2.24 `#define MM_MODIFIED (1 << 6)`

Definition at line 59 of file space.h.

4.40.2.25 `#define MM_REFERENCED (1 << 5)`

Definition at line 60 of file space.h.

4.40.2.26 #define MMU_CTRL_REG 0x00000000

Definition at line 98 of file space.h.

4.40.2.27 #define MMU_CTX_REG 0x00000200

Definition at line 100 of file space.h.

4.40.2.28 #define MMU_CTXTBL_PTR 0x00000100

Definition at line 99 of file space.h.

4.40.2.29 #define MMU_FAULT_ADDR 0x00000400

Definition at line 102 of file space.h.

4.40.2.30 #define MMU_FAULT_STATUS 0x00000300

Definition at line 101 of file space.h.

4.40.3 Typedef Documentation**4.40.3.1 typedef uint32_t ptd**

Definition at line 108 of file space.h.

4.40.3.2 typedef uint32_t pte

Definition at line 107 of file space.h.

4.40.4 Function Documentation**4.40.4.1 void pok_arch_space_init (void)**

Initilize MMU tables.

Definition at line 132 of file space.c.

```

133 {
134     uint32_t sdr1;
135
136     pt_base = 0;
137     pt_mask = 0x3ff;
138
139     sdr1 = pt_base | (pt_mask >> 10);
140     asm volatile ("mtsdr1 %0" : : "r"(sdr1));
141 }
```

4.41 /home/hipse/git-repos/pok/trunk/kernel/arch/x86/space.h File Reference

```
#include <types.h>
#include "thread.h"
```

Data Structures

- struct [space_context_t](#)

4.41.1 Detailed Description

Author

Julian Pidancet

Date

2008-2009

Definition in file [space.h](#).

4.42 /home/hipse/git-repos/pok/trunk/kernel/arch/sparc/syscalls.h File Reference

Functions

- void [pok_syscalls_init](#) (void)

4.42.1 Detailed Description

Author

Fabien Chouteau

Definition in file [syscalls.h](#).

4.42.2 Function Documentation

4.42.2.1 void pok_syscalls_init (void)

Syscalls initialization. Just register the syscall handler.

Definition at line 83 of file [syscalls.c](#).

```
84 {  
85     pok_arch_event_register(SPARC_TRAP_SYSCALL_BASE + 0x2,  
                             pok_arch_sc_int);  
86 }
```

4.43 /home/hipse/git-repos/pok/trunk/kernel/arch/sparc/traps.c File Reference

Traps management.

```
#include <types.h>  
#include <errno.h>  
#include <libc.h>  
#include <core/debug.h>  
#include "thread.h"  
#include "traps.h"
```

Functions

- [pok_ret_t traps_init](#) (void)
- void [trap_handler](#) (unsigned int pc, unsigned int npc, unsigned int psr, unsigned int trap_nb, unsigned int restore_counter, unsigned int stack_pointer)

Variables

- [sparc_traps_handler pok_sparc_isr](#) [256]

4.43.1 Detailed Description

Traps management.

Author

Fabien Chouteau

Definition in file [traps.c](#).

4.43.2 Function Documentation

4.43.2.1 void [trap_handler](#) (unsigned int *pc*, unsigned int *npc*, unsigned int *psr*, unsigned int *trap_nb*, unsigned int *restore_counter*, unsigned int *stack_pointer*)

Function called by interrupt pre-handler. Call the correct handler for the given trap number.

Parameters

<i>trap_nb</i>	The number of the current trap. (cf SPARC V8 Manual, page 76)
<i>stack_pointer</i>	Adress of the interrupted stack.

See Also

[pok_arch_sp](#)

Definition at line 53 of file traps.c.

```

59 {
60     (void)restore_counter;
61
62     pok_arch_sp = stack_pointer;
63
64     if (pok_sparc_isr[trap_nb] != NULL)
65     {
66         pok_sparc_isr[trap_nb]();
67     }
68     else
69     {
70 #ifdef POK_NEEDS_DEBUG
71         printf ("[KERNEL] [ERROR] Unhandled trap: 0x%x %%PSR=%x %%PC=%x %%nPC=%x %%sp=0x%x\n", trap_nb, psr, pc
, npc, stack_pointer);
72         printf("%%psr : impl:0x%x ver:%x nzvc:%u%u%u%u EC:%u EF:%u PIL:0x%x S:%u PS:%u ET:%u CWP:%u\n\r",
73             (psr >> 28) & 0xF, (psr >> 24) & 0xF,
74             (psr >> 23) & 0x1, (psr >> 22) & 0x1c, (psr >> 21) & 0x1, (psr >> 20) & 0x1,
75             (psr >> 23) & 0x1, (psr >> 12) & 0x1, (psr >> 8) & 0xF, (psr >> 7) & 0x1, (psr >> 6) & 0x1,
76             (psr >> 5) & 0x1, psr & 0xF);
77 #else
78         (void)psr;
79         (void)npc;
80         (void)pc;
81 #endif
82         POK_FATAL ("Unhandled trap");
83     }
84     return;
85 }

```

4.43.2 `pok_ret_t traps_init (void)`

Initialize ISR table.

See Also

[pok_sparc_isr](#)

Definition at line 40 of file traps.c.

```
41 {
42     memset((unsigned char *)pok_sparc_isr, 0x0, sizeof (
        pok_sparc_isr));
43     return POK_ERRNO_OK;
44 }
```

4.43.3 Variable Documentation

4.43.3.1 `sparc_traps_handler pok_sparc_isr[256]`

Interrupt subroutine table.

Definition at line 34 of file traps.c.

4.44 /home/hipse/git-repos/pok/trunk/kernel/arch/sparc/traps.h File Reference

```
#include <types.h>
#include <errno.h>
```

Macros

- `#define SPARC_TRAP_IRQ_BASE 0x10`
- `#define SPARC_TRAP_SYSCALL_BASE 0x80`

Typedefs

- `typedef void(* sparc_traps_handler)(void)`

Functions

- `pok_ret_t traps_init (void)`

Variables

- `sparc_traps_handler pok_sparc_isr [256]`

4.44.1 Detailed Description

Author

Fabien Chouteau

Definition in file [traps.h](#).

4.44.2 Macro Definition Documentation

4.44.2.1 #define SPARC_TRAP_IRQ_BASE 0x10

Definition at line 28 of file traps.h.

4.44.2.2 #define SPARC_TRAP_SYSCALL_BASE 0x80

Definition at line 29 of file traps.h.

4.44.3 Typedef Documentation

4.44.3.1 typedef void(* sparc_traps_handler)(void)

Definition at line 31 of file traps.h.

4.44.4 Function Documentation

4.44.4.1 pok_ret_t traps_init (void)

Initialize ISR table.

See Also

[pok_sparc_isr](#)

Definition at line 40 of file traps.c.

```
41 {
42     memset((unsigned char *)pok_sparc_isr, 0x0, sizeof (
43         pok_sparc_isr));
44     return POK_ERRNO_OK;
45 }
```

4.44.5 Variable Documentation

4.44.5.1 sparc_traps_handler pok_sparc_isr[256]

Interrupt subroutine table.

Definition at line 34 of file traps.c.

4.45 /home/hipse/git-repos/pok/trunk/kernel/arch/x86/event.c File Reference

```
#include <libc.h>
#include <types.h>
#include <errno.h>
#include <core/syscall.h>
#include "event.h"
#include "sysdesc.h"
```

Macros

- #define [IDT_SIZE](#) 256

Functions

- [pok_ret_t pok_event_init \(\)](#)
- [pok_ret_t pok_idt_init \(\)](#)
- [void pok_idt_set_gate \(uint16_t index, uint16_t segsel, uint32_t offset, e_idte_type t, int dpl\)](#)

Variables

- [idt_entry_t pok_idt \[IDT_SIZE\]](#)

4.45.1 Macro Definition Documentation

4.45.1.1 #define IDT_SIZE 256

Definition at line 27 of file event.c.

4.45.2 Function Documentation

4.45.2.1 [pok_ret_t pok_event_init \(\)](#)

Definition at line 31 of file event.c.

```

32 {
33     pok_idt_init ();
34
35     #if defined (POK_NEEDS_DEBUG) || defined (POK_NEEDS_ERROR_HANDLING)
36         pok_exception_init ();
37     #endif
38
39     pok_syscall_init ();
40
41     return (POK_ERRNO_OK);
42 }
```

4.45.2.2 [pok_ret_t pok_idt_init \(\)](#)

Definition at line 44 of file event.c.

```

45 {
46     sysdesc_t sysdesc;
47
48     /* Clear table */
49     memset(pok_idt, 0, sizeof (idt_entry_t) * IDT_SIZE);
50
51     /* Load IDT */
52     sysdesc.limit = sizeof (pok_idt);
53     sysdesc.base = (uint32_t)pok_idt;
54
55     asm ("lidt %0"
56         :
57         : "m" (sysdesc));
58
59     return (POK_ERRNO_OK);
60 }
```

4.45.2.3 [void pok_idt_set_gate \(uint16_t index, uint16_t segsel, uint32_t offset, e_idte_type t, int dpl \)](#)

Definition at line 62 of file event.c.

```

67 {
68     pok_idt[index].offset_low   = (offset) & 0xFFFF;
69     pok_idt[index].offset_high = (offset >> 16) & 0xFFFF;
70     pok_idt[index].segssel     = segssel;
71     pok_idt[index].dpl        = dpl;
72     pok_idt[index].type       = t;
73     pok_idt[index].d          = 1;
74     pok_idt[index].res0       = 0; /* reserved */
75     pok_idt[index].res1       = 0; /* reserved */
76     pok_idt[index].present    = 1;
77 }

```

4.45.3 Variable Documentation

4.45.3.1 idt_entry_t pok_idt[IDT_SIZE]

Definition at line 29 of file event.c.

4.46 /home/hipse/git-repos/pok/trunk/kernel/arch/x86/event.h File Reference

```

#include <types.h>
#include <arch/x86/interrupt.h>
#include "gdt.h"

```

Data Structures

- struct [__attribute__](#)

Macros

- #define [EXCEPTION_DIVIDE_ERROR](#) 0
- #define [EXCEPTION_DEBUG](#) 1
- #define [EXCEPTION_NMI](#) 2
- #define [EXCEPTION_BREAKPOINT](#) 3
- #define [EXCEPTION_OVERFLOW](#) 4
- #define [EXCEPTION_BOUNDRange](#) 5
- #define [EXCEPTION_INVALIDOPCODE](#) 6
- #define [EXCEPTION_NOMATH_COPROC](#) 7
- #define [EXCEPTION_DOUBLEFAULT](#) 8
- #define [EXCEPTION_COPSEG_OVERRUN](#) 9
- #define [EXCEPTION_INVALID_TSS](#) 10
- #define [EXCEPTION_SEGMENT_NOT_PRESENT](#) 11
- #define [EXCEPTION_STACKSEG_FAULT](#) 12
- #define [EXCEPTION_GENERAL_PROTECTION](#) 13
- #define [EXCEPTION_PAGEFAULT](#) 14
- #define [EXCEPTION_RESERVED](#) 15
- #define [EXCEPTION_FPU_FAULT](#) 16
- #define [EXCEPTION_ALIGNMENT_CHECK](#) 17
- #define [EXCEPTION_MACHINE_CHECK](#) 18
- #define [EXCEPTION_SIMD_FAULT](#) 19

Typedefs

- typedef enum [e_idte_type](#) [e_idte_type](#)

Enumerations

- enum `e_idte_type` { `IDTE_TASK` = 5, `IDTE_INTERRUPT` = 6, `IDTE_TRAP` = 7 }

Functions

- void `pok_idt_set_gate` (`uint16_t` index, `uint16_t` segsel, `uint32_t` offset, `e_idte_type` t, int dpl)
- `pok_ret_t` `pok_idt_init` ()
- `pok_ret_t` `pok_exception_init` ()
- `pok_ret_t` `pok_event_init` ()
- `pok_ret_t` `pok_syscall_init` ()

4.46.1 Macro Definition Documentation

4.46.1.1 #define EXCEPTION_ALIGNMENT_CHECK 17

Definition at line 63 of file event.h.

4.46.1.2 #define EXCEPTION_BOUND RANGE 5

Definition at line 51 of file event.h.

4.46.1.3 #define EXCEPTION_BREAKPOINT 3

Definition at line 49 of file event.h.

4.46.1.4 #define EXCEPTION_COPSEG_OVERRUN 9

Definition at line 55 of file event.h.

4.46.1.5 #define EXCEPTION_DEBUG 1

Definition at line 47 of file event.h.

4.46.1.6 #define EXCEPTION_DIVIDE_ERROR 0

Definition at line 46 of file event.h.

4.46.1.7 #define EXCEPTION_DOUBLEFAULT 8

Definition at line 54 of file event.h.

4.46.1.8 #define EXCEPTION_FPU_FAULT 16

Definition at line 62 of file event.h.

4.46.1.9 #define EXCEPTION_GENERAL_PROTECTION 13

Definition at line 59 of file event.h.

4.46.1.10 `#define EXCEPTION_INVALID_TSS 10`

Definition at line 56 of file event.h.

4.46.1.11 `#define EXCEPTION_INVALIDOPCODE 6`

Definition at line 52 of file event.h.

4.46.1.12 `#define EXCEPTION_MACHINE_CHECK 18`

Definition at line 64 of file event.h.

4.46.1.13 `#define EXCEPTION_NMI 2`

Definition at line 48 of file event.h.

4.46.1.14 `#define EXCEPTION_NOMATH_COPROC 7`

Definition at line 53 of file event.h.

4.46.1.15 `#define EXCEPTION_OVERFLOW 4`

Definition at line 50 of file event.h.

4.46.1.16 `#define EXCEPTION_PAGEFAULT 14`

Definition at line 60 of file event.h.

4.46.1.17 `#define EXCEPTION_RESERVED 15`

Definition at line 61 of file event.h.

4.46.1.18 `#define EXCEPTION_SEGMENT_NOT_PRESENT 11`

Definition at line 57 of file event.h.

4.46.1.19 `#define EXCEPTION_SIMD_FAULT 19`

Definition at line 65 of file event.h.

4.46.1.20 `#define EXCEPTION_STACKSEG_FAULT 12`

Definition at line 58 of file event.h.

4.46.2 Typedef Documentation

4.46.2.1 `typedef enum e_idte_type e_idte_type`

4.46.3 Enumeration Type Documentation

4.46.3.1 enum e_idte_type

Enumerator

IDTE_TASK
IDTE_INTERRUPT
IDTE_TRAP

Definition at line 26 of file event.h.

```
27 {
28     IDTE_TASK = 5,
29     IDTE_INTERRUPT = 6,
30     IDTE_TRAP = 7
31 } e_idte_type;
```

4.46.4 Function Documentation

4.46.4.1 pok_ret_t pok_event_init ()

Definition at line 31 of file event.c.

```
32 {
33     pok_idt_init ();
34
35 #if defined (POK_NEEDS_DEBUG) || defined (POK_NEEDS_ERROR_HANDLING)
36     pok_exception_init ();
37 #endif
38
39     pok_syscall_init ();
40
41     return (POK_ERRNO_OK);
42 }
```

4.46.4.2 pok_ret_t pok_exception_init ()

4.46.4.3 pok_ret_t pok_idt_init ()

Definition at line 44 of file event.c.

```
45 {
46     sysdesc_t sysdesc;
47
48     /* Clear table */
49     memset(pok_idt, 0, sizeof (idt_entry_t) * IDT_SIZE);
50
51     /* Load IDT */
52     sysdesc.limit = sizeof (pok_idt);
53     sysdesc.base = (uint32_t)pok_idt;
54
55     asm ("lidt %0"
56         :
57         : "m" (sysdesc));
58
59     return (POK_ERRNO_OK);
60 }
```

4.46.4.4 void pok_idt_set_gate (uint16_t index, uint16_t segsel, uint32_t offset, e_idte_type t, int dpl)

Definition at line 62 of file event.c.

```

67 {
68     pok_idt[index].offset_low  = (offset) & 0xFFFF;
69     pok_idt[index].offset_high = (offset >> 16) & 0xFFFF;
70     pok_idt[index].segsel     = segsel;
71     pok_idt[index].dpl       = dpl;
72     pok_idt[index].type      = t;
73     pok_idt[index].d         = 1;
74     pok_idt[index].res0      = 0; /* reserved */
75     pok_idt[index].res1      = 0; /* reserved */
76     pok_idt[index].present   = 1;
77 }

```

4.46.4.5 pok_ret_t pok_syscall_init ()

Init system calls

Definition at line 83 of file syscalls.c.

```

84 {
85     pok_idt_set_gate (POK_SYSCALL_INT_NUMBER,
86                     GDT_CORE_CODE_SEGMENT << 3,
87                     (uint32_t) syscall_gate,
88                     IDTE_INTERRUPT,
89                     3);
90
91     return (POK_ERRNO_OK);
92 }

```

4.47 /home/hipse/git-repos/pok/trunk/kernel/arch/x86/exceptions.c File Reference

4.47.1 Detailed Description

Author

Julian Pidancet

Definition in file [exceptions.c](#).

4.48 /home/hipse/git-repos/pok/trunk/kernel/arch/x86/gdt.c File Reference

```

#include <libc.h>
#include <types.h>
#include <errno.h>
#include "gdt.h"
#include "sysdesc.h"
#include "tss.h"

```

Macros

- `#define POK_CONFIG_NB_THREADS 0`
- `#define POK_CONFIG_NB_PARTITIONS 0`
- `#define GDT_SIZE 256`

Functions

- `pok_ret_t pok_gdt_init ()`
- `int pok_tss_init ()`

- void `tss_set_esp0` (`uint32_t esp0`)
- void `gdt_set_segment` (`uint16_t index`, `uint32_t base_address`, `uint32_t limit`, `e_gdte_type t`, `int dpl`)
- void `gdt_set_system` (`uint16_t index`, `uint32_t base_address`, `uint32_t limit`, `e_gdte_type t`, `int dpl`)
- void `gdt_enable` (`uint16_t index`)
- void `gdt_disable` (`uint16_t index`)

Variables

- `gdt_entry_t pok_gdt` [`GDT_SIZE`]
- `tss_t pok_tss`

4.48.1 Macro Definition Documentation

4.48.1.1 #define GDT_SIZE 256

Definition at line 35 of file `gdt.c`.

4.48.1.2 #define POK_CONFIG_NB_PARTITIONS 0

Definition at line 32 of file `gdt.c`.

4.48.1.3 #define POK_CONFIG_NB_THREADS 0

Definition at line 28 of file `gdt.c`.

4.48.2 Function Documentation

4.48.2.1 void gdt_disable (uint16_t index)

Definition at line 155 of file `gdt.c`.

```
156 {
157     pok_gdt[index].present = 0;
158 }
```

4.48.2.2 void gdt_enable (uint16_t index)

Definition at line 150 of file `gdt.c`.

```
151 {
152     pok_gdt[index].present = 1;
153 }
```

4.48.2.3 void gdt_set_segment (uint16_t index, uint32_t base_address, uint32_t limit, e_gdte_type t, int dpl)

Definition at line 99 of file `gdt.c`.

```
104 {
105     if (limit > (1 << 20)) /* 4K granularity */
106     {
107         pok_gdt[index].limit_low = (limit >> 12) & 0xFFFF;
108         pok_gdt[index].limit_high = (limit >> 28) & 0xF;
109         pok_gdt[index].granularity = 1;
110     }
```

```

111     else /* 1B granularity */
112     {
113         pok_gdt[index].limit_low = limit & 0xFFFF;
114         pok_gdt[index].limit_high = (limit >> 16) & 0xFF;
115         pok_gdt[index].granularity = 0;
116     }
117
118     pok_gdt[index].base_low = base_address & 0xFFFFF;
119     pok_gdt[index].base_high = (base_address >> 24) & 0xFF;
120
121     pok_gdt[index].type = t & 0xF;
122     pok_gdt[index].dpl = dpl & 0x3;
123
124     pok_gdt[index].s = 1; /* Segment is data/code type */
125     pok_gdt[index].present = 1;
126     pok_gdt[index].available = 0;
127     pok_gdt[index].op_size = 1; /* We work on 32 bits segments */
128 }

```

4.48.2.4 void gdt_set_system (uint16_t index, uint32_t base_address, uint32_t limit, e_gdte_type t, int dpl)

Definition at line 130 of file gdt.c.

```

135 {
136     pok_gdt[index].limit_low = limit & 0xFFFF;
137     pok_gdt[index].limit_high = (limit >> 16) & 0xFF;
138     pok_gdt[index].base_low = base_address & 0xFFFFF;
139     pok_gdt[index].base_high = (base_address >> 24) & 0xFF;
140
141     pok_gdt[index].type = t & 0xF;
142     pok_gdt[index].dpl = dpl & 0x3;
143
144     pok_gdt[index].s = 0; /* Segment is system type */
145     pok_gdt[index].present = 1;
146     pok_gdt[index].available = 0;
147     pok_gdt[index].op_size = 0;
148 }

```

4.48.2.5 pok_ret_t pok_gdt_init ()

Definition at line 41 of file gdt.c.

```

42 {
43     sysdesc_t sysdesc;
44
45     /* Set null descriptor and clear table */
46     memset(pok_gdt, 0, sizeof (gdt_entry_t) * GDT_SIZE);
47
48     /* Set kernel descriptors */
49     gdt_set_segment(GDT_CORE_CODE_SEGMENT, 0, ~0UL,
50                   GDTE_CODE, 0);
51     gdt_set_segment(GDT_CORE_DATA_SEGMENT, 0, ~0UL,
52                   GDTE_DATA, 0);
53
54     /* Load GDT */
55     sysdesc.limit = sizeof (pok_gdt);
56     sysdesc.base = (uint32_t)pok_gdt;
57
58     asm ("lgdt %0"
59         :
60         : "m" (sysdesc));
61
62     /* Reload Segments */
63     asm ("ljmp %0, $1f\n"
64         : "1:\n"
65         : "mov %1, %%ax\n"
66         : "mov %%ax, %%ds\n"
67         : "mov %%ax, %%es\n"
68         : "mov %%ax, %%fs\n"
69         : "mov %%ax, %%gs\n"
70         : "mov %%ax, %%ss\n"
71         :
72         : "i" (GDT_CORE_CODE_SEGMENT << 3),
73         : "i" (GDT_CORE_DATA_SEGMENT << 3),
74         : "eax");
75
76     pok_tss_init();

```

```
75
76     return (POK_ERRNO_OK);
77 }
```

4.48.2.6 int pok_tss_init ()

Definition at line 79 of file gdt.c.

```
80 {
81     uint16_t sel = GDT_BUILD_SELECTOR(GDT_TSS_SEGMENT, 0, 0);
82
83     memset(&pok_tss, 0, sizeof (tss_t));
84
85     pok_tss.ss0 = GDT_BUILD_SELECTOR(
86         GDT_CORE_DATA_SEGMENT, 0, 0);
87
88     gdt_set_system(GDT_TSS_SEGMENT, (uint32_t)&
89         pok_tss,
90         sizeof (tss_t), GDTE_TSS, 0);
91
92     asm ("ltr %0" : : "m" (sel));
93     return (POK_ERRNO_OK);
94 }
```

4.48.2.7 void tss_set_esp0 (uint32_t esp0)

Definition at line 94 of file gdt.c.

```
95 {
96     pok_tss.esp0 = esp0;
97 }
```

4.48.3 Variable Documentation

4.48.3.1 gdt_entry_t pok_gdt[GDT_SIZE]

Definition at line 37 of file gdt.c.

4.48.3.2 tss_t pok_tss

Definition at line 39 of file gdt.c.

4.49 /home/hipse/git-repos/pok/trunk/kernel/arch/x86/gdt.h File Reference

```
#include <types.h>
```

Data Structures

- struct [__attribute__](#)

Macros

- #define [GDT_CORE_CODE_SEGMENT](#) 1
- #define [GDT_CORE_DATA_SEGMENT](#) 2
- #define [GDT_TSS_SEGMENT](#) 3

- #define `GDT_PARTITION_CODE_SEGMENT`(*partition_id*) (4 + 2 * *partition_id*)
- #define `GDT_PARTITION_DATA_SEGMENT`(*partition_id*) (4 + 2 * *partition_id* + 1)
- #define `GDT_BUILD_SELECTOR`(*seg*, *local*, *rpl*) ((*seg* << 3) | ((*local* & 0x1) << 2) | (*rpl* & 0x3))

Typedefs

- typedef enum `e_gdte_type` `e_gdte_type`

Enumerations

- enum `e_gdte_type` { `GDTE_CODE` = 0xB, `GDTE_DATA` = 0x3, `GDTE_TSS` = 0x9 }

Functions

- `pok_ret_t pok_gdt_init` ()
- int `pok_tss_init` ()
- void `tss_set_esp0` (uint32_t *esp0*)
- void `gdt_set_segment` (uint16_t *index*, uint32_t *base_address*, uint32_t *limit*, `e_gdte_type` *t*, int *dpl*)
- void `gdt_set_system` (uint16_t *index*, uint32_t *base_address*, uint32_t *limit*, `e_gdte_type` *t*, int *dpl*)
- void `gdt_enable` (uint16_t *index*)
- void `gdt_disable` (uint16_t *index*)

4.49.1 Macro Definition Documentation

4.49.1.1 #define `GDT_BUILD_SELECTOR`(*seg*, *local*, *rpl*) ((*seg* << 3) | ((*local* & 0x1) << 2) | (*rpl* & 0x3))

Definition at line 52 of file `gdt.h`.

4.49.1.2 #define `GDT_CORE_CODE_SEGMENT` 1

Definition at line 45 of file `gdt.h`.

4.49.1.3 #define `GDT_CORE_DATA_SEGMENT` 2

Definition at line 46 of file `gdt.h`.

4.49.1.4 #define `GDT_PARTITION_CODE_SEGMENT`(*partition_id*) (4 + 2 * *partition_id*)

Definition at line 49 of file `gdt.h`.

4.49.1.5 #define `GDT_PARTITION_DATA_SEGMENT`(*partition_id*) (4 + 2 * *partition_id* + 1)

Definition at line 50 of file `gdt.h`.

4.49.1.6 #define `GDT_TSS_SEGMENT` 3

Definition at line 47 of file `gdt.h`.

4.49.2 Typedef Documentation

4.49.2.1 typedef enum e_gdte_type e_gdte_type

4.49.3 Enumeration Type Documentation

4.49.3.1 enum e_gdte_type

Enumerator

GDTE_CODE

GDTE_DATA

GDTE_TSS

Definition at line 23 of file gdt.h.

```

24 {
25     GDTE_CODE = 0xB,
26     GDTE_DATA = 0x3,
27     GDTE_TSS = 0x9
28 } e_gdte_type;
```

4.49.4 Function Documentation

4.49.4.1 void gdt_disable (uint16_t index)

Definition at line 155 of file gdt.c.

```

156 {
157     pok_gdt[index].present = 0;
158 }
```

4.49.4.2 void gdt_enable (uint16_t index)

Definition at line 150 of file gdt.c.

```

151 {
152     pok_gdt[index].present = 1;
153 }
```

4.49.4.3 void gdt_set_segment (uint16_t index, uint32_t base_address, uint32_t limit, e_gdte_type t, int dpl)

Definition at line 99 of file gdt.c.

```

104 {
105     if (limit > (1 << 20)) /* 4K granularity */
106     {
107         pok_gdt[index].limit_low = (limit >> 12) & 0xFFFF;
108         pok_gdt[index].limit_high = (limit >> 28) & 0xFF;
109         pok_gdt[index].granularity = 1;
110     }
111     else /* 1B granularity */
112     {
113         pok_gdt[index].limit_low = limit & 0xFFFF;
114         pok_gdt[index].limit_high = (limit >> 16) & 0xFF;
115         pok_gdt[index].granularity = 0;
116     }
117     pok_gdt[index].base_low = base_address & 0FFFFFFF;
118     pok_gdt[index].base_high = (base_address >> 24) & 0xFF;
119     pok_gdt[index].type = t & 0xF;
120     pok_gdt[index].dpl = dpl & 0x3;
121 }
```

```

123
124     pok_gdt[index].s = 1;                /* Segment is data/code type */
125     pok_gdt[index].present = 1;
126     pok_gdt[index].available = 0;
127     pok_gdt[index].op_size = 1;        /* We work on 32 bits segments */
128 }

```

4.49.4.4 void gdt_set_system (uint16_t index, uint32_t base_address, uint32_t limit, e_gdte_type t, int dpl)

Definition at line 130 of file gdt.c.

```

135 {
136     pok_gdt[index].limit_low = limit & 0xFFFF;
137     pok_gdt[index].limit_high = (limit >> 16) & 0xFF;
138     pok_gdt[index].base_low = base_address & 0xFFFFF;
139     pok_gdt[index].base_high = (base_address >> 24) & 0xFF;
140
141     pok_gdt[index].type = t & 0xF;
142     pok_gdt[index].dpl = dpl & 0x3;
143
144     pok_gdt[index].s = 0;                /* Segment is system type */
145     pok_gdt[index].present = 1;
146     pok_gdt[index].available = 0;
147     pok_gdt[index].op_size = 0;
148 }

```

4.49.4.5 pok_ret_t pok_gdt_init ()

Definition at line 41 of file gdt.c.

```

42 {
43     sysdesc_t sysdesc;
44
45     /* Set null descriptor and clear table */
46     memset(pok_gdt, 0, sizeof (gdt_entry_t) * GDT_SIZE);
47
48     /* Set kernel descriptors */
49     gdt_set_segment(GDT_CORE_CODE_SEGMENT, 0, ~0UL,
50                   GDTE_CODE, 0);
51     gdt_set_segment(GDT_CORE_DATA_SEGMENT, 0, ~0UL,
52                   GDTE_DATA, 0);
53
54     /* Load GDT */
55     sysdesc.limit = sizeof (pok_gdt);
56     sysdesc.base = (uint32_t)pok_gdt;
57
58     asm ("lgdt %0"
59         : "m" (sysdesc));
60
61     /* Reload Segments */
62     asm ("ljmp %0, $1f\n"
63         : "1:"
64         : "mov %1, %%ax\n"
65         : "mov %%ax, %%ds\n"
66         : "mov %%ax, %%es\n"
67         : "mov %%ax, %%fs\n"
68         : "mov %%ax, %%gs\n"
69         : "mov %%ax, %%ss\n"
70         : "i" (GDT_CORE_CODE_SEGMENT << 3),
71         : "i" (GDT_CORE_DATA_SEGMENT << 3)
72         : "eax");
73
74     pok_tss_init();
75
76     return (POK_ERRNO_OK);
77 }

```

4.49.4.6 int pok_tss_init ()

Definition at line 79 of file gdt.c.

```

80 {
81     uint16_t sel = GDT_BUILD_SELECTOR(GDT_TSS_SEGMENT, 0, 0);
82
83     memset(&pok_tss, 0, sizeof (tss_t));
84
85     pok_tss.ss0 = GDT_BUILD_SELECTOR(
86         GDT_CORE_DATA_SEGMENT, 0, 0);
87
88     gdt_set_system(GDT_TSS_SEGMENT, (uint32_t)&
89         pok_tss,
90         sizeof (tss_t), GDTE_TSS, 0);
91     asm ("ltr %0" : : "m"(sel));
92     return (POK_ERRNO_OK);
93 }

```

4.49.4.7 void tss_set.esp0 (uint32_t esp0)

Definition at line 94 of file gdt.c.

```

95 {
96     pok_tss.esp0 = esp0;
97 }

```

4.50 /home/hipse/git-repos/pok/trunk/kernel/arch/x86/interrupt.c File Reference

```
#include <arch/x86/interrupt.h>
```

Functions

- void [update_tss](#) ([interrupt_frame](#) *frame)

4.50.1 Function Documentation

4.50.1.1 void update_tss (interrupt_frame * frame)

Definition at line 20 of file interrupt.c.

```

21 {
22     uint32_t* esp0 = (&pok_tss) + 1;
23
24     if ((frame->cs & 0xffff) != 0x8)
25     {
26         *esp0 = (uint32_t)frame + sizeof (interrupt_frame);
27     }
28 }

```

4.51 /home/hipse/git-repos/pok/trunk/kernel/arch/x86/pci.c File Reference

4.52 /home/hipse/git-repos/pok/trunk/kernel/arch/x86/sysdesc.h File Reference

Data Structures

- struct [__attribute__](#)

4.53 /home/hipse/git-repos/pok/trunk/kernel/arch/x86/tss.h File Reference

```
#include <types.h>
```

Data Structures

- struct [__attribute__](#)

4.54 /home/hipse/git-repos/pok/trunk/kernel/arch/x86/types.h File Reference

Macros

- #define [__POK_X86_TYPES_H__](#)

Typedefs

- typedef unsigned short [uint8_t](#)
- typedef unsigned short [uint16_t](#)
- typedef unsigned int [uint32_t](#)
- typedef unsigned long long [uint64_t](#)
- typedef short [int8_t](#)
- typedef short [int16_t](#)
- typedef signed long long [int64_t](#)
- typedef unsigned int [size_t](#)
- typedef unsigned long int [intptr_t](#)

4.54.1 Macro Definition Documentation

4.54.1.1 #define __POK_X86_TYPES_H__

Definition at line 19 of file types.h.

4.54.2 Typedef Documentation

4.54.2.1 typedef short int16_t

Definition at line 27 of file types.h.

4.54.2.2 typedef signed long long int64_t

Definition at line 28 of file types.h.

4.54.2.3 typedef short int8_t

Definition at line 26 of file types.h.

4.54.2.4 typedef unsigned long int intptr_t

Definition at line 31 of file types.h.

4.54.2.5 typedef unsigned int size_t

Definition at line 30 of file types.h.

4.54.2.6 typedef unsigned short uint16_t

Definition at line 22 of file types.h.

4.54.2.7 typedef unsigned int uint32_t

Definition at line 23 of file types.h.

4.54.2.8 typedef unsigned long long uint64_t

Definition at line 24 of file types.h.

4.54.2.9 typedef unsigned short uint8_t

Definition at line 21 of file types.h.

4.55 /home/hipse/git-repos/pok/trunk/kernel/include/arch/sparc/types.h File Reference

Typedefs

- typedef unsigned char [uint8_t](#)
- typedef unsigned short [uint16_t](#)
- typedef unsigned int [uint32_t](#)
- typedef unsigned long long [uint64_t](#)
- typedef char [int8_t](#)
- typedef short [int16_t](#)
- typedef signed long long [int64_t](#)
- typedef unsigned int [size_t](#)
- typedef unsigned long int [intptr_t](#)

4.55.1 Typedef Documentation

4.55.1.1 typedef short int16_t

Definition at line 27 of file types.h.

4.55.1.2 typedef signed long long int64_t

Definition at line 28 of file types.h.

4.55.1.3 typedef char int8_t

Definition at line 26 of file types.h.

4.55.1.4 typedef unsigned long int `intptr_t`

Definition at line 31 of file `types.h`.

4.55.1.5 typedef unsigned int `size_t`

Definition at line 30 of file `types.h`.

4.55.1.6 typedef unsigned short `uint16_t`

Definition at line 22 of file `types.h`.

4.55.1.7 typedef unsigned int `uint32_t`

Definition at line 23 of file `types.h`.

4.55.1.8 typedef unsigned long long `uint64_t`

Definition at line 24 of file `types.h`.

4.55.1.9 typedef unsigned char `uint8_t`

Definition at line 21 of file `types.h`.

4.56 /home/hipse/git-repos/pok/trunk/kernel/include/arch/x86/types.h File Reference

Macros

- `#define` [__POK_X86_TYPES_H__](#)

Typedefs

- typedef unsigned short [uint8_t](#)
- typedef unsigned short [uint16_t](#)
- typedef unsigned int [uint32_t](#)
- typedef unsigned long long [uint64_t](#)
- typedef short [int8_t](#)
- typedef short [int16_t](#)
- typedef signed long long [int64_t](#)
- typedef unsigned int [size_t](#)
- typedef unsigned long int [intptr_t](#)

4.56.1 Macro Definition Documentation

4.56.1.1 `#define` `__POK_X86_TYPES_H__`

Definition at line 19 of file `types.h`.

4.56.2 Typedef Documentation

4.56.2.1 typedef short int16_t

Definition at line 27 of file types.h.

4.56.2.2 typedef signed long long int64_t

Definition at line 28 of file types.h.

4.56.2.3 typedef short int8_t

Definition at line 26 of file types.h.

4.56.2.4 typedef unsigned long int intptr_t

Definition at line 31 of file types.h.

4.56.2.5 typedef unsigned int size_t

Definition at line 30 of file types.h.

4.56.2.6 typedef unsigned short uint16_t

Definition at line 22 of file types.h.

4.56.2.7 typedef unsigned int uint32_t

Definition at line 23 of file types.h.

4.56.2.8 typedef unsigned long long uint64_t

Definition at line 24 of file types.h.

4.56.2.9 typedef unsigned short uint8_t

Definition at line 21 of file types.h.

4.57 /home/hipse/git-repos/pok/trunk/kernel/include/types.h File Reference

```
#include <arch/x86/types.h>
```

Macros

- #define `NULL` 0
- #define `FALSE` 0
- #define `TRUE` 1
- #define `bool_t` int
- #define `pok_bool_t` int

Typedefs

- typedef [uint32_t pok_port_size_t](#)
- typedef [uint8_t pok_port_direction_t](#)
- typedef [uint8_t pok_port_kind_t](#)
- typedef [uint8_t pok_queueing_discipline_t](#)
- typedef [uint8_t pok_port_id_t](#)
- typedef [uint8_t pok_size_t](#)
- typedef [uint8_t pok_range_t](#)
- typedef [uint8_t pok_buffer_id_t](#)
- typedef [uint8_t pok_blackboard_id_t](#)
- typedef [uint8_t pok_lockobj_id_t](#)
- typedef [uint8_t pok_sem_id_t](#)
- typedef [uint8_t pok_event_id_t](#)
- typedef [uint8_t pok_partition_id_t](#)
- typedef [uint16_t pok_sem_value_t](#)

4.57.1 Macro Definition Documentation

4.57.1.1 #define bool_t int

Definition at line 30 of file types.h.

4.57.1.2 #define FALSE 0

Definition at line 28 of file types.h.

4.57.1.3 #define NULL 0

Definition at line 27 of file types.h.

4.57.1.4 #define pok_bool_t int

Definition at line 31 of file types.h.

4.57.1.5 #define TRUE 1

Definition at line 29 of file types.h.

4.57.2 Typedef Documentation

4.57.2.1 typedef uint8_t pok_blackboard_id_t

Definition at line 41 of file types.h.

4.57.2.2 typedef uint8_t pok_buffer_id_t

Definition at line 40 of file types.h.

4.57.2.3 typedef uint8_t pok_event_id_t

Definition at line 44 of file types.h.

4.57.2.4 typedef uint8_t pok_lockobj_id_t

Definition at line 42 of file types.h.

4.57.2.5 typedef uint8_t pok_partition_id_t

Definition at line 45 of file types.h.

4.57.2.6 typedef uint8_t pok_port_direction_t

Definition at line 34 of file types.h.

4.57.2.7 typedef uint8_t pok_port_id_t

Definition at line 37 of file types.h.

4.57.2.8 typedef uint8_t pok_port_kind_t

Definition at line 35 of file types.h.

4.57.2.9 typedef uint32_t pok_port_size_t

Definition at line 33 of file types.h.

4.57.2.10 typedef uint8_t pok_queueing_discipline_t

Definition at line 36 of file types.h.

4.57.2.11 typedef uint8_t pok_range_t

Definition at line 39 of file types.h.

4.57.2.12 typedef uint8_t pok_sem_id_t

Definition at line 43 of file types.h.

4.57.2.13 typedef uint16_t pok_sem_value_t

Definition at line 46 of file types.h.

4.57.2.14 typedef uint8_t pok_size_t

Definition at line 38 of file types.h.

4.58 /home/hipse/git-repos/pok/trunk/kernel/arch/x86/x86-qemu/debug.c File Reference

4.59 /home/hipse/git-repos/pok/trunk/kernel/core/debug.c File Reference

4.60 /home/hipse/git-repos/pok/trunk/kernel/arch/x86/x86-qemu/pic.c File Reference

```
#include <types.h>
#include <errno.h>
#include <arch/x86/ioports.h>
#include "pic.h"
```

Functions

- int [pok_pic_init](#) ()
- int [pok_pic_mask](#) (uint8_t irq)
- int [pok_pic_unmask](#) (uint8_t irq)
- void [pok_pic_eoi](#) (uint8_t irq)

4.60.1 Function Documentation

4.60.1.1 void [pok_pic_eoi](#) (uint8_t irq)

Definition at line 90 of file pic.c.

```
91 {
92     if (irq >= 8)
93     {
94         outb (PIC_SLAVE_BASE, 0x20);
95     }
96
97     outb (PIC_MASTER_BASE, 0x20);
98 }
```

4.60.1.2 int [pok_pic_init](#) ()

Definition at line 25 of file pic.c.

```
26 {
27     outb (PIC_MASTER_BASE, PIC_MASTER_ICW1);
28     outb (PIC_SLAVE_BASE, PIC_SLAVE_ICW1);
29
30     outb (PIC_MASTER_BASE + 1, PIC_MASTER_ICW2);
31     outb (PIC_SLAVE_BASE + 1, PIC_SLAVE_ICW2);
32
33     outb (PIC_MASTER_BASE + 1, PIC_MASTER_ICW3);
34     outb (PIC_SLAVE_BASE + 1, PIC_SLAVE_ICW3);
35
36     outb (PIC_MASTER_BASE + 1, PIC_MASTER_ICW4);
37     outb (PIC_SLAVE_BASE + 1, PIC_SLAVE_ICW4);
38
39     /* Mask everything */
40     outb (PIC_MASTER_BASE + 1, 0xfb);
41     outb (PIC_SLAVE_BASE + 1, 0xff);
42
43     return (POK_ERRNO_OK);
44 }
```

4.60.1.3 int pok_pic_mask (uint8_t irq)

Definition at line 46 of file pic.c.

```
47 {
48     uint8_t mask;
49
50     if (irq > 15)
51     {
52         return (POK_ERRNO_EINVAL);
53     }
54
55     if (irq < 8)
56     {
57         mask = inb (PIC_MASTER_BASE + 1);
58         outb (PIC_MASTER_BASE + 1, mask | (1 << irq));
59     }
60     else
61     {
62         mask = inb (PIC_SLAVE_BASE + 1);
63         outb (PIC_SLAVE_BASE + 1, mask | (1 << (irq - 8)));
64     }
65
66     return (POK_ERRNO_OK);
67 }
```

4.60.1.4 int pok_pic_unmask (uint8_t irq)

Definition at line 69 of file pic.c.

```
70 {
71     uint8_t mask;
72
73     if (irq > 15)
74         return (POK_ERRNO_EINVAL);
75
76     if (irq < 8)
77     {
78         mask = inb (PIC_MASTER_BASE + 1);
79         outb (PIC_MASTER_BASE + 1, mask & ~(1 << irq));
80     }
81     else
82     {
83         mask = inb (PIC_SLAVE_BASE + 1);
84         outb (PIC_SLAVE_BASE + 1, mask & ~(1 << (irq - 8)));
85     }
86
87     return (POK_ERRNO_OK);
88 }
```

4.61 /home/hipse/git-repos/pok/trunk/kernel/arch/x86/x86-qemu/pic.h File Reference

Macros

- #define [PIC_MASTER_BASE](#) 0x20
- #define [PIC_SLAVE_BASE](#) 0xa0
- #define [PIC_MASTER_ICW1](#) 0x11
- #define [PIC_MASTER_ICW2](#) 0x20
- #define [PIC_MASTER_ICW3](#) 0x04
- #define [PIC_MASTER_ICW4](#) 0x01
- #define [PIC_SLAVE_ICW1](#) 0x11
- #define [PIC_SLAVE_ICW2](#) 0x28
- #define [PIC_SLAVE_ICW3](#) 0x02
- #define [PIC_SLAVE_ICW4](#) 0x01

Functions

- int [pok_pic_init](#) ()
- int [pok_pic_mask](#) (uint8_t irq)
- int [pok_pic_unmask](#) (uint8_t irq)
- void [pok_pic_eoi](#) (uint8_t irq)

4.61.1 Macro Definition Documentation

4.61.1.1 #define PIC_MASTER_BASE 0x20

Definition at line 21 of file pic.h.

4.61.1.2 #define PIC_MASTER_ICW1 0x11

Definition at line 24 of file pic.h.

4.61.1.3 #define PIC_MASTER_ICW2 0x20

Definition at line 25 of file pic.h.

4.61.1.4 #define PIC_MASTER_ICW3 0x04

Definition at line 26 of file pic.h.

4.61.1.5 #define PIC_MASTER_ICW4 0x01

Definition at line 27 of file pic.h.

4.61.1.6 #define PIC_SLAVE_BASE 0xa0

Definition at line 22 of file pic.h.

4.61.1.7 #define PIC_SLAVE_ICW1 0x11

Definition at line 29 of file pic.h.

4.61.1.8 #define PIC_SLAVE_ICW2 0x28

Definition at line 30 of file pic.h.

4.61.1.9 #define PIC_SLAVE_ICW3 0x02

Definition at line 31 of file pic.h.

4.61.1.10 #define PIC_SLAVE_ICW4 0x01

Definition at line 32 of file pic.h.

4.61.2 Function Documentation

4.61.2.1 void pok_pic_eoi (uint8_t irq)

Definition at line 90 of file pic.c.

```
91 {
92     if (irq >= 8)
93     {
94         outb (PIC_SLAVE_BASE, 0x20);
95     }
96     outb (PIC_MASTER_BASE, 0x20);
97 }
98 }
```

4.61.2.2 int pok_pic_init ()

Definition at line 25 of file pic.c.

```
26 {
27     outb (PIC_MASTER_BASE, PIC_MASTER_ICW1);
28     outb (PIC_SLAVE_BASE, PIC_SLAVE_ICW1);
29
30     outb (PIC_MASTER_BASE + 1, PIC_MASTER_ICW2);
31     outb (PIC_SLAVE_BASE + 1, PIC_SLAVE_ICW2);
32
33     outb (PIC_MASTER_BASE + 1, PIC_MASTER_ICW3);
34     outb (PIC_SLAVE_BASE + 1, PIC_SLAVE_ICW3);
35
36     outb (PIC_MASTER_BASE + 1, PIC_MASTER_ICW4);
37     outb (PIC_SLAVE_BASE + 1, PIC_SLAVE_ICW4);
38
39     /* Mask everything */
40     outb (PIC_MASTER_BASE + 1, 0xfb);
41     outb (PIC_SLAVE_BASE + 1, 0xff);
42
43     return (POK_ERRNO_OK);
44 }
```

4.61.2.3 int pok_pic_mask (uint8_t irq)

Definition at line 46 of file pic.c.

```
47 {
48     uint8_t mask;
49
50     if (irq > 15)
51     {
52         return (POK_ERRNO_EINVAL);
53     }
54
55     if (irq < 8)
56     {
57         mask = inb (PIC_MASTER_BASE + 1);
58         outb (PIC_MASTER_BASE + 1, mask | (1 << irq));
59     }
60     else
61     {
62         mask = inb (PIC_SLAVE_BASE + 1);
63         outb (PIC_SLAVE_BASE + 1, mask | (1 << (irq - 8)));
64     }
65
66     return (POK_ERRNO_OK);
67 }
```

4.61.2.4 int pok_pic_unmask (uint8_t irq)

Definition at line 69 of file pic.c.

```

70 {
71     uint8_t mask;
72
73     if (irq > 15)
74         return (POK_ERRNO_EINVAL);
75
76     if (irq < 8)
77     {
78         mask = inb(PIC_MASTER_BASE + 1);
79         outb(PIC_MASTER_BASE + 1, mask & ~(1 << irq));
80     }
81     else
82     {
83         mask = inb(PIC_SLAVE_BASE + 1);
84         outb(PIC_SLAVE_BASE + 1, mask & ~(1 << (irq - 8)));
85     }
86
87     return (POK_ERRNO_OK);
88 }

```

4.62 /home/hipse/git-repos/pok/trunk/kernel/arch/x86/x86-qemu/pit.c File Reference

```

#include <errno.h>
#include <bsp.h>
#include <core/time.h>
#include <core/sched.h>
#include <arch/x86/ioports.h>
#include <arch/x86/interrupt.h>
#include "pic.h"
#include "pit.h"

```

Macros

- `#define OSCILLATOR_RATE 1193180` /** The oscillation rate of x86 clock */
- `#define PIT_BASE 0x40`
- `#define PIT_IRQ 0`

Functions

- `INTERRUPT_HANDLER` (pit_interrupt)
- `pok_ret_t pok_x86_qemu_timer_init` ()

4.62.1 Macro Definition Documentation

4.62.1.1 `#define OSCILLATOR_RATE 1193180` /** The oscillation rate of x86 clock */

Definition at line 29 of file pit.c.

4.62.1.2 `#define PIT_BASE 0x40`

Definition at line 30 of file pit.c.

4.62.1.3 `#define PIT_IRQ 0`

Definition at line 31 of file pit.c.

4.62.2 Function Documentation

4.62.2.1 INTERRUPT_HANDLER (pit_interrupt)

Definition at line 33 of file pit.c.

```

34 {
35     (void) frame;
36     pok_pic_eoi (PIT_IRQ);
37     CLOCK_HANDLER
38 }
```

4.62.2.2 pok_ret_t pok_x86_qemu_timer_init ()

Definition at line 40 of file pit.c.

```

41 {
42     uint16_t pit_freq;
43
44     pit_freq = POK_TIMER_FREQUENCY;
45
46     outb (PIT_BASE + 3, 0x34); /* Channel0, rate generator, Set LSB then MSB */
47     outb (PIT_BASE, (OSCILLATOR_RATE / pit_freq) & 0xff);
48     outb (PIT_BASE, ((OSCILLATOR_RATE / pit_freq) >> 8) & 0xff);
49
50     pok_bsp_irq_register (PIT_IRQ, pit_interrupt);
51
52     return (POK_ERRNO_OK);
53 }
```

4.63 /home/hipse/git-repos/pok/trunk/kernel/arch/x86/x86-qemu/pit.h File Reference

Functions

- [pok_ret_t pok_x86_qemu_timer_init \(\)](#)

4.63.1 Function Documentation

4.63.1.1 pok_ret_t pok_x86_qemu_timer_init ()

Definition at line 40 of file pit.c.

```

41 {
42     uint16_t pit_freq;
43
44     pit_freq = POK_TIMER_FREQUENCY;
45
46     outb (PIT_BASE + 3, 0x34); /* Channel0, rate generator, Set LSB then MSB */
47     outb (PIT_BASE, (OSCILLATOR_RATE / pit_freq) & 0xff);
48     outb (PIT_BASE, ((OSCILLATOR_RATE / pit_freq) >> 8) & 0xff);
49
50     pok_bsp_irq_register (PIT_IRQ, pit_interrupt);
51
52     return (POK_ERRNO_OK);
53 }
```

4.64 /home/hipse/git-repos/pok/trunk/kernel/arch/x86/x86-qemu/pm.c File Reference

```

#include <errno.h>
#include <arch/x86/multiboot.h>
#include <types.h>
#include "pm.h"
```

Macros

- #define `ALIGN_UP`(boundary, val) (val + (boundary - 1)) & (~(boundary - 1))

Functions

- int `pok_pm_init` ()
- `uint32_t` `pok_pm_sbrk` (`uint32_t` increment)

Variables

- void * `__pok_begin`
- void * `__pok_end`
- `uint32_t` `pok_multiboot_magic`
- `uint32_t` `pok_multiboot_info`
- `uint32_t` `pok_x86_pm_heap_start`
- `uint32_t` `pok_x86_pm_brk`
- `uint32_t` `pok_x86_pm_heap_end`

4.64.1 Detailed Description

Author

Julian Pidancet
Julien Delange

Date

2008-2009

Definition in file `pm.c`.

4.64.2 Macro Definition Documentation

4.64.2.1 #define `ALIGN_UP`(*boundary*, *val*)(val + (boundary - 1)) & (~(boundary - 1))

Definition at line 30 of file `pm.c`.

4.64.3 Function Documentation

4.64.3.1 int `pok_pm_init` ()

Definition at line 44 of file `pm.c`.

```

45 {
46     pok_multiboot_info_t* mbi;
47     uint32_t free_mem;
48
49     mbi = (pok_multiboot_info_t*) pok_multiboot_info;
50
51 #ifdef POK_NEEDS_DMA
52     free_mem = MEM_16MB;
53 #else
54     free_mem = ALIGN_UP (4096, (uint32_t)(&__pok_end));
55 #endif
56
57     pok_x86_pm_heap_start = pok_x86_pm_brk = free_mem;
58

```

```
59 pok_x86_pm_heap_end = (uint32_t)(mbi->mem_upper * 1024);
60
61 return (POK_ERRNO_OK);
62 }
```

4.64.3.2 uint32_t pok_pm_sbrk (uint32_t increment)

Allocation function, very basic, just allocate new memory space each time

Definition at line 68 of file pm.c.

```
69 {
70     uint32_t addr;
71
72     addr = pok_x86_pm_brk;
73
74     pok_x86_pm_brk += increment;
75
76     return (addr);
77 }
```

4.64.4 Variable Documentation

4.64.4.1 void* __pok_begin

4.64.4.2 void* __pok_end

4.64.4.3 uint32_t pok_multiboot_info

4.64.4.4 uint32_t pok_multiboot_magic

4.64.4.5 uint32_t pok_x86_pm_brk

Definition at line 40 of file pm.c.

4.64.4.6 uint32_t pok_x86_pm_heap_end

Definition at line 41 of file pm.c.

4.64.4.7 uint32_t pok_x86_pm_heap_start

Definition at line 39 of file pm.c.

4.65 /home/hipse/git-repos/pok/trunk/kernel/arch/x86/x86-qemu/pm.h File Reference

Macros

- #define [MEM_16MB](#) 0x1000000

Functions

- int [pok_pm_init](#) ()
- [uint32_t pok_pm_sbrk](#) (uint32_t increment)

4.65.1 Macro Definition Documentation

4.65.1.1 #define MEM_16MB 0x1000000

Definition at line 21 of file pm.h.

4.65.2 Function Documentation

4.65.2.1 int pok_pm_init ()

Definition at line 44 of file pm.c.

```

45 {
46     pok_multiboot_info_t* mbi;
47     uint32_t             free_mem;
48
49     mbi = (pok_multiboot_info_t*) pok_multiboot_info;
50
51     #ifndef POK_NEEDS_DMA
52         free_mem = MEM_16MB;
53     #else
54         free_mem = ALIGN_UP (4096, (uint32_t) (&__pok_end));
55     #endif
56
57     pok_x86_pm_heap_start = pok_x86_pm_brk = free_mem;
58
59     pok_x86_pm_heap_end = (uint32_t) (mbi->mem_upper * 1024);
60
61     return (POK_ERRNO_OK);
62 }
```

4.65.2.2 uint32_t pok_pm_sbrk (uint32_t increment)

Allocation function, very basic, just allocate new memory space each time

Definition at line 68 of file pm.c.

```

69 {
70     uint32_t addr;
71
72     addr = pok_x86_pm_brk;
73
74     pok_x86_pm_brk += increment;
75
76     return (addr);
77 }
```

4.66 /home/hipse/git-repos/pok/trunk/kernel/core/boot.c File Reference

Boot function to start the kernel.

```

#include <arch.h>
#include <bsp.h>
#include <core/time.h>
#include <core/thread.h>
#include <core/sched.h>
#include <core/partition.h>
#include <middleware/port.h>
#include <middleware/queue.h>
#include <core/boot.h>
#include <core/instrumentation.h>
```

Functions

- void [pok_boot](#) ()
Boot function that launch everything.

4.66.1 Detailed Description

Boot function to start the kernel.

Author

Julien Delange

Date

2008-2009

Definition in file [boot.c](#).

4.66.2 Function Documentation

4.66.2.1 void [pok_boot](#) ()

Boot function that launch everything.

This function load every service according to system requirements (the POK_NEEDS_* macro). If we don't use partitioning service, we execute a main function. In that case, POK is acting like an executive, not a real kernel

Definition at line 37 of file [boot.c](#).

```

38 {
39     pok_arch_init ();
40     pok_bsp_init ();
41
42     #if defined (POK_NEEDS_TIME) || defined (POK_NEEDS_SCHED) || defined (POK_NEEDS_THREADS)
43         pok_time_init ();
44     #endif
45
46     #ifdef POK_NEEDS_PARTITIONS
47         pok_partition_init ();
48     #endif
49
50     #ifdef POK_NEEDS_THREADS
51         pok_thread_init ();
52     #endif
53
54     #if defined (POK_NEEDS_SCHED) || defined (POK_NEEDS_THREADS)
55         pok_sched_init ();
56     #endif
57
58     #if (defined POK_NEEDS_LOCKOBJ) || defined (POK_NEEDS_PORTS_QUEUEING) || defined (POK_NEEDS_PORTS_SAMPLING)
59         pok_lockobj_init ();
60     #endif
61     #if defined (POK_NEEDS_PORTS_QUEUEING) || defined (POK_NEEDS_PORTS_SAMPLING)
62         pok_port_init ();
63         pok_queue_init ();
64     #endif
65
66     #if defined (POK_NEEDS_DEBUG) || defined (POK_NEEDS_CONSOLE)
67         pok_cons_write ("POK kernel initialized\n", 23);
68     #endif
69
70     #ifdef POK_NEEDS_INSTRUMENTATION
71         uint32_t tmp;
72         printf ("[INSTRUMENTATION][CHEDDAR] <event_table>\n");
73         printf ("[INSTRUMENTATION][CHEDDAR] <processor>\n");
74         printf ("[INSTRUMENTATION][CHEDDAR] <name>pok_kernel</name>\n");
75
76         for (tmp = 0 ; tmp < POK_CONFIG_NB_THREADS ; tmp++)
77         {
78             printf ("[INSTRUMENTATION][CHEDDAR] <task_activation> 0 task %d</task_activation>\n", tmp);

```

```
79     }
80 #endif
81
82     pok_arch_preempt_enable();
83
84 #ifndef POK_NEEDS_PARTITIONS
85
86     main ();
87 #endif
88 }
```

4.67 /home/hipse/git-repos/pok/trunk/kernel/core/error.c File Reference

4.68 /home/hipse/git-repos/pok/trunk/kernel/core/instrumentation.c File Reference

4.69 /home/hipse/git-repos/pok/trunk/kernel/core/kernel.c File Reference

4.70 /home/hipse/git-repos/pok/trunk/kernel/core/loader.c File Reference

4.70.1 Detailed Description

Author

Julian Pidancet
Julien Delange

Date

2008-2009

Contains all needed stuff to load partitions (elf files). This needs the partitioning service (POK_NEEDS_PARTITIONS must be defined) to work.

Definition in file [loader.c](#).

4.71 /home/hipse/git-repos/pok/trunk/kernel/core/lockobj.c File Reference

Provides fonctionnalités for locking functions (mutexes, semaphores and so on)

4.71.1 Detailed Description

Provides fonctionnalités for locking functions (mutexes, semaphores and so on)

Author

Julien Delange

This file contains the implementation code for mutexes, conditions and semaphores. This is implemented in the same file since the fonctionnalités does not differ so much.

Definition in file [lockobj.c](#).

4.72 /home/hipse/git-repos/pok/trunk/kernel/core/partition.c File Reference

This file provides functions for partitioning services.

4.72.1 Detailed Description

This file provides functions for partitioning services.

Author

Julien Delange

The definition of useful structures can be found in [partition.h](#) header file. To enable partitioning services, you must set the POK_NEEDS_PARTITIONS macro.

Definition in file [partition.c](#).

4.73 /home/hipse/git-repos/pok/trunk/kernel/core/sched.c File Reference

4.74 /home/hipse/git-repos/pok/trunk/kernel/core/syscall.c File Reference

```
#include <bsp.h>
#include <types.h>
#include <libc.h>
#include <arch/x86/ioports.h>
#include <arch/x86/pci.h>
#include <errno.h>
#include <core/debug.h>
#include <core/syscall.h>
#include <core/partition.h>
#include <core/thread.h>
#include <core/lockobj.h>
#include <core/time.h>
#include <core/error.h>
#include <middleware/port.h>
```

Functions

- [pok_ret_t pok_core_syscall](#) (const [pok_syscall_id_t](#) syscall_id, const [pok_syscall_args_t](#) *args, const [pok_syscall_info_t](#) *infos)

4.74.1 Function Documentation

4.74.1.1 [pok_ret_t pok_core_syscall](#) (const [pok_syscall_id_t](#) *syscall_id*, const [pok_syscall_args_t](#) * *args*, const [pok_syscall_info_t](#) * *infos*)

Function that performs the syscall. It is called by the architecture interruption handler.

Parameters

<i>syscall_id</i>	This param correspond to the syscal which should be performed. The list of available syscalls is available in the definition of the pok_syscall_id_t type
<i>args</i>	Arguments of the syscall. It corresponds to data useful to perform the syscall.
<i>infos</i>	Informations about the syscall: which partition/thread initiates the syscall, etc ...

Returns

Returns an error code, which is defined in [include/errno.h](#)

Here is the default syscall handler. In this case, the syscall ID was not properly identified and thus, we should return an error. If error management is activated, we raise an error in kernel of partitions, calling the error handler.

Definition at line 40 of file syscall.c.

```

43 {
44     switch (syscall_id)
45     {
46 #if defined (POK_NEEDS_CONSOLE) || defined (POK_NEEDS_DEBUG)
47         case POK_SYSCALL_CONSWRITE:
48             POK_CHECK_PTR_OR_RETURN (infos->partition, args->
49             arg1 + infos->base_addr)
50             if (pok_cons_write ((const char*)args->arg1 + infos->base_addr, args->arg2))
51                 {
52                     return POK_ERRNO_OK;
53                 }
54             else
55                 {
56                     return POK_ERRNO_EINVAL;
57                 }
58             break;
59 #endif
60 #ifndef POK_NEEDS_PORTS_VIRTUAL
61         case POK_SYSCALL_MIDDLEWARE_VIRTUAL_CREATE:
62             POK_CHECK_PTR_OR_RETURN (infos->partition, args->
63             arg1 + infos->base_addr)
64             return pok_port_virtual_id ( (char*) (args->arg1 + infos->base_addr), (
65             pok_port_id_t*) (args->arg2 + infos->base_addr));
66             break;
67         case POK_SYSCALL_MIDDLEWARE_VIRTUAL_NB_DESTINATIONS:
68             POK_CHECK_PTR_OR_RETURN (infos->partition, args->arg2 + infos->base_addr)
69             return pok_port_virtual_nb_destinations ( (pok_port_id_t) (args->arg1), (
70             uint32_t*) (args->arg2 + infos->base_addr));
71             break;
72         case POK_SYSCALL_MIDDLEWARE_VIRTUAL_DESTINATION:
73             POK_CHECK_PTR_OR_RETURN (infos->partition, ((void*) args->arg3)+infos->
74             base_addr)
75             return pok_port_virtual_destination ( (pok_port_id_t) (args->arg1), (
76             uint32_t) (args->arg2), (uint32_t*) (args->arg3 + infos->base_addr));
77             break;
78         case POK_SYSCALL_MIDDLEWARE_VIRTUAL_GET_GLOBAL:
79             POK_CHECK_PTR_OR_RETURN (infos->partition, (void*) (args->arg2 + infos->
80             base_addr))
81             return pok_port_virtual_get_global ((pok_port_id_t) (args->arg1), (
82             pok_port_id_t*) (args->arg2 + infos->base_addr));
83             break;
84 #endif
85 #if defined POK_NEEDS_GETTICK
86         case POK_SYSCALL_GETTICK:
87             POK_CHECK_PTR_OR_RETURN (infos->partition, args->
88             arg1 + infos->base_addr)
89             return pok_gettick_by_pointer ((uint64_t*) (args->arg1 + infos->base_addr));
90             break;
91 #endif
92         case POK_SYSCALL_THREAD_CREATE:
93             return pok_partition_thread_create ((uint32_t*) (args->
94             arg1 + infos->base_addr),
95             (pok_thread_attr_t*) (args->arg2 + infos->
96             base_addr),
97             (uint8_t) (args->arg3 + infos->
98             partition));
99             break;
100 #ifndef POK_NEEDS_THREAD_SLEEP
101         case POK_SYSCALL_THREAD_SLEEP:
102             return pok_thread_sleep (args->arg1);
103             break;
104 #endif
105 #ifndef POK_NEEDS_THREAD_SLEEP_UNTIL
106         case POK_SYSCALL_THREAD_SLEEP_UNTIL:
107             return pok_thread_sleep_until (args->arg1);
108             break;
109 #endif
110     }
111 }

```

```

107 #endif
108
109     case POK_SYSCALL_THREAD_PERIOD:
110         return pok_sched_end_period ();
111         break;
112
113 #if defined (POK_NEEDS_THREAD_SUSPEND) || defined (POK_NEEDS_ERROR_HANDLING)
114     case POK_SYSCALL_THREAD_SUSPEND:
115         return pok_thread_suspend ();
116         break;
117 #endif
118
119 #ifndef POK_NEEDS_THREAD_ID
120     case POK_SYSCALL_THREAD_ID:
121         return pok_sched_get_current ((uint32_t*) (args->arg1 + infos->
122         base_addr));
123         break;
124 #endif
125     case POK_SYSCALL_THREAD_STATUS:
126         return pok_thread_get_status (args->arg1, (pok_thread_attr_t*) (args->
127         arg2 + infos->base_addr));
128         break;
129     case POK_SYSCALL_THREAD_DELAYED_START:
130         return pok_thread_delayed_start (args->arg1, args->arg2);
131         break;
132     case POK_SYSCALL_THREAD_SET_PRIORITY:
133         return pok_thread_set_priority (args->arg1, args->arg2);
134         break;
135     case POK_SYSCALL_THREAD_RESUME:
136         return pok_thread_resume (args->arg1);
137         break;
138     case POK_SYSCALL_THREAD_SUSPEND_TARGET:
139         return pok_thread_suspend_target (args->arg1);
140         break;
141
142 #ifndef POK_NEEDS_ERROR_HANDLING
143     case POK_SYSCALL_THREAD_RESTART:
144         return pok_partition_restart_thread (args->arg1);
145         break;
146
147     case POK_SYSCALL_THREAD_STOP:
148         return pok_partition_stop_thread (args->arg1);
149         break;
150
151     case POK_SYSCALL_THREAD_STOPSELF:
152         pok_sched_stop_self ();
153         return POK_ERRNO_OK;
154         break;
155
156 #endif
157 #ifndef POK_NEEDS_PARTITIONS
158     case POK_SYSCALL_PARTITION_SET_MODE:
159         return pok_partition_set_mode_current ((pok_partition_mode_t)args->arg1);
160         break;
161     case POK_SYSCALL_PARTITION_GET_ID:
162         return pok_current_partition_get_id ((uint8_t*) (args->arg1 + infos->
163         base_addr));
164         break;
165     case POK_SYSCALL_PARTITION_GET_PERIOD:
166         return pok_current_partition_get_period ((uint64_t*) (args->arg1 + infos->
167         base_addr));
168         break;
169     case POK_SYSCALL_PARTITION_GET_DURATION:
170         return pok_current_partition_get_duration ((uint64_t*) (args->
171         arg1 + infos->base_addr));
172         break;
173     case POK_SYSCALL_PARTITION_GET_LOCK_LEVEL:
174         return pok_current_partition_get_lock_level ((uint32_t*) (args->
175         arg1 + infos->base_addr));
176         break;
177     case POK_SYSCALL_PARTITION_GET_OPERATING_MODE:
178         return pok_current_partition_get_operating_mode ((pok_partition_mode_t*) (args->
179         arg1 + infos->base_addr));
180         break;
181     case POK_SYSCALL_PARTITION_GET_START_CONDITION:
182         return pok_current_partition_get_start_condition ((pok_start_condition_t*) (args->
183         arg1 + infos->base_addr));
184         break;
185 #endif
186 #ifndef POK_NEEDS_ERROR_HANDLING
187     case POK_SYSCALL_ERROR_HANDLER_CREATE:
188         return pok_error_thread_create (args->arg1, (void*) (args->arg2));
189
190 #endif

```

```

193         break;
194
195     case POK_SYSCALL_ERROR_RAISE_APPLICATION_ERROR:
196         POK_CHECK_PTR_OR_RETURN(infos->partition, args->
197     arg1 + infos->base_addr)
198         pok_error_raise_application_error ((char*) (args->arg1 + infos->base_addr), args->arg2);
199         return POK_ERRNO_OK;
200         break;
201
202     case POK_SYSCALL_ERROR_GET:
203         return pok_error_get ((pok_error_status_t*) (args->arg1 + infos->base_addr));
204         break;
205 #endif
206
207     /* Middleware syscalls */
208 #ifdef POK_NEEDS_PORTS_SAMPLING
209     case POK_SYSCALL_MIDDLEWARE_SAMPLING_CREATE:
210         POK_CHECK_PTR_OR_RETURN(infos->partition, args->arg1 + infos->base_addr)
211         return pok_port_sampling_create ((char*) (args->arg1 + infos->base_addr),
212     (pok_port_size_t) args->arg2,
213     (pok_port_direction_t) args->arg3,
214     (uint64_t) args->arg4,
215     (pok_port_id_t*) (args->arg5 + infos->base_addr));
216         break;
217
218     case POK_SYSCALL_MIDDLEWARE_SAMPLING_WRITE:
219         POK_CHECK_PTR_OR_RETURN(infos->partition, args->arg2 + infos->base_addr)
220
221         return pok_port_sampling_write ((const pok_port_id_t) args->arg1,
222     (const void*) ((void*) args->arg2 + infos->base_addr),
223     (const uint8_t) args->arg3);
224         break;
225
226     case POK_SYSCALL_MIDDLEWARE_SAMPLING_READ:
227         POK_CHECK_PTR_OR_RETURN(infos->partition, args->arg2 + infos->base_addr)
228         POK_CHECK_PTR_OR_RETURN(infos->partition, args->arg4 + infos->base_addr)
229         return pok_port_sampling_read ((const pok_port_id_t) args->arg1,
230     (void*) args->arg2 + infos->base_addr,
231     (pok_port_size_t) (args->arg3 + infos->base_addr),
232     (bool_t*) (args->arg4 + infos->base_addr));
233         break;
234
235     case POK_SYSCALL_MIDDLEWARE_SAMPLING_ID:
236         POK_CHECK_PTR_OR_RETURN(infos->partition, args->arg1 + infos->base_addr)
237         POK_CHECK_PTR_OR_RETURN(infos->partition, args->arg2 + infos->base_addr)
238         return pok_port_sampling_id ((char*) (args->arg1 + infos->base_addr),
239     (pok_port_id_t*) (args->arg2 + infos->base_addr));
240         break;
241
242 #ifndef POK_GENERATED_CODE
243     case POK_SYSCALL_MIDDLEWARE_SAMPLING_STATUS:
244         POK_CHECK_PTR_OR_RETURN(infos->partition, args->
245     arg2+infos->base_addr)
246         return pok_port_sampling_status ((const pok_port_id_t) args->arg1,
247     (pok_port_sampling_status_t*) (args->arg2 + infos->base_addr));
248         break;
249 #endif /* POK_GENERATED_CODE */
250 #endif /* POK_NEEDS_PORTS_SAMPLING */
251
252 #ifdef POK_NEEDS_PORTS_QUEUEING
253     case POK_SYSCALL_MIDDLEWARE_QUEUEING_CREATE:
254         POK_CHECK_PTR_OR_RETURN(infos->partition, args->
255     arg1 + infos->base_addr)
256         POK_CHECK_PTR_OR_RETURN(infos->partition, args->arg5 + infos->base_addr)
257         return pok_port_queueing_create ((char*) (args->arg1 + infos->base_addr),
258     (pok_port_size_t) args->arg2,
259     (pok_port_direction_t) args->arg3,
260     (pok_port_queueing_discipline_t)
261     args->arg4,
262     (pok_port_id_t*) (args->arg5 + infos
263     ->base_addr));
264         break;
265
266     case POK_SYSCALL_MIDDLEWARE_QUEUEING_SEND:
267         POK_CHECK_PTR_OR_RETURN(infos->partition, args->arg2 + infos->base_addr)
268         return pok_port_queueing_send ((const pok_port_id_t) args->arg1,
269     (const void*) (args->arg2 + infos->
270     base_addr),
271     (const uint8_t) (args->arg3),
272     (const uint64_t) args->arg4);
273         break;
274
275     case POK_SYSCALL_MIDDLEWARE_QUEUEING_RECEIVE:

```

```

272     POK_CHECK_PTR_OR_RETURN(infos->partition, args->arg4 + infos->base_addr)
273     POK_CHECK_PTR_OR_RETURN(infos->partition, args->arg5 + infos->base_addr)
274     return pok_port_queueing_receive ((const pok_port_id_t)  args->arg1,
275                                     (uint64_t)             args->arg2,
276                                     (pok_port_size_t)       args->arg3,
277                                     (void*)                 ((void*)args->arg4 + infos->base_addr),
278                                     (pok_port_size_t*)      (args->arg5 + infos->
base_addr));
279     break;
280
281     case POK_SYSCALL_MIDDLEWARE_QUEUEING_ID:
282     POK_CHECK_PTR_OR_RETURN(infos->partition, args->arg1 + infos->base_addr)
283     POK_CHECK_PTR_OR_RETURN(infos->partition, args->arg2 + infos->base_addr)
284     return pok_port_queueing_id ((char*)             (args->arg1 + infos->base_addr),
285                                 (pok_port_id_t*)    (args->arg2 + infos->base_addr));
286     break;
287
288 #ifndef POK_GENERATED_CODE
289     case POK_SYSCALL_MIDDLEWARE_QUEUEING_STATUS:
290     POK_CHECK_PTR_OR_RETURN(infos->partition, args->
arg2 + infos->base_addr)
291     return pok_port_queueing_status ((const pok_port_id_t)  args->arg1,
292                                     (pok_port_queueing_status_t*) (args->arg2 + infos->
base_addr));
293     break;
294 #endif
295 #endif /* POK_NEEDS_PORTS_QUEUEING */
296
297 #ifdef POK_NEEDS_LOCKOBJECTS
298     case POK_SYSCALL_LOCKOBJ_CREATE:
299     POK_CHECK_PTR_OR_RETURN(infos->partition, args->
arg2+infos->base_addr)
300     POK_CHECK_PTR_OR_RETURN(infos->partition, args->arg1+infos->base_addr)
301     return pok_lockobj_partition_create ((
pok_lockobj_id_t*) (args->arg1 + infos->base_addr),
302                                         (pok_lockobj_attr_t*) (args->arg2 +
infos->base_addr));
303     break;
304
305     case POK_SYSCALL_LOCKOBJ_OPERATION:
306     if (args->arg2 == NULL)
307     {
308         return pok_lockobj_partition_wrapper ((const
uint8_t) args->arg1, NULL);
309     }
310     else
311     {
312         POK_CHECK_PTR_OR_RETURN(infos->partition, args->
arg2 + infos->base_addr)
313         return pok_lockobj_partition_wrapper ((const
uint8_t) args->arg1,
314                                             (pok_lockobj_lockattr_t*) (args->
arg2 + infos->base_addr));
315     }
316     break;
317 #endif /* POK_NEEDS_LOCKOBJECTS */
318
319 #ifdef POK_NEEDS_IO
320     case POK_SYSCALL_INB:
321     if ((args->arg1 < pok_partitions[infos->partition].io_min) ||
322         (args->arg1 > pok_partitions[infos->partition].io_max))
323     {
324         return -POK_ERRNO_EPERM;
325     }
326     else
327     {
328         return inb((unsigned short) args->arg1);
329     }
330     break;
331
332     case POK_SYSCALL_OUTB:
333     if ((args->arg1 < pok_partitions[infos->partition].io_min) ||
334         (args->arg1 > pok_partitions[infos->partition].io_max))
335     {
336         return -POK_ERRNO_EPERM;
337     }
338     else
339     {
340         outb((unsigned short) args->arg1, (unsigned char) args->arg2);
341         return POK_ERRNO_OK;
342     }
343     break;
344 #endif /* POK_NEEDS_IO */
345
346 #ifdef POK_NEEDS_PCI
347     case POK_SYSCALL_PCI_REGISTER:
348     POK_CHECK_PTR_OR_RETURN(infos->partition, args->

```

```

    arg1 + infos->base_addr)
349     return pci_register((void*)args->arg1 + infos->base_addr, infos->partition);
350     break;
351 #endif /* POK_NEEDS_PCI */
352
353
360     default:
361 #ifdef POK_NEEDS_ERROR_HANDLING
362     pok_error_declare (POK_ERROR_KIND_ILLEGAL_REQUEST);
363     pok_sched_activate_error_thread ();
364 #else
365     #ifdef POK_NEEDS_DEBUG
366     printf ("Tried to use syscall %d\n", syscall_id);
367     #endif
368     POK_FATAL ("Unknown syscall");
369 #endif
370     break;
371 }
372
373 return POK_ERRNO_EINVAL;
374 }

```

4.75 /home/hipse/git-repos/pok/trunk/kernel/core/time.c File Reference

4.75.1 Detailed Description

Author

François Goudal
Julien Delange

Date

2008-2009

Definition in file [time.c](#).

4.76 /home/hipse/git-repos/pok/trunk/kernel/include/arch.h File Reference

Generic interface to handle architectures.

```

#include <types.h>
#include <errno.h>

```

Functions

- [pok_ret_t pok_arch_init \(\)](#)
- [pok_ret_t pok_arch_preempt_disable \(\)](#)
- [pok_ret_t pok_arch_preempt_enable \(\)](#)
- [pok_ret_t pok_arch_idle \(\)](#)
- [pok_ret_t pok_arch_event_register \(uint8_t vector, void\(*handler\)\(void\)\)](#)
- [uint32_t pok_context_create \(uint32_t thread_id, uint32_t stack_size, uint32_t entry\)](#)
- [void pok_context_switch \(uint32_t *old_sp, uint32_t new_sp\)](#)
- [void pok_context_reset \(uint32_t stack_size, uint32_t stack_addr\)](#)
- [pok_ret_t pok_create_space \(uint8_t partition_id, uint32_t addr, uint32_t size\)](#)
- [uint32_t pok_space_base_vaddr \(uint32_t addr\)](#)
- [void pok_dispatch_space \(uint8_t partition_id, uint32_t user_pc, uint32_t user_sp, uint32_t kernel_sp, uint32_t arg1, uint32_t arg2\)](#)
- [uint32_t pok_space_context_create \(uint8_t partition_id, uint32_t entry_rel, uint32_t stack_rel, uint32_t arg1, uint32_t arg2\)](#)

- void [pok_space_context_restart](#) (uint32_t sp, uint32_t entry, uint32_t user_stack)
- [pok_ret_t pok_space_switch](#) (uint8_t old_partition_id, uint8_t new_partition_id)
- [uint32_t pok_thread_stack_addr](#) (const uint8_t partition_id, const uint32_t local_thread_id)

4.76.1 Detailed Description

Generic interface to handle architectures.

Author

Julian Pidancet
Julien Delange

Date

2008-2009

Definition in file [arch.h](#).

4.76.2 Function Documentation

4.76.2.1 [pok_ret_t pok_arch_event_register](#) (uint8_t vector, void(*)*(void) handler*)

Register an event (for example, an interruption)

Attach the handler to the given trap number (vector).

See Also

[pok_sparc_isr](#)

Definition at line 83 of file arch.c.

```
84 {  
85     (void) vector;  
86     (void) handler;  
87  
88     return (POK_ERRNO_OK);  
89 }
```

4.76.2.2 [pok_ret_t pok_arch_idle](#) ()

Function that do nothing. Useful for the idle task for example.

Definition at line 74 of file arch.c.

```
75 {  
76     while (1)  
77     {  
78     }  
79  
80     return (POK_ERRNO_OK);  
81 }
```

4.76.2.3 pok_ret_t pok_arch_init ()

Function that initializes architecture concerns.

Initialize all SPARC managers (traps, syscalls, space).

Definition at line 43 of file arch.c.

```

44 {
45     set_msr (MSR_IP);
46     #if POK_NEEDS_PARTITIONS
47     pok_arch_space_init();
48     #endif
49
50     return (POK_ERRNO_OK);
51 }
```

4.76.2.4 pok_ret_t pok_arch_preempt_disable ()

Disable interruptions

Definition at line 53 of file arch.c.

```

54 {
55     unsigned int msr;
56
57     msr = get_msr();
58     msr &= ~MSR_EE;
59     set_msr(msr);
60     return (POK_ERRNO_OK);
61 }
```

4.76.2.5 pok_ret_t pok_arch_preempt_enable ()

Enable interruptions

Definition at line 63 of file arch.c.

```

64 {
65     unsigned int msr;
66
67     msr = get_msr();
68     msr |= MSR_EE;
69     set_msr(msr);
70
71     return (POK_ERRNO_OK);
72 }
```

4.76.2.6 uint32_t pok_context_create (uint32_t thread_id, uint32_t stack_size, uint32_t entry)

4.76.2.7 void pok_context_reset (uint32_t stack_size, uint32_t stack_addr)

4.76.2.8 void pok_context_switch (uint32_t * old_sp, uint32_t new_sp)

4.76.2.9 pok_ret_t pok_create_space (uint8_t partition_id, uint32_t addr, uint32_t size)

Set ptd and pte for the given partition.

Definition at line 42 of file space.c.

```

45 {
46     #ifdef POK_NEEDS_DEBUG
47     printf ("pok_create_space: %d: %x %x\n", partition_id, addr, size);
48     #endif
49     spaces[partition_id].phys_base = addr;
```

```

50 spaces[partition_id].size = size;
51
52 return (POK_ERRNO_OK);
53 }

```

4.76.2.10 void pok_dispatch_space (uint8_t partition_id, uint32_t user_pc, uint32_t user_sp, uint32_t kernel_sp, uint32_t arg1, uint32_t arg2)

Definition at line 114 of file space.c.

```

120 {
121     interrupt_frame   ctx;
122     uint32_t          code_sel;
123     uint32_t          data_sel;
124     uint32_t          sp;
125
126     code_sel = GDT_BUILD_SELECTOR (GDT_PARTITION_CODE_SEGMENT (
partition_id), 0, 3);
127     data_sel = GDT_BUILD_SELECTOR (GDT_PARTITION_DATA_SEGMENT (
partition_id), 0, 3);
128
129     sp = (uint32_t) &ctx;
130
131     memset (&ctx, 0, sizeof (interrupt_frame));
132
133     pok_arch_preempt_disable ();
134
135     ctx.es = ctx.ds = ctx.ss = data_sel;
136
137     ctx.__esp = (uint32_t) (&ctx.error); /* for pusha */
138     ctx.eip = user_pc;
139     ctx.eax = arg1;
140     ctx.ebx = arg2;
141     ctx.cs = code_sel;
142     ctx.eflags = 1 << 9;
143     ctx.esp = user_sp;
144
145     tss_set_esp0 (kernel_sp);
146
147     asm ("mov %0, %%esp          \n"
148         "pop %%es                \n"
149         "pop %%ds                \n"
150         "popa                    \n"
151         "addl $4, %%esp          \n"
152         "iret                    \n"
153         :
154         : "m" (sp)
155         );
156 }

```

4.76.2.11 uint32_t pok_space_base_vaddr (uint32_t addr)

Returns

partition virtual base adress.

See Also

[SPARC_PARTITION_BASE_VADDR](#)

Definition at line 64 of file space.c.

```

65 {
66     (void) addr;
67     return (0);
68 }

```

4.76.2.12 `uint32_t pok_space_context_create (uint8_t id, uint32_t entry_rel, uint32_t stack_rel, uint32_t arg1, uint32_t arg2)`

Create a new context in the given space

Initilize thread stack.

Definition at line 72 of file space.c.

```

77 {
78     context_t* ctx;
79     volatile_context_t* vctx;
80     char*      stack_addr;
81     (void) partition_id;
82
83     stack_addr = pok_bsp_mem_alloc (KERNEL_STACK_SIZE);
84
85     vctx = (volatile_context_t *)
86         (stack_addr + KERNEL_STACK_SIZE - sizeof (
87             volatile_context_t));
88     ctx = (context_t *)((char *)vctx - sizeof (context_t) + 8);
89     memset (ctx, 0, sizeof (*ctx));
90     memset (vctx, 0, sizeof (*vctx));
91
92     vctx->r3     = arg1;
93     vctx->r4     = arg2;
94     vctx->sp    = stack_rel - 12;
95     vctx->srr0  = entry_rel;
96     vctx->srr1  = MSR_EE | MSR_IP | MSR_DR | MSR_IR |
97                 MSR_PR;
98     ctx->lr     = (uint32_t) pok_arch_rfi;
99     ctx->sp    = (uint32_t) &vctx->sp;
100
101 #ifdef POK_NEEDS_DEBUG
102     printf ("space_context_create %d: entry=%x stack=%x arg1=%x arg2=%x ksp=%x\n",
103         partition_id, entry_rel, stack_rel, arg1, arg2, &vctx->sp);
104 #endif
105
106     return (uint32_t)ctx;
107 }

```

4.76.2.13 `void pok_space_context_restart (uint32_t sp, uint32_t entry, uint32_t user_stack)`

4.76.2.14 `pok_ret_t pok_space_switch (uint8_t old_partition_id, uint8_t new_partition_id)`

Switch from one space to another

Switch address space in MMU (context register).

Definition at line 55 of file space.c.

```

57 {
58     (void) old_partition_id;
59     /* printf ("space_switch %u -> %u\n", old_partition_id, new_partition_id); */
60     asm volatile ("mtsr %0,%1" : : "r"(0), "r"(PPC_SR_KP | new_partition_id));
61     return (POK_ERRNO_OK);
62 }

```

4.76.2.15 `uint32_t pok_thread_stack_addr (const uint8_t partition_id, const uint32_t local_thread_id)`

Returns the stack address for a the thread number N in a partition.

- `partition_id` indicates the partition that contains the thread.
- `local_thread_id` the thread-id of the thread inside the partition.

Returns

the stack address of the thread.

Compute the stack address for the given thread.

Definition at line 92 of file arch.c.

```

94 {
95     return pok_partitions[partition_id].size - 16 - (local_thread_id * POK_USER_STACK_SIZE);
96 }

```

4.77 /home/hipse/git-repos/pok/trunk/kernel/include/arch/ppc/spinlock.h File Reference

Macros

- #define [SPIN_UNLOCK](#)(_spin_) (_spin_) = 0
- #define [SPIN_LOCK](#)(_spin_)

Typedefs

- typedef unsigned int [pok_spinlock_t](#)

4.77.1 Macro Definition Documentation

4.77.1.1 #define SPIN_LOCK(_spin_)

Value:

```

do {
    unsigned int val;
    asm volatile ( "\n"
                  "1:\n\t"
                  "lwarx    %0,0,%1      \n\t"
                  "cmpwi    %0,0      \n\t"
                  "bne     1b          \n\t"
                  "stwcx.   %2,0,%1      \n\t"
                  "bne     1b          \n\t"
                  : "=&r"(val) : "r" (&spin_), "r"(1);
    } while (0)

```

Definition at line 26 of file spinlock.h.

4.77.1.2 #define SPIN_UNLOCK(_spin_)(_spin_) = 0

Definition at line 23 of file spinlock.h.

4.77.2 Typedef Documentation

4.77.2.1 typedef unsigned int pok_spinlock_t

Definition at line 21 of file spinlock.h.

4.78 /home/hipse/git-repos/pok/trunk/kernel/include/arch/sparc/spinlock.h File Reference

Macros

- #define [SPIN_UNLOCK](#)(*_spin_*) (*_spin_*) = 0
- #define [SPIN_LOCK](#)(*_spin_*)

Typedefs

- typedef unsigned int [pok_spinlock_t](#)

4.78.1 Macro Definition Documentation

4.78.1.1 #define SPIN_LOCK(*_spin_*)

Value:

```
do {
    asm volatile ("1:
                  ldstub [%0], %1 \n"
                  "tst %1 \n"
                  "bnz lb \n"
                  : /* no output */
                  : "r" (&(_spin_)), "r"(1));
} while (0)
```

Definition at line 30 of file spinlock.h.

4.78.1.2 #define SPIN_UNLOCK(*_spin_*)(*_spin_*) = 0

Definition at line 27 of file spinlock.h.

4.78.2 Typedef Documentation

4.78.2.1 typedef unsigned int [pok_spinlock_t](#)

Definition at line 25 of file spinlock.h.

4.79 /home/hipse/git-repos/pok/trunk/kernel/include/arch/x86/spinlock.h File Reference

Macros

- #define [SPIN_UNLOCK](#)(*_spin_*)
- #define [SPIN_LOCK](#)(*_spin_*)

Typedefs

- typedef unsigned char [pok_spinlock_t](#)

4.79.1 Macro Definition Documentation

4.79.1.1 #define SPIN_LOCK(*_spin_*)

Value:

```
asm volatile ("mov $1, %%al          \n\t"
              "l:                    \n\t"
              "lock xchg %0, %%al    \n\t"
              "test %%al, %%al      \n\t"
              "jnz lb                \n\t"
              :                          \
              : "m" (_spin_)           \
              : "%al")
```

Definition at line 28 of file spinlock.h.

4.79.1.2 #define SPIN_UNLOCK(*_spin_*)

Value:

```
{
  (_spin_) = 0;
}
```

Definition at line 23 of file spinlock.h.

4.79.2 Typedef Documentation

4.79.2.1 typedef unsigned char pok_spinlock_t

Definition at line 21 of file spinlock.h.

4.80 /home/hiphse/git-repos/pok/trunk/kernel/include/arch/x86/interrupt.h File Reference

```
#include <types.h>
```

Data Structures

- struct [interrupt_frame](#)

Macros

- #define [INTERRUPT_HANDLER](#)(name)
- #define [INTERRUPT_HANDLER_errorcode](#)(name)
- #define [INTERRUPT_HANDLER_syscall](#)(name)

Functions

- void [update_tss](#) ([interrupt_frame](#) *frame)

Variables

- [uint32_t pok_tss](#)

4.80.1 Macro Definition Documentation

4.80.1.1 #define INTERRUPT_HANDLER(name)

Value:

```
void name (void);
void name##_handler(interrupt_frame* frame);
asm (
    ".global \"#name \"           \n"
    "\t.type \"#name\",@function  \n"
    "#name\":                      \n"
    "cli                          \n"
    "subl $4, %esp                \n"
    "pusha                        \n"
    "push %ds                     \n"
    "push %es                     \n"
    "push %esp                    \n"
    "mov $0x10, %ax              \n"
    "mov %ax, %ds                \n"
    "mov %ax, %es                \n"
    "call \"#name\"_handler        \n"
    "call update_tss             \n"
    "addl $4, %esp               \n"
    "pop %es                     \n"
    "pop %ds                     \n"
    "popa                         \n"
    "addl $4, %esp               \n"
    "sti                          \n"
    "iret                        \n"
);
void name##_handler(interrupt_frame* frame)
```

Definition at line 53 of file interrupt.h.

4.80.1.2 #define INTERRUPT_HANDLER_errorcode(name)

Value:

```
void name (void);
void name##_handler(interrupt_frame* frame);
asm (
    ".global \"#name \"           \n"
    "\t.type \"#name\",@function  \n"
    "#name\":                      \n"
    "cli                          \n"
    "pusha                        \n"
    "push %ds                     \n"
    "push %es                     \n"
    "push %esp                    \n"
    "mov $0x10, %ax              \n"
    "mov %ax, %ds                \n"
    "mov %ax, %es                \n"
    "call \"#name\"_handler        \n"
    "call update_tss             \n"
    "addl $4, %esp               \n"
    "pop %es                     \n"
    "pop %ds                     \n"
    "popa                         \n"
    "addl $4, %esp               \n"
    "sti                          \n"
    "iret                        \n"
);
void name##_handler(interrupt_frame* frame)
```

Definition at line 81 of file interrupt.h.

4.80.1.3 #define INTERRUPT_HANDLER_syscall(name)

Value:

```
int name (void);
void name##_handler(interrupt_frame* frame);
```

```

asm (
    ".global "#name "           \n"
    "\t.type "#name",@function  \n"
    "#name":                     \n"
    "cli                          \n"
    "subl $4, %esp               \n"
    "pusha                        \n"
    "push %ds                     \n"
    "push %es                     \n"
    "push %esp                    \n"
    "mov $0x10, %ax              \n"
    "mov %ax, %ds                \n"
    "mov %ax, %es                \n"
    "call "#name"_handler        \n"
    "movl %eax, 40(%esp)         \n" /* return value */ \n"
    "call update_tss             \n"
    "addl $4, %esp               \n"
    "pop %es                      \n"
    "pop %ds                      \n"
    "popa                         \n"
    "addl $4, %esp               \n"
    "sti                          \n"
    "iret                         \n"
);
void name##_handler(interrupt_frame* frame)

```

Definition at line 108 of file interrupt.h.

4.80.2 Function Documentation

4.80.2.1 void update_tss (interrupt_frame * frame)

Definition at line 20 of file interrupt.c.

```

21 {
22     uint32_t* esp0 = (&pok_tss) + 1;
23
24     if ((frame->cs & 0xffff) != 0x8)
25     {
26         *esp0 = (uint32_t)frame + sizeof (interrupt_frame);
27     }
28 }

```

4.80.3 Variable Documentation

4.80.3.1 uint32_t pok_tss

Definition at line 39 of file gdt.c.

4.81 /home/hipse/git-repos/pok/trunk/kernel/include/arch/x86/multiboot.h File Reference

Data Structures

- struct [pok_multiboot_header_t](#)
- struct [pok_aout_symbol_table_t](#)
- struct [pok_elf_section_header_table_t](#)
- struct [pok_multiboot_info_t](#)
- struct [pok_module_t](#)
- struct [pok_memory_map_t](#)

Macros

- #define `MULTIBOOT_BOOTLOADER_MAGIC` 0x2BADB002
- #define `MULTIBOOT_HEADER_MAGIC` 0x1BADB002
- #define `MULTIBOOT_HEADER_FLAGS` 0x00010003
- #define `MULTIBOOT_BOOTLOADER_MAGIC` 0x2BADB002
- #define `MULTIBOOT_STACK_SIZE` 0x4000
- #define `MULTIBOOT_CMDLINE` 4
- #define `MULTIBOOT_MODS` 8
- #define `EXT_C(sym)` sym

4.81.1 Detailed Description

Author

Julien Pidancet

Date

2008-2009

Definition in file [multiboot.h](#).

4.81.2 Macro Definition Documentation

4.81.2.1 #define `EXT_C(sym)` sym

C symbol format. `HAVE_ASM_USCORE` is defined by configure.

Definition at line 57 of file [multiboot.h](#).

4.81.2.2 #define `MULTIBOOT_BOOTLOADER_MAGIC` 0x2BADB002

The magic number passed by a Multiboot-compliant boot loader.

Definition at line 41 of file [multiboot.h](#).

4.81.2.3 #define `MULTIBOOT_BOOTLOADER_MAGIC` 0x2BADB002

The magic number passed by a Multiboot-compliant boot loader.

Definition at line 41 of file [multiboot.h](#).

4.81.2.4 #define `MULTIBOOT_CMDLINE` 4

Definition at line 48 of file [multiboot.h](#).

4.81.2.5 #define `MULTIBOOT_HEADER_FLAGS` 0x00010003

The flags for the Multiboot header.

Definition at line 36 of file [multiboot.h](#).

4.81.2.6 #define MULTIBOOT_HEADER_MAGIC 0x1BADB002

The magic number for the Multiboot header.

Definition at line 31 of file multiboot.h.

4.81.2.7 #define MULTIBOOT_MODS 8

Definition at line 49 of file multiboot.h.

4.81.2.8 #define MULTIBOOT_STACK_SIZE 0x4000

The size of our stack (16KB).

Definition at line 46 of file multiboot.h.

4.82 /home/hipse/git-repos/pok/trunk/kernel/include/arch/x86/pci.h File Reference

4.83 /home/hipse/git-repos/pok/trunk/kernel/include/bsp.h File Reference

Interfaces that BSP must provide.

```
#include <types.h>
#include <errno.h>
```

Functions

- [pok_ret_t pok_bsp_init \(\)](#)
- [pok_ret_t pok_bsp_irq_acknowledge \(uint8_t irq\)](#)
- [pok_ret_t pok_bsp_irq_register \(uint8_t irq, void\(*handler\)\(void\)\)](#)
- [void * pok_bsp_mem_alloc \(size_t size\)](#)
- [pok_ret_t pok_bsp_time_init \(\)](#)
- [bool_t pok_cons_write \(const char *s, size_t length\)](#)

4.83.1 Detailed Description

Interfaces that BSP must provide.

Author

Julian Pidancet

Date

2008-2009

Definition in file [bsp.h](#).

4.83.2 Function Documentation

4.83.2.1 pok_ret_t pok_bsp_init ()

Definition at line 22 of file bsp.c.

```

23 {
24     pok_cons_init ();
25
26     return (POK_ERRNO_OK);
27 }
```

4.83.2.2 pok_ret_t pok_bsp_irq_acknowledge (uint8_t irq)

Definition at line 35 of file bsp.c.

```

36 {
37     pok_pic_eoi (irq);
38
39     return (POK_ERRNO_OK);
40 }
```

4.83.2.3 pok_ret_t pok_bsp_irq_register (uint8_t irq, void*(*)(void) handler)

Definition at line 42 of file bsp.c.

```

44 {
45     pok_pic_unmask (irq);
46
47     pok_arch_event_register (32 + irq, handler);
48
49     return (POK_ERRNO_OK);
50 }
```

4.83.2.4 void* pok_bsp_mem_alloc (size_t size)

Used for partition allocation. For SPARC support, all partitions are aligned on page size and all partition sizes have to be less than page size.

See Also

[SPARC_PAGE_SIZE](#)

Allocate data. At this time, the pok_pm_sbrk function only increment size each time we allocate memory and was not designed to free previously allocated memory.

Definition at line 34 of file bsp.c.

```

35 {
36     char *res;
37
38     res = (char *)(((unsigned int)heap_end + 4095) & ~4095);
39     heap_end = res + sz;
40     return res;
41 }
```

4.83.2.5 pok_ret_t pok_bsp_time_init ()

Initialize the timer, register the ISR and unmask the interrupt.

See Also

[unmask_irq\(irq_nbr\)](#)

Init time. *freq* is the frequency of the oscillator.

Definition at line 87 of file timer.c.

```
88 {
89     time_inter = (BUS_FREQ * FREQ_DIV) / POK_TIMER_FREQUENCY;
90     time_last = get_ppc_tb ();
91     pok_arch_set_decr();
92
93     return (POK_ERRNO_OK);
94 }
```

4.83.2.6 bool_t pok_cons_write (const char * s, size_t length)**4.84 /home/hiphse/git-repos/pok/trunk/kernel/include/core/boot.h File Reference****Functions**

- void [pok_boot \(\)](#)
Boot function that launch everything.

4.84.1 Detailed Description**Author**

Julien Delange

Date

2008-2009

Definition in file [boot.h](#).

4.84.2 Function Documentation**4.84.2.1 void pok_boot ()**

Boot function that launch everything.

This function load every service according to system requirements (the POK_NEEDS_* macro). If we don't use partitioning service, we execute a main function. In that case, POK is acting like an executive, not a real kernel

Definition at line 37 of file boot.c.

```
38 {
39     pok_arch_init ();
40     pok_bsp_init ();
41
42     #if defined (POK_NEEDS_TIME) || defined (POK_NEEDS_SCHED) || defined (POK_NEEDS_THREADS)
43         pok_time_init ();
44     #endif
45
46     #ifdef POK_NEEDS_PARTITIONS
47         pok_partition_init ();
48     #endif
49
50     #ifdef POK_NEEDS_THREADS
51         pok_thread_init ();
52     #endif
```

```

53
54 #if defined (POK_NEEDS_SCHED) || defined (POK_NEEDS_THREADS)
55     pok_sched_init ();
56 #endif
57
58 #if (defined POK_NEEDS_LOCKOBJ) || defined (POK_NEEDS_PORTS_QUEUEING) || defined (POK_NEEDS_PORTS_SAMPLING)
59     pok_lockobj_init ();
60 #endif
61 #if defined (POK_NEEDS_PORTS_QUEUEING) || defined (POK_NEEDS_PORTS_SAMPLING)
62     pok_port_init ();
63     pok_queue_init ();
64 #endif
65
66 #if defined (POK_NEEDS_DEBUG) || defined (POK_NEEDS_CONSOLE)
67     pok_cons_write ("POK kernel initialized\n", 23);
68 #endif
69
70 #ifndef POK_NEEDS_INSTRUMENTATION
71     uint32_t tmp;
72     printf (" [INSTRUMENTATION] [CHEDDAR] <event_table>\n");
73     printf (" [INSTRUMENTATION] [CHEDDAR] <processor>\n");
74     printf (" [INSTRUMENTATION] [CHEDDAR] <name>pok_kernel</name>\n");
75
76     for (tmp = 0 ; tmp < POK_CONFIG_NB_THREADS ; tmp++)
77     {
78         printf (" [INSTRUMENTATION] [CHEDDAR] <task_activation> 0 task %d</task_activation>\n", tmp);
79     }
80 #endif
81
82     pok_arch_preempt_enable ();
83
84 #ifndef POK_NEEDS_PARTITIONS
85
86     main ();
87 #endif
88 }

```

4.85 /home/hipse/git-repos/pok/trunk/kernel/include/core/cpio.h File Reference

Data Structures

- struct [cpio_bin_header](#)
- struct [cpio_file](#)

Enumerations

- enum [cpio_format](#) {
[CPIO_BIN_FMT](#), [CPIO_ODC_FMT](#), [CPIO_NEWC_FMT](#), [CPIO_CRC_FMT](#),
[CPIO_TAR_FMT](#), [CPIO_USTAR_FMT](#), [CPIO_HPBIN_FMT](#), [CPIO_HPODC_FMT](#) }

Functions

- int [cpio_open](#) (struct [cpio_file](#) *cpio, void *file)
- char * [cpio_get_filename](#) (struct [cpio_file](#) *cpio)
- int [cpio_next_file](#) (struct [cpio_file](#) *cpio)
- void * [cpio_get_fileaddr](#) (struct [cpio_file](#) *cpio)

4.85.1 Enumeration Type Documentation

4.85.1.1 enum [cpio_format](#)

Enumerator

CPIO_BIN_FMT

CPIO_ODC_FMT

CPIO_NEWC_FMT
CPIO_CRC_FMT
CPIO_TAR_FMT
CPIO_USTAR_FMT
CPIO_HPBIN_FMT
CPIO_HPODC_FMT

Definition at line 21 of file cpio.h.

```
22 {  
23     CPIO_BIN_FMT,  
24     CPIO_ODC_FMT,  
25     CPIO_NEWC_FMT,  
26     CPIO_CRC_FMT,  
27     CPIO_TAR_FMT,  
28     CPIO_USTAR_FMT,  
29     CPIO_HPBIN_FMT,  
30     CPIO_HPODC_FMT  
31 };
```

4.85.2 Function Documentation

4.85.2.1 void* cpio_get_fileaddr (struct cpio_file * *cpio*)

4.85.2.2 char* cpio_get_filename (struct cpio_file * *cpio*)

4.85.2.3 int cpio_next_file (struct cpio_file * *cpio*)

4.85.2.4 int cpio_open (struct cpio_file * *cpio*, void * *file*)

4.86 /home/hipse/git-repos/pok/trunk/kernel/include/core/debug.h File Reference

Macros

- #define `POK_DEBUG_PRINT_CURRENT_STATE`
- #define `POK_FATAL(arg)`

4.86.1 Macro Definition Documentation

4.86.1.1 #define `POK_DEBUG_PRINT_CURRENT_STATE`

Definition at line 37 of file debug.h.

4.86.1.2 #define `POK_FATAL(arg)`

Definition at line 38 of file debug.h.

4.87 /home/hipse/git-repos/pok/trunk/kernel/include/core/error.h File Reference

4.88 /home/hipse/git-repos/pok/trunk/kernel/include/core/instrumentation.h File Reference

4.89 /home/hipse/git-repos/pok/trunk/kernel/include/core/kernel.h File Reference

Functions

- void [pok_kernel_restart](#) (void)
- void [pok_kernel_stop](#) (void)

4.89.1 Function Documentation

4.89.1.1 void [pok_kernel_restart](#) (void)

4.89.1.2 void [pok_kernel_stop](#) (void)

4.90 /home/hipse/git-repos/pok/trunk/kernel/include/core/loader.h File Reference

```
#include <types.h>
```

Functions

- void [pok_loader_load_partition](#) (const [uint8_t](#) part_id, [uint32_t](#) offset, [uint32_t](#) *entry)
Load the program of the partition.

4.90.1 Function Documentation

4.90.1.1 void [pok_loader_load_partition](#) (const [uint8_t](#) part_id, [uint32_t](#) offset, [uint32_t](#) * entry)

Load the program of the partition.

It loads the program of the partition *part_id*. In fact, It will load the ELF file that corresponds to this partition.

4.91 /home/hipse/git-repos/pok/trunk/kernel/include/core/lockobj.h File Reference

```
#include <types.h>  
#include <arch.h>
```

Data Structures

- struct [pok_lockobj_attr_t](#)
- struct [pok_lockobj_t](#)
- struct [pok_lockobj_lockattr_t](#)

Macros

- #define [POK_CONFIG_NB_LOCKOBJECTS](#) 0

Enumerations

- enum `pok_lockobj_kind_t` { `POK_LOCKOBJ_KIND_MUTEX` = 1, `POK_LOCKOBJ_KIND_SEMAPHORE` = 2, `POK_LOCKOBJ_KIND_EVENT` = 3 }
- enum `pok_locking_policy_t` { `POK_LOCKOBJ_POLICY_STANDARD` = 0, `POK_LOCKOBJ_POLICY_PIP` = 1, `POK_LOCKOBJ_POLICY_PCP` = 2 }
- enum `pok_mutex_state_t` { `LOCKOBJ_STATE_LOCK` = 0, `LOCKOBJ_STATE_UNLOCK` = 1, `LOCKOBJ_STATE_WAITEVENT` = 2 }
- enum `pok_lockobj_lock_kind_t` { `LOCKOBJ_LOCK_REGULAR` = 1, `LOCKOBJ_LOCK_TIMED` = 2 }
- enum `pok_lockobj_operation_t` { `LOCKOBJ_OPERATION_LOCK` = 1, `LOCKOBJ_OPERATION_UNLOCK` = 2, `LOCKOBJ_OPERATION_WAIT` = 3, `LOCKOBJ_OPERATION_SIGNAL` = 4, `LOCKOBJ_OPERATION_BROADCAST` = 5 }

Functions

- `pok_ret_t pok_lockobj_create` (`pok_lockobj_t *obj`, `const pok_lockobj_attr_t *attr`)
- `pok_ret_t pok_lockobj_init` ()
- `pok_ret_t pok_lockobj_partition_create` (`pok_lockobj_id_t *id`, `const pok_lockobj_attr_t *attr`)
- `pok_ret_t pok_lockobj_lock` (`pok_lockobj_t *obj`, `const pok_lockobj_lockattr_t *attr`)
- `pok_ret_t pok_lockobj_unlock` (`pok_lockobj_t *obj`, `const pok_lockobj_lockattr_t *attr`)
- `pok_ret_t pok_lockobj_eventwait` (`pok_lockobj_t *obj`, `const uint64_t timeout`)
- `pok_ret_t pok_lockobj_eventsignal` (`pok_lockobj_t *obj`)
- `pok_ret_t pok_lockobj_eventbroadcast` (`pok_lockobj_t *obj`)
- `pok_ret_t pok_lockobj_partition_wrapper` (`const pok_lockobj_id_t id`, `const pok_lockobj_lockattr_t *attr`)

4.91.1 Macro Definition Documentation

4.91.1.1 #define POK_CONFIG_NB_LOCKOBJECTS 0

Definition at line 25 of file lockobj.h.

4.91.2 Enumeration Type Documentation

4.91.2.1 enum pok_locking_policy_t

Enumerator

`POK_LOCKOBJ_POLICY_STANDARD`
`POK_LOCKOBJ_POLICY_PIP`
`POK_LOCKOBJ_POLICY_PCP`

Definition at line 47 of file lockobj.h.

```
48 {
49     POK_LOCKOBJ_POLICY_STANDARD = 0,
50     POK_LOCKOBJ_POLICY_PIP     = 1,
51     POK_LOCKOBJ_POLICY_PCP     = 2
52 }pok_locking_policy_t;
```

4.91.2.2 enum pok_lockobj_kind_t

Enumerator

POK_LOCKOBJ_KIND_MUTEX
POK_LOCKOBJ_KIND_SEMAPHORE
POK_LOCKOBJ_KIND_EVENT

Definition at line 38 of file lockobj.h.

```

39 {
40     POK_LOCKOBJ_KIND_MUTEX = 1,
41     POK_LOCKOBJ_KIND_SEMAPHORE = 2,
42     POK_LOCKOBJ_KIND_EVENT = 3
43 }pok_lockobj_kind_t;

```

4.91.2.3 enum pok_lockobj_lock_kind_t

Enumerator

LOCKOBJ_LOCK_REGULAR
LOCKOBJ_LOCK_TIMED

Definition at line 100 of file lockobj.h.

```

101 {
102     LOCKOBJ_LOCK_REGULAR = 1,
103     LOCKOBJ_LOCK_TIMED = 2
104 }pok_lockobj_lock_kind_t;

```

4.91.2.4 enum pok_lockobj_operation_t

Enumerator

LOCKOBJ_OPERATION_LOCK
LOCKOBJ_OPERATION_UNLOCK
LOCKOBJ_OPERATION_WAIT
LOCKOBJ_OPERATION_SIGNAL
LOCKOBJ_OPERATION_BROADCAST

Definition at line 106 of file lockobj.h.

```

107 {
108     LOCKOBJ_OPERATION_LOCK = 1,
109     LOCKOBJ_OPERATION_UNLOCK = 2,
110     LOCKOBJ_OPERATION_WAIT = 3,
111     LOCKOBJ_OPERATION_SIGNAL = 4,
112     LOCKOBJ_OPERATION_BROADCAST = 5
113 }pok_lockobj_operation_t;

```

4.91.2.5 enum pok_mutex_state_t

Enumerator

LOCKOBJ_STATE_LOCK
LOCKOBJ_STATE_UNLOCK
LOCKOBJ_STATE_WAITEVENT

Definition at line 55 of file lockobj.h.

```
56 {
57     LOCKOBJ_STATE_LOCK = 0,
58     LOCKOBJ_STATE_UNLOCK = 1,
59     LOCKOBJ_STATE_WAITEVENT = 2
60 }pok_mutex_state_t;
```

4.91.3 Function Documentation

4.91.3.1 `pok_ret_t pok_lockobj_create (pok_lockobj_t * obj, const pok_lockobj_attr_t * attr)`

4.91.3.2 `pok_ret_t pok_lockobj_eventbroadcast (pok_lockobj_t * obj)`

4.91.3.3 `pok_ret_t pok_lockobj_eventsignal (pok_lockobj_t * obj)`

4.91.3.4 `pok_ret_t pok_lockobj_eventwait (pok_lockobj_t * obj, const uint64_t timeout)`

4.91.3.5 `pok_ret_t pok_lockobj_init ()`

4.91.3.6 `pok_ret_t pok_lockobj_lock (pok_lockobj_t * obj, const pok_lockobj_lockattr_t * attr)`

4.91.3.7 `pok_ret_t pok_lockobj_partition_create (pok_lockobj_id_t * id, const pok_lockobj_attr_t * attr)`

4.91.3.8 `pok_ret_t pok_lockobj_partition_wrapper (const pok_lockobj_id_t id, const pok_lockobj_lockattr_t * attr)`

4.91.3.9 `pok_ret_t pok_lockobj_unlock (pok_lockobj_t * obj, const pok_lockobj_lockattr_t * attr)`

4.92 /home/hipse/git-repos/pok/trunk/kernel/include/core/partition.h File Reference

Definition of structure for partitioning services.

4.92.1 Detailed Description

Definition of structure for partitioning services.

Author

Julien Delange

Definition in file [partition.h](#).

4.93 /home/hipse/git-repos/pok/trunk/kernel/include/core/sched.h File Reference

4.94 /home/hipse/git-repos/pok/trunk/kernel/include/core/schedvalues.h File Reference

Enumerations

- enum `pok_sched_t` {
`POK_SCHED_FIFO` = 0, `POK_SCHED_RR` = 1, `POK_SCHED_GLOBAL_TIMESLICE` = 2, `POK_SCHED_RMS` = 3,
`POK_SCHED_EDF` = 4, `POK_SCHED_LLF` = 5, `POK_SCHED_STATIC` = 6 }

4.94.1 Enumeration Type Documentation

4.94.1.1 enum pok_sched_t

Enumerator

```

POK_SCHED_FIFO
POK_SCHED_RR
POK_SCHED_GLOBAL_TIMESLICE
POK_SCHED_RMS
POK_SCHED_EDF
POK_SCHED_LLF
POK_SCHED_STATIC

```

Definition at line 21 of file schedvalues.h.

```

22 {
23     POK_SCHED_FIFO           = 0,
24     POK_SCHED_RR            = 1,
25     POK_SCHED_GLOBAL_TIMESLICE = 2,
26     POK_SCHED_RMS           = 3,
27     POK_SCHED_EDF           = 4,
28     POK_SCHED_LLF           = 5,
29     POK_SCHED_STATIC        = 6
30 } pok_sched_t;

```

4.95 /home/hipse/git-repos/pok/trunk/kernel/include/core/syscall.h File Reference

```

#include <types.h>
#include <errno.h>

```

Data Structures

- struct [pok_syscall_args_t](#)
- struct [pok_syscall_info_t](#)

Macros

- #define [POK_CHECK_PTR_OR_RETURN](#)(pid, ptr)

Enumerations

- enum [pok_syscall_id_t](#) {
 - [POK_SYSCALL_CONSWRITE](#) = 10, [POK_SYSCALL_GETTICK](#) = 20, [POK_SYSCALL_INT_NUMBER](#) = 42,
 - [POK_SYSCALL_THREAD_CREATE](#) = 50,
 - [POK_SYSCALL_THREAD_SLEEP_UNTIL](#) = 51, [POK_SYSCALL_THREAD_SLEEP](#) = 52, [POK_SYSCALL_THREAD_SUSPEND](#) = 53, [POK_SYSCALL_THREAD_RESTART](#) = 54,
 - [POK_SYSCALL_THREAD_STOP](#) = 55, [POK_SYSCALL_THREAD_PERIOD](#) = 56, [POK_SYSCALL_THREAD_STOPSELF](#) = 57, [POK_SYSCALL_THREAD_ID](#) = 58,
 - [POK_SYSCALL_THREAD_STATUS](#) = 59, [POK_SYSCALL_THREAD_SET_PRIORITY](#) = 60, [POK_SYSCALL_THREAD_RESUME](#) = 61, [POK_SYSCALL_THREAD_SUSPEND_TARGET](#) = 62,
 - [POK_SYSCALL_THREAD_DELAYED_START](#) = 65 }

Functions

- [pok_ret_t pok_core_syscall](#) (const [pok_syscall_id_t](#) syscall_id, const [pok_syscall_args_t](#) *args, const [pok_syscall_info_t](#) *infos)
- [pok_ret_t pok_syscall_init](#) ()

4.95.1 Macro Definition Documentation

4.95.1.1 #define POK_CHECK_PTR_OR_RETURN(pid, ptr)

Value:

```

if (!POK_CHECK_PTR_IN_PARTITION(pid,ptr))
{
    return POK_ERRNO_EINVAL;
}

```

Definition at line 143 of file syscall.h.

4.95.2 Enumeration Type Documentation

4.95.2.1 enum pok_syscall_id_t

Enumerator

POK_SYSCALL_CONSWRITE
POK_SYSCALL_GETTICK
POK_SYSCALL_INT_NUMBER
POK_SYSCALL_THREAD_CREATE
POK_SYSCALL_THREAD_SLEEP_UNTIL
POK_SYSCALL_THREAD_SLEEP
POK_SYSCALL_THREAD_SUSPEND
POK_SYSCALL_THREAD_RESTART
POK_SYSCALL_THREAD_STOP
POK_SYSCALL_THREAD_PERIOD
POK_SYSCALL_THREAD_STOPSELF
POK_SYSCALL_THREAD_ID
POK_SYSCALL_THREAD_STATUS
POK_SYSCALL_THREAD_SET_PRIORITY
POK_SYSCALL_THREAD_RESUME
POK_SYSCALL_THREAD_SUSPEND_TARGET
POK_SYSCALL_THREAD_DELAYED_START

Definition at line 23 of file syscall.h.

```

24 {
25     POK_SYSCALL_CONSWRITE           = 10,
26     POK_SYSCALL_GETTICK             = 20,
27     POK_SYSCALL_INT_NUMBER          = 42,
28     POK_SYSCALL_THREAD_CREATE        = 50,
29     POK_SYSCALL_THREAD_SLEEP_UNTIL  = 51,
30     POK_SYSCALL_THREAD_SLEEP        = 52,
31     POK_SYSCALL_THREAD_SUSPEND      = 53,
32     POK_SYSCALL_THREAD_RESTART      = 54,
33     POK_SYSCALL_THREAD_STOP         = 55,
34     POK_SYSCALL_THREAD_PERIOD       = 56,

```

```

35  POK_SYSCALL_THREAD_STOPSELF          = 57,
36  POK_SYSCALL_THREAD_ID               = 58,
37  POK_SYSCALL_THREAD_STATUS           = 59,
38  POK_SYSCALL_THREAD_SET_PRIORITY
    = 60,
39  POK_SYSCALL_THREAD_RESUME           = 61,
40  POK_SYSCALL_THREAD_SUSPEND_TARGET   = 62,
41  //POK_SYSCALL_THREAD_DEADLINE       = 63,
42  //POK_SYSCALL_THREAD_STATE          = 64,
43  POK_SYSCALL_THREAD_DELAYED_START    = 65,
44 #ifdef POK_NEEDS_PORTS_SAMPLING
45  POK_SYSCALL_MIDDLEWARE_SAMPLING_ID   = 101,
46  POK_SYSCALL_MIDDLEWARE_SAMPLING_READ = 102,
47  POK_SYSCALL_MIDDLEWARE_SAMPLING_STATUS = 103,
48  POK_SYSCALL_MIDDLEWARE_SAMPLING_WRITE = 104,
49  POK_SYSCALL_MIDDLEWARE_SAMPLING_CREATE = 105,
50 #endif
51 #ifdef POK_NEEDS_PORTS_QUEUEING
52  POK_SYSCALL_MIDDLEWARE_QUEUEING_CREATE = 110,
53  POK_SYSCALL_MIDDLEWARE_QUEUEING_SEND  = 111,
54  POK_SYSCALL_MIDDLEWARE_QUEUEING_RECEIVE = 112,
55  POK_SYSCALL_MIDDLEWARE_QUEUEING_ID    = 113,
56  POK_SYSCALL_MIDDLEWARE_QUEUEING_STATUS = 114,
57 #endif
58 #ifdef POK_NEEDS_PORTS_VIRTUAL
59  POK_SYSCALL_MIDDLEWARE_VIRTUAL_CREATE = 150,
60  POK_SYSCALL_MIDDLEWARE_VIRTUAL_NB_DESTINATIONS = 151,
61  POK_SYSCALL_MIDDLEWARE_VIRTUAL_DESTINATION = 152,
62  POK_SYSCALL_MIDDLEWARE_VIRTUAL_GET_GLOBAL = 153,
63 #endif
64 #if defined (POK_NEEDS_LOCKOBJECTS) || defined (POK_NEEDS_MUTEXES) || defined (POK_NEEDS_SEMAPHORES) ||
    defined (POK_NEEDS_EVENTS) || defined (POK_NEEDS_BUFFERS) || defined (POK_NEEDS_BLACKBOARDS)
65  POK_SYSCALL_LOCKOBJ_CREATE           = 201,
66  POK_SYSCALL_LOCKOBJ_OPERATION        = 202,
67 #endif
68 #ifdef POK_NEEDS_ERROR_HANDLING
69  POK_SYSCALL_ERROR_HANDLER_CREATE     = 301,
70  POK_SYSCALL_ERROR_HANDLER_SET_READY  = 302,
71  POK_SYSCALL_ERROR_RAISE_APPLICATION_ERROR = 303,
72  POK_SYSCALL_ERROR_GET                 = 304,
73 #endif
74 #ifdef POK_NEEDS_PARTITIONS
75  POK_SYSCALL_PARTITION_SET_MODE       = 404,
76  POK_SYSCALL_PARTITION_GET_ID         = 405,
77  POK_SYSCALL_PARTITION_GET_PERIOD     = 406,
78  POK_SYSCALL_PARTITION_GET_DURATION   = 407,
79  POK_SYSCALL_PARTITION_GET_LOCK_LEVEL = 408,
80  POK_SYSCALL_PARTITION_GET_OPERATING_MODE = 409,
81  POK_SYSCALL_PARTITION_GET_START_CONDITION = 410,
82 #endif
83 #ifdef POK_NEEDS_IO
84  POK_SYSCALL_INB                       = 501,
85  POK_SYSCALL_OUTB                      = 502,
86 #endif
87 #ifdef POK_NEEDS_PCI
88  POK_SYSCALL_PCI_REGISTER              = 601,
89 #endif
90 } pok_syscall_id_t;

```

4.95.3 Function Documentation

4.95.3.1 `pok_ret_t pok_core_syscall (const pok_syscall_id_t syscall_id, const pok_syscall_args_t * args, const pok_syscall_info_t * infos)`

Function that performs the syscall. It is called by the architecture interruption handler.

Parameters

<i>syscall_id</i>	This param correspond to the syscal which should be performed. The list of available syscalls is available in the definition of the <code>pok_syscall_id_t</code> type
<i>args</i>	Arguments of the syscall. It corresponds to data useful to perform the syscall.
<i>infos</i>	Informations about the syscall: which partition/thread initiates the syscall, etc ...

Returns

Returns an error code, which is defined in [include/errno.h](#)

Here is the default syscall handler. In this case, the syscall ID was not properly identified and thus, we should return an error. If error management is activated, we raise an error in kernel of partitions, calling the error handler.

Definition at line 40 of file syscall.c.

```

43 {
44     switch (syscall_id)
45     {
46 #if defined (POK_NEEDS_CONSOLE) || defined (POK_NEEDS_DEBUG)
47         case POK_SYSCALL_CONSWRITE:
48             POK_CHECK_PTR_OR_RETURN(infos->partition, args->
49                 arg1 + infos->base_addr)
50                 if (pok_cons_write ((const char*)args->arg1 + infos->base_addr, args->arg2))
51                     {
52                         return POK_ERRNO_OK;
53                     }
54                 else
55                     {
56                         return POK_ERRNO_EINVAL;
57                     }
58                 break;
59 #endif
60 #ifndef POK_NEEDS_PORTS_VIRTUAL
61         case POK_SYSCALL_MIDDLEWARE_VIRTUAL_CREATE:
62             POK_CHECK_PTR_OR_RETURN(infos->partition, args->
63                 arg1 + infos->base_addr)
64             return pok_port_virtual_id ( (char*) (args->arg1 + infos->base_addr), (
65                 pok_port_id_t*) (args->arg2 + infos->base_addr));
66             break;
67         case POK_SYSCALL_MIDDLEWARE_VIRTUAL_NB_DESTINATIONS:
68             POK_CHECK_PTR_OR_RETURN(infos->partition, args->arg2 + infos->base_addr)
69             return pok_port_virtual_nb_destinations ( (pok_port_id_t) (args->arg1), (
70                 uint32_t*) (args->arg2 + infos->base_addr));
71             break;
72         case POK_SYSCALL_MIDDLEWARE_VIRTUAL_DESTINATION:
73             POK_CHECK_PTR_OR_RETURN(infos->partition, ((void*) args->arg3)+infos->
74                 base_addr)
75             return pok_port_virtual_destination ( (pok_port_id_t) (args->arg1), (
76                 uint32_t) (args->arg2), (uint32_t*) (args->arg3 + infos->base_addr));
77             break;
78         case POK_SYSCALL_MIDDLEWARE_VIRTUAL_GET_GLOBAL:
79             POK_CHECK_PTR_OR_RETURN(infos->partition, (void*) (args->arg2 + infos->
80                 base_addr))
81             return pok_port_virtual_get_global ((pok_port_id_t) (args->arg1), (
82                 pok_port_id_t*) (args->arg2 + infos->base_addr));
83             break;
84 #endif
85 #if defined POK_NEEDS_GETTICK
86         case POK_SYSCALL_GETTICK:
87             POK_CHECK_PTR_OR_RETURN(infos->partition, args->
88                 arg1 + infos->base_addr)
89             return pok_gettick_by_pointer ((uint64_t*) (args->arg1 + infos->base_addr));
90             break;
91 #endif
92         case POK_SYSCALL_THREAD_CREATE:
93             return pok_partition_thread_create ((uint32_t*) (args->
94                 arg1 + infos->base_addr),
95                 (pok_thread_attr_t*) (args->arg2 + infos->
96                 base_addr),
97                 (uint8_t) (args->arg3 + infos->
98                 partition));
99             break;
100 #ifndef POK_NEEDS_THREAD_SLEEP
101         case POK_SYSCALL_THREAD_SLEEP:
102             return pok_thread_sleep (args->arg1);
103             break;
104 #endif
105 #ifndef POK_NEEDS_THREAD_SLEEP_UNTIL
106         case POK_SYSCALL_THREAD_SLEEP_UNTIL:
107             return pok_thread_sleep_until (args->arg1);
108             break;
109 #endif
110     }
111     return POK_ERRNO_UNKNOWN_SYSCALL;
112 }

```

```

107 #endif
108
109     case POK_SYSCALL_THREAD_PERIOD:
110         return pok_sched_end_period ();
111         break;
112
113 #if defined (POK_NEEDS_THREAD_SUSPEND) || defined (POK_NEEDS_ERROR_HANDLING)
114     case POK_SYSCALL_THREAD_SUSPEND:
115         return pok_thread_suspend ();
116         break;
117 #endif
118
119 #ifndef POK_NEEDS_THREAD_ID
120     case POK_SYSCALL_THREAD_ID:
121         return pok_sched_get_current ((uint32_t*) (args->arg1 + infos->
122         base_addr));
123         break;
124 #endif
125     case POK_SYSCALL_THREAD_STATUS:
126         return pok_thread_get_status (args->arg1, (pok_thread_attr_t*) (args->
127         arg2 + infos->base_addr));
128         break;
129     case POK_SYSCALL_THREAD_DELAYED_START:
130         return pok_thread_delayed_start (args->arg1, args->arg2);
131         break;
132     case POK_SYSCALL_THREAD_SET_PRIORITY:
133         return pok_thread_set_priority (args->arg1, args->arg2);
134         break;
135     case POK_SYSCALL_THREAD_RESUME:
136         return pok_thread_resume (args->arg1);
137         break;
138     case POK_SYSCALL_THREAD_SUSPEND_TARGET:
139         return pok_thread_suspend_target (args->arg1);
140         break;
141
142 #ifndef POK_NEEDS_ERROR_HANDLING
143
144     case POK_SYSCALL_THREAD_RESTART:
145         return pok_partition_restart_thread (args->arg1);
146         break;
147
148     case POK_SYSCALL_THREAD_STOP:
149         return pok_partition_stop_thread (args->arg1);
150         break;
151
152     case POK_SYSCALL_THREAD_STOPSELF:
153         pok_sched_stop_self ();
154         return POK_ERRNO_OK;
155         break;
156
157 #endif
158
159 #ifndef POK_NEEDS_PARTITIONS
160     case POK_SYSCALL_PARTITION_SET_MODE:
161         return pok_partition_set_mode_current ((pok_partition_mode_t)args->arg1);
162         break;
163     case POK_SYSCALL_PARTITION_GET_ID:
164         return pok_current_partition_get_id ((uint8_t*) (args->arg1 + infos->
165         base_addr));
166         break;
167     case POK_SYSCALL_PARTITION_GET_PERIOD:
168         return pok_current_partition_get_period ((uint64_t*) (args->arg1 + infos->
169         base_addr));
170         break;
171     case POK_SYSCALL_PARTITION_GET_DURATION:
172         return pok_current_partition_get_duration ((uint64_t*) (args->
173         arg1 + infos->base_addr));
174         break;
175     case POK_SYSCALL_PARTITION_GET_LOCK_LEVEL:
176         return pok_current_partition_get_lock_level ((uint32_t*) (args->
177         arg1 + infos->base_addr));
178         break;
179     case POK_SYSCALL_PARTITION_GET_OPERATING_MODE:
180         return pok_current_partition_get_operating_mode ((pok_partition_mode_t*) (args->
181         arg1 + infos->base_addr));
182         break;
183     case POK_SYSCALL_PARTITION_GET_START_CONDITION:
184         return pok_current_partition_get_start_condition ((pok_start_condition_t*) (args->
185         arg1 + infos->base_addr));
186         break;
187 #endif
188
189 #ifndef POK_NEEDS_ERROR_HANDLING
190     case POK_SYSCALL_ERROR_HANDLER_CREATE:
191         return pok_error_thread_create (args->arg1, (void*) (args->arg2));
192

```

```

193         break;
194
195     case POK_SYSCALL_ERROR_RAISE_APPLICATION_ERROR:
196         POK_CHECK_PTR_OR_RETURN(infos->partition, args->
197     arg1 + infos->base_addr)
198         pok_error_raise_application_error ((char*) (args->arg1 + infos->base_addr), args->arg2);
199         return POK_ERRNO_OK;
200         break;
201
202     case POK_SYSCALL_ERROR_GET:
203         return pok_error_get ((pok_error_status_t*) (args->arg1 + infos->base_addr));
204         break;
205 #endif
206
207     /* Middleware syscalls */
208 #ifdef POK_NEEDS_PORTS_SAMPLING
209     case POK_SYSCALL_MIDDLEWARE_SAMPLING_CREATE:
210         POK_CHECK_PTR_OR_RETURN(infos->partition, args->arg1 + infos->base_addr)
211         return pok_port_sampling_create ((char*) (args->arg1 + infos->base_addr),
212             (pok_port_size_t) args->arg2,
213             (pok_port_direction_t) args->arg3,
214             (uint64_t) args->arg4,
215             (pok_port_id_t*) (args->arg5 + infos->base_addr));
216         break;
217
218     case POK_SYSCALL_MIDDLEWARE_SAMPLING_WRITE:
219         POK_CHECK_PTR_OR_RETURN(infos->partition, args->arg2 + infos->base_addr)
220
221         return pok_port_sampling_write ((const pok_port_id_t) args->arg1,
222             (const void*) ((void*) args->arg2 + infos->base_addr),
223             (const uint8_t) args->arg3);
224         break;
225
226     case POK_SYSCALL_MIDDLEWARE_SAMPLING_READ:
227         POK_CHECK_PTR_OR_RETURN(infos->partition, args->arg2 + infos->base_addr)
228         POK_CHECK_PTR_OR_RETURN(infos->partition, args->arg4 + infos->base_addr)
229         return pok_port_sampling_read ((const pok_port_id_t) args->arg1,
230             (void*) args->arg2 + infos->base_addr,
231             (pok_port_size_t) (args->arg3 + infos->base_addr),
232             (bool_t*) (args->arg4 + infos->base_addr));
233         break;
234
235     case POK_SYSCALL_MIDDLEWARE_SAMPLING_ID:
236         POK_CHECK_PTR_OR_RETURN(infos->partition, args->arg1 + infos->base_addr)
237         POK_CHECK_PTR_OR_RETURN(infos->partition, args->arg2 + infos->base_addr)
238         return pok_port_sampling_id ((char*) (args->arg1 + infos->base_addr),
239             (pok_port_id_t*) (args->arg2 + infos->base_addr));
240         break;
241
242 #ifndef POK_GENERATED_CODE
243     case POK_SYSCALL_MIDDLEWARE_SAMPLING_STATUS:
244         POK_CHECK_PTR_OR_RETURN(infos->partition, args->
245     arg2+infos->base_addr)
246         return pok_port_sampling_status ((const pok_port_id_t) args->arg1,
247             (pok_port_sampling_status_t*) (args->arg2 + infos->base_addr));
248         break;
249 #endif /* POK_GENERATED_CODE */
250 #endif /* POK_NEEDS_PORTS_SAMPLING */
251
252 #ifdef POK_NEEDS_PORTS_QUEUEING
253     case POK_SYSCALL_MIDDLEWARE_QUEUEING_CREATE:
254         POK_CHECK_PTR_OR_RETURN(infos->partition, args->
255     arg1 + infos->base_addr)
256         POK_CHECK_PTR_OR_RETURN(infos->partition, args->arg5 + infos->base_addr)
257         return pok_port_queueing_create ((char*) (args->arg1 + infos->base_addr),
258             (pok_port_size_t) args->arg2,
259             (pok_port_direction_t) args->arg3,
260             (pok_port_queueing_discipline_t)
261     args->arg4,
262             (pok_port_id_t*) (args->arg5 + infos
263     ->base_addr));
264         break;
265
266     case POK_SYSCALL_MIDDLEWARE_QUEUEING_SEND:
267         POK_CHECK_PTR_OR_RETURN(infos->partition, args->arg2 + infos->base_addr)
268         return pok_port_queueing_send ((const pok_port_id_t)
269     args->arg1,
270             (const void*) (args->arg2 + infos->
271     base_addr),
272             (const uint8_t) (args->arg3),
273             (const uint64_t) args->arg4);
274         break;
275
276     case POK_SYSCALL_MIDDLEWARE_QUEUEING_RECEIVE:

```

```

272     POK_CHECK_PTR_OR_RETURN(infos->partition, args->arg4 + infos->base_addr)
273     POK_CHECK_PTR_OR_RETURN(infos->partition, args->arg5 + infos->base_addr)
274     return pok_port_queueing_receive ((const pok_port_id_t)  args->arg1,
275                                     (uint64_t)             args->arg2,
276                                     (pok_port_size_t)        args->arg3,
277                                     (void*)                 ((void*)args->arg4 + infos->base_addr),
278                                     (pok_port_size_t*)       (args->arg5 + infos->
base_addr));
279     break;
280
281     case POK_SYSCALL_MIDDLEWARE_QUEUEING_ID:
282     POK_CHECK_PTR_OR_RETURN(infos->partition, args->arg1 + infos->base_addr)
283     POK_CHECK_PTR_OR_RETURN(infos->partition, args->arg2 + infos->base_addr)
284     return pok_port_queueing_id ((char*)             (args->arg1 + infos->base_addr),
285                                 (pok_port_id_t*)     (args->arg2 + infos->base_addr));
286     break;
287
288 #ifndef POK_GENERATED_CODE
289     case POK_SYSCALL_MIDDLEWARE_QUEUEING_STATUS:
290     POK_CHECK_PTR_OR_RETURN(infos->partition, args->
arg2 + infos->base_addr)
291     return pok_port_queueing_status ((const pok_port_id_t)  args->arg1,
292                                     (pok_port_queueing_status_t*) (args->arg2 + infos->
base_addr));
293     break;
294 #endif
295 #endif /* POK_NEEDS_PORTS_QUEUEING */
296
297 #ifdef POK_NEEDS_LOCKOBJECTS
298     case POK_SYSCALL_LOCKOBJ_CREATE:
299     POK_CHECK_PTR_OR_RETURN(infos->partition, args->
arg2+infos->base_addr)
300     POK_CHECK_PTR_OR_RETURN(infos->partition, args->arg1+infos->base_addr)
301     return pok_lockobj_partition_create ((
pok_lockobj_id_t*) (args->arg1 + infos->base_addr),
302                                         (pok_lockobj_attr_t*) (args->arg2 +
infos->base_addr));
303     break;
304
305     case POK_SYSCALL_LOCKOBJ_OPERATION:
306     if (args->arg2 == NULL)
307     {
308         return pok_lockobj_partition_wrapper ((const
uint8_t) args->arg1, NULL);
309     }
310     else
311     {
312         POK_CHECK_PTR_OR_RETURN(infos->partition, args->
arg2 + infos->base_addr)
313         return pok_lockobj_partition_wrapper ((const
uint8_t) args->arg1,
314                                             (pok_lockobj_lockattr_t*) (args->
arg2 + infos->base_addr));
315     }
316     break;
317 #endif /* POK_NEEDS_LOCKOBJECTS */
318
319 #ifdef POK_NEEDS_IO
320     case POK_SYSCALL_INB:
321     if ((args->arg1 < pok_partitions[infos->partition].io_min) ||
322         (args->arg1 > pok_partitions[infos->partition].io_max))
323     {
324         return -POK_ERRNO_EPERM;
325     }
326     else
327     {
328         return inb((unsigned short) args->arg1);
329     }
330     break;
331
332     case POK_SYSCALL_OUTB:
333     if ((args->arg1 < pok_partitions[infos->partition].io_min) ||
334         (args->arg1 > pok_partitions[infos->partition].io_max))
335     {
336         return -POK_ERRNO_EPERM;
337     }
338     else
339     {
340         outb((unsigned short) args->arg1, (unsigned char) args->arg2);
341         return POK_ERRNO_OK;
342     }
343     break;
344 #endif /* POK_NEEDS_IO */
345
346 #ifdef POK_NEEDS_PCI
347     case POK_SYSCALL_PCI_REGISTER:
348     POK_CHECK_PTR_OR_RETURN(infos->partition, args->

```

```
    arg1 + infos->base_addr)
349     return pci_register((void*)args->arg1 + infos->base_addr, infos->partition);
350     break;
351 #endif /* POK_NEEDS_PCI */
352
353
360     default:
361 #ifdef POK_NEEDS_ERROR_HANDLING
362     pok_error_declare (POK_ERROR_KIND_ILLEGAL_REQUEST);
363     pok_sched_activate_error_thread ();
364 #else
365     #ifdef POK_NEEDS_DEBUG
366     printf ("Tried to use syscall %d\n", syscall_id);
367     #endif
368     POK_FATAL ("Unknown syscall");
369 #endif
370     break;
371 }
372
373     return POK_ERRNO_EINVAL;
374 }
```

4.95.3.2 pok_ret_t pok_syscall.init ()

Init system calls

Definition at line 83 of file syscalls.c.

```
84 {
85     pok_idt_set_gate (POK_SYSCALL_INT_NUMBER,
86                     GDT_CORE_CODE_SEGMENT << 3,
87                     (uint32_t) syscall_gate,
88                     IDTE_INTERRUPT,
89                     3);
90
91     return (POK_ERRNO_OK);
92 }
```

4.96 /home/hipse/git-repos/pok/trunk/kernel/include/core/time.h File Reference

4.97 /home/hipse/git-repos/pok/trunk/kernel/include/dependencies.h File Reference

4.98 /home/hipse/git-repos/pok/trunk/kernel/include/elf.h File Reference

Data Structures

- struct [Elf32_Ehdr](#)
- struct [Elf32_Phdr](#)

Macros

- #define [EI_NIDENT](#) (16)

Typedefs

- typedef [uint16_t](#) [Elf32_Half](#)
- typedef [uint32_t](#) [Elf32_Word](#)
- typedef [uint32_t](#) [Elf32_Off](#)
- typedef [uint32_t](#) [Elf32_Addr](#)

4.98.1 Macro Definition Documentation

4.98.1.1 #define EI_NIDENT (16)

Definition at line 26 of file elf.h.

4.98.2 Typedef Documentation

4.98.2.1 typedef uint32_t Elf32_Addr

Definition at line 24 of file elf.h.

4.98.2.2 typedef uint16_t Elf32_Half

Definition at line 21 of file elf.h.

4.98.2.3 typedef uint32_t Elf32_Off

Definition at line 23 of file elf.h.

4.98.2.4 typedef uint32_t Elf32_Word

Definition at line 22 of file elf.h.

4.99 /home/hipse/git-repos/pok/trunk/kernel/include/errno.h File Reference

Enumerations

- enum `pok_ret_t` {
[POK_ERRNO_OK](#) = 0, [POK_ERRNO_EINVAL](#) = 1, [POK_ERRNO_UNAVAILABLE](#) = 2, [POK_ERRNO_PARAM](#) = 3,
[POK_ERRNO_TOOMANY](#) = 5, [POK_ERRNO_EPERM](#) = 6, [POK_ERRNO_EXISTS](#) = 7, [POK_ERRNO_ERANGE](#) = 8,
[POK_ERRNO_EDOM](#) = 9, [POK_ERRNO_HUGE_VAL](#) = 10, [POK_ERRNO_EFAULT](#) = 11, [POK_ERRNO_THREAD](#) = 49,
[POK_ERRNO_THREADATTR](#) = 50, [POK_ERRNO_TIME](#) = 100, [POK_ERRNO_PARTITION_ATTR](#) = 200,
[POK_ERRNO_PORT](#) = 301,
[POK_ERRNO_NOTFOUND](#) = 302, [POK_ERRNO_DIRECTION](#) = 303, [POK_ERRNO_SIZE](#) = 304, [POK_ERRNO_DISCIPLINE](#) = 305,
[POK_ERRNO_PORTPART](#) = 307, [POK_ERRNO_EMPTY](#) = 308, [POK_ERRNO_KIND](#) = 309, [POK_ERRNO_FULL](#) = 311,
[POK_ERRNO_READY](#) = 310, [POK_ERRNO_TIMEOUT](#) = 250, [POK_ERRNO_MODE](#) = 251, [POK_ERRNO_LOCKOBJ_UNAVAILABLE](#) = 500,
[POK_ERRNO_LOCKOBJ_NOTREADY](#) = 501, [POK_ERRNO_LOCKOBJ_KIND](#) = 502, [POK_ERRNO_LOCKOBJ_POLICY](#) = 503, [POK_ERRNO_PARTITION_MODE](#) = 601,
[POK_ERRNO_PARTITION](#) = 401 }

4.99.1 Enumeration Type Documentation

4.99.1.1 enum pok_ret_t

Enumerator

POK_ERRNO_OK
POK_ERRNO_EINVAL
POK_ERRNO_UNAVAILABLE
POK_ERRNO_PARAM
POK_ERRNO_TOOMANY
POK_ERRNO_EPERM
POK_ERRNO_EXISTS
POK_ERRNO_ERANGE
POK_ERRNO_EDOM
POK_ERRNO_HUGE_VAL
POK_ERRNO_EFAULT
POK_ERRNO_THREAD
POK_ERRNO_THREADATTR
POK_ERRNO_TIME
POK_ERRNO_PARTITION_ATTR
POK_ERRNO_PORT
POK_ERRNO_NOTFOUND
POK_ERRNO_DIRECTION
POK_ERRNO_SIZE
POK_ERRNO_DISCIPLINE
POK_ERRNO_PORTPART
POK_ERRNO_EMPTY
POK_ERRNO_KIND
POK_ERRNO_FULL
POK_ERRNO_READY
POK_ERRNO_TIMEOUT
POK_ERRNO_MODE
POK_ERRNO_LOCKOBJ_UNAVAILABLE
POK_ERRNO_LOCKOBJ_NOTREADY
POK_ERRNO_LOCKOBJ_KIND
POK_ERRNO_LOCKOBJ_POLICY
POK_ERRNO_PARTITION_MODE
POK_ERRNO_PARTITION

Definition at line 21 of file errno.h.

```

22 {
23     POK_ERRNO_OK           = 0,
24     POK_ERRNO_EINVAL      = 1,
25
26     POK_ERRNO_UNAVAILABLE = 2,
27     POK_ERRNO_PARAM       = 3,
28
29     POK_ERRNO_TOOMANY     = 5,
30     POK_ERRNO_EPERM      = 6,
31     POK_ERRNO_EXISTS      = 7,
32
33     POK_ERRNO_ERANGE     = 8,
34     POK_ERRNO_EDOM       = 9,

```

```

34         POK_ERRNO_HUGE_VAL           = 10,
35
36         POK_ERRNO_EFAULT             = 11,
37
38         POK_ERRNO_THREAD             = 49,
39         POK_ERRNO_THREADATTR        = 50,
40
41         POK_ERRNO_TIME               = 100,
42
43         POK_ERRNO_PARTITION_ATTR    = 200,
44
45         POK_ERRNO_PORT               = 301,
46         POK_ERRNO_NOTFOUND          = 302,
47         POK_ERRNO_DIRECTION         = 303,
48         POK_ERRNO_SIZE              = 304,
49         POK_ERRNO_DISCIPLINE        = 305,
50         POK_ERRNO_PORTPART         = 307,
51         POK_ERRNO_EMPTY             = 308,
52         POK_ERRNO_KIND              = 309,
53         POK_ERRNO_FULL              = 311,
54         POK_ERRNO_READY             = 310,
55         POK_ERRNO_TIMEOUT           = 250,
56         POK_ERRNO_MODE              = 251,
57
58         POK_ERRNO_LOCKOBJ_UNAVAILABLE = 500,
59         POK_ERRNO_LOCKOBJ_NOTREADY  = 501,
60         POK_ERRNO_LOCKOBJ_KIND      = 502,
61         POK_ERRNO_LOCKOBJ_POLICY    = 503,
62
63         POK_ERRNO_PARTITION_MODE    = 601,
64
65         POK_ERRNO_PARTITION         = 401
66 } pok_ret_t;

```

4.100 /home/hipse/git-repos/pok/trunk/kernel/include/libc.h File Reference

```
#include <types.h>
```

Functions

- void * [memcpy](#) (void *to, const void *from, [size_t](#) n)
- void * [memset](#) (void *dest, unsigned char val, [size_t](#) count)
- int [strlen](#) (const char *str)
- int [strcmp](#) (const char *s1, const char *s2)
- int [strncmp](#) (const char *s1, const char *s2, [size_t](#) size)

4.100.1 Function Documentation

4.100.1.1 void* memcpy (void * to, const void * from, size_t n)

Definition at line 20 of file memcpy.c.

```

23 {
24 #ifdef __i386__
25     int d0;
26     int d1;
27     int d2;
28
29     __asm__ __volatile__(
30         "rep ; movsl\n\t"
31         "testb $2,%b4\n\t"
32         "je 1f\n\t"
33         "movsw\n\t"
34         "1:\ttestb $1,%b4\n\t"
35         "je 2f\n\t"
36         "movsb\n\t"
37         "2:"
38         : "=&c" (d0), "=&D" (d1), "=&S" (d2)
39         : "0" (n/4), "q" (n), "1" ((long) to), "2" ((long) from)
40         : "memory");

```

```

41 #else
42 char *cto = (char *)to;
43 const char *cfrom = (const char *)from;
44
45 for (; n > 0; n--)
46 {
47     *cto++ = *cfrom++;
48 }
49 #endif
50 return (to);
51 }

```

4.100.1.2 void* memset (void * *dest*, unsigned char *val*, size_t *count*)

4.100.1.3 int strcmp (const char * *s1*, const char * *s2*)

4.100.1.4 int strlen (const char * *str*)

4.100.1.5 int strncmp (const char * *s1*, const char * *s2*, size_t *size*)

4.101 /home/hipse/git-repos/pok/trunk/kernel/include/middleware/port.h File Reference

Describe queueing and sampling ports structures.

```

#include <types.h>
#include <errno.h>
#include <core/lockobj.h>

```

Data Structures

- struct [pok_port_t](#)

Macros

- #define [POK_PORT_MAX_SIZE](#) 512

Typedefs

- typedef [pok_queueing_discipline_t](#) [pok_port_queueing_discipline_t](#)

Enumerations

- enum [pok_port_queueing_disciplines_t](#) { [POK_PORT_QUEUEING_DISCIPLINE_FIFO](#) = 1, [POK_PORT_QUEUEING_DISCIPLINE_PRIORITY](#) = 2 }
- enum [pok_port_directions_t](#) { [POK_PORT_DIRECTION_IN](#) = 1, [POK_PORT_DIRECTION_OUT](#) = 2 }
- enum [pok_port_kinds_t](#) { [POK_PORT_KIND_QUEUEING](#) = 1, [POK_PORT_KIND_SAMPLING](#) = 2, [POK_PORT_KIND_INVALID](#) = 10 }

4.101.1 Detailed Description

Describe queueing and sampling ports structures.

Date

2008-2009

Author

Julien Delange

Definition in file [port.h](#).**4.101.2 Macro Definition Documentation****4.101.2.1 #define POK_PORT_MAX_SIZE 512**

Definition at line 31 of file port.h.

4.101.3 Typedef Documentation**4.101.3.1 typedef pok_queueing_discipline_t pok_port_queueing_discipline_t**

Definition at line 45 of file port.h.

4.101.4 Enumeration Type Documentation**4.101.4.1 enum pok_port_directions_t****Enumerator*****POK_PORT_DIRECTION_IN***
POK_PORT_DIRECTION_OUT

Definition at line 39 of file port.h.

```
40 {  
41     POK_PORT_DIRECTION_IN = 1,  
42     POK_PORT_DIRECTION_OUT = 2,  
43 } pok_port_directions_t;
```

4.101.4.2 enum pok_port_kinds_t**Enumerator*****POK_PORT_KIND_QUEUEING***
POK_PORT_KIND_SAMPLING
POK_PORT_KIND_INVALID

Definition at line 47 of file port.h.

```
48 {  
49     POK_PORT_KIND_QUEUEING = 1,  
50     POK_PORT_KIND_SAMPLING = 2,  
51 #ifdef POK_NEEDS_PORTS_VIRTUAL  
52     POK_PORT_KIND_VIRTUAL = 2,  
53 #endif  
54     POK_PORT_KIND_INVALID = 10  
55 } pok_port_kinds_t;
```

4.101.4.3 enum pok_port_queueing_disciplines_t

Enumerator

POK_PORT_QUEUEING_DISCIPLINE_FIFO
POK_PORT_QUEUEING_DISCIPLINE_PRIORITY

Definition at line 33 of file port.h.

```
34 {  
35     POK_PORT_QUEUEING_DISCIPLINE_FIFO    = 1,  
36     POK_PORT_QUEUEING_DISCIPLINE_PRIORITY = 2  
37 } pok_port_queueing_disciplines_t;
```

4.102 /home/hipse/git-repos/pok/trunk/kernel/include/middleware/queue.h File Reference

4.103 /home/hipse/git-repos/pok/trunk/kernel/libc/__udivdi3.c File Reference

Functions

- unsigned long long [__udivdi3](#) (unsigned long long num, unsigned long long den)

4.103.1 Function Documentation

4.103.1.1 unsigned long long __udivdi3 (unsigned long long num, unsigned long long den)

Definition at line 19 of file __udivdi3.c.

```
21 {  
22 #ifdef POK_NEEDS_DEBUG  
23     unsigned long long quot, qbit;  
24  
25     quot = 0;  
26     qbit = 1;  
27  
28     if (den == 0)  
29     {  
30         return 0;  
31     }  
32  
33     while ((long long) den >= 0)  
34     {  
35         den <<= 1;  
36         qbit <<= 1;  
37     }  
38  
39     while (qbit)  
40     {  
41         if (den <= num)  
42         {  
43             num -= den;  
44             quot += qbit;  
45         }  
46         den >>= 1;  
47         qbit >>= 1;  
48     }  
49  
50     return quot;  
51 #else  
52     (void) num;  
53     (void) den;  
54     return 0;  
55 #endif  
56 }
```

4.104 /home/hiphse/git-repos/pok/trunk/kernel/libc/memcpy.c File Reference

```
#include <libc.h>
```

Functions

- void * [memcpy](#) (void *to, const void *from, [size_t](#) n)

4.104.1 Function Documentation

4.104.1.1 void* memcpy (void * to, const void * from, size_t n)

Definition at line 20 of file memcpy.c.

```
23 {
24 #ifdef __i386__
25     int d0;
26     int d1;
27     int d2;
28
29     __asm__ __volatile__(
30         "rep ; movsl\n\t"
31         "testb $2,%b4\n\t"
32         "je 1f\n\t"
33         "movsw\n\t"
34         "1:\ttestb $1,%b4\n\t"
35         "je 2f\n\t"
36         "movsb\n\t"
37         "2:"
38         : "=&c" (d0), "=&D" (d1), "=&S" (d2)
39         : "0" (n/4), "q" (n), "1" ((long) to), "2" ((long) from)
40         : "memory");
41 #else
42     char *cto = (char *)to;
43     const char *cfrom = (const char *)from;
44
45     for (; n > 0; n--)
46     {
47         *cto++ = *cfrom++;
48     }
49 #endif
50     return (to);
51 }
```

4.105 /home/hiphse/git-repos/pok/trunk/kernel/libc/memset.c File Reference

```
#include <libc.h>
```

Functions

- [__attribute__](#) ((weak))

4.105.1 Function Documentation

4.105.1.1 [__attribute__](#) (weak)

Definition at line 20 of file memset.c.

```
22 {
23     unsigned char *d = (unsigned char *) dest;
24 }
```

```
25  while (count--)\n26  {\n27      *d++ = val;\n28  }\n29\n30  return dest;\n31 }
```

4.106 /home/hipse/git-repos/pok/trunk/kernel/libc/printf.c File Reference

4.107 /home/hipse/git-repos/pok/trunk/kernel/libc/strcmp.c File Reference

4.108 /home/hipse/git-repos/pok/trunk/kernel/libc/strlen.c File Reference

4.109 /home/hipse/git-repos/pok/trunk/kernel/middleware/portcreate.c File Reference

4.110 /home/hipse/git-repos/pok/trunk/kernel/middleware/portflushall.c File Reference

Flush the ports and send the data of IN ports to OUT ports.

4.110.1 Detailed Description

Flush the ports and send the data of IN ports to OUT ports.

Date

2008-2009

Author

Julien Delange
Laurent Lec

Definition in file [portflushall.c](#).

4.111 /home/hipse/git-repos/pok/trunk/kernel/middleware/portinit.c File Reference

4.112 /home/hipse/git-repos/pok/trunk/kernel/middleware/portqueueingcreate.c File Reference

4.113 /home/hipse/git-repos/pok/trunk/kernel/middleware/portqueueingid.c File Reference

4.114 /home/hipse/git-repos/pok/trunk/kernel/middleware/portqueueingreceive.c File Reference

4.115 /home/hipse/git-repos/pok/trunk/kernel/middleware/portqueueingsend.c File Reference

- 4.116** /home/hipse/git-repos/pok/trunk/kernel/middleware/portqueueingstatus.c File Reference
- 4.117** /home/hipse/git-repos/pok/trunk/kernel/middleware/portsamplingcreate.c File Reference
- 4.118** /home/hipse/git-repos/pok/trunk/kernel/middleware/portsamplingid.c File Reference
- 4.119** /home/hipse/git-repos/pok/trunk/kernel/middleware/portsamplingread.c File Reference
- 4.120** /home/hipse/git-repos/pok/trunk/kernel/middleware/portsamplingstatus.c File Reference
- 4.121** /home/hipse/git-repos/pok/trunk/kernel/middleware/portsamplingwrite.c File Reference

Send data on a sampling port.

4.121.1 Detailed Description

Send data on a sampling port.

Author

Julien Delange

Date

2008-2009

Definition in file [portsamplingwrite.c](#).

4.122 /home/hipse/git-repos/pok/trunk/kernel/middleware/portutils.c File Reference

Various functions for ports management.

4.122.1 Detailed Description

Various functions for ports management.

Date

2008-2009

Author

Julien Delange

Definition in file [portutils.c](#).

4.123 /home/hipse/git-repos/pok/trunk/kernel/middleware/portvirtualdestination.c File Reference

4.124 /home/hipse/git-repos/pok/trunk/kernel/middleware/portvirtualgetglobal.c File Reference

4.125 /home/hipse/git-repos/pok/trunk/kernel/middleware/portvirtualid.c File Reference

4.126 /home/hipse/git-repos/pok/trunk/kernel/middleware/portvirtualnbdestinations.c File Reference

4.127 /home/hipse/git-repos/pok/trunk/kernel/middleware/queueinit.c File Reference

4.128 /home/hipse/git-repos/pok/trunk/kernel/middleware/ressources.c File Reference

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