

# Or1ksim: The OpenRISC 1000 Architectural Simulator

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# Chapter 1

## Or1ksim: the OpenRISC 1000 Architectural Simulator

### 1.1 About

This is the entire code base for Or1ksim. It is described in more detail in its user guide, which can be found in the `doc` directory.

Or1ksim uses the ArgTable 2 library to parse its arguments. This documentation excludes that code base.

### 1.2 Installation

See the `INSTALL` file in the main directory for information on building and installing these programs

### 1.3 Documentation

The user guide can be found as a texinfo file in the `doc` subdirectory.

This document may be converted to HTML, PDF, info files or PostScript by the commands "make html", "make pdf", "make info" and "make ps" respectively.

### 1.4 Copying

This file is part of OpenRISC Architectural Simulator.

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## **Chapter 2**

### **Todo List**

**Global [rsp\\_insert\\_matchpoint](#)** This doesn't work with icache/immu yet

**Global [rsp\\_remove\\_matchpoint](#)** This doesn't work with icache/immu yet

**Global [rsp\\_write\\_all\\_regs](#)** There is no error checking at present. Non-hex chars will generate a warning message, but there is no other check that the right amount of data is present. The result is always "OK".

# Chapter 3

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# Chapter 4

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# Chapter 5

## Data Structure Documentation

### 5.1 `_csm_list` Struct Reference

```
#include <cuc.h>
```

Collaboration diagram for `_csm_list`:



#### Data Fields

- `int ref`
- `int cnt`
- `int cmovs`
- `double size`
- `double osize`
- `int cmatch`
- `int dead`
- `int ninsn`
- `struct _csm_list * from`
- `struct _csm_list * next`

## 5.1.1 Field Documentation

5.1.1.1 `int _csm_list::cmatch`

5.1.1.2 `int _csm_list::cmovs`

5.1.1.3 `int _csm_list::cnt`

5.1.1.4 `int _csm_list::dead`

5.1.1.5 `struct _csm_list* _csm_list::from` [read]

5.1.1.6 `struct _csm_list* _csm_list::next` [read]

5.1.1.7 `int _csm_list::ninsn`

5.1.1.8 `double _csm_list::osize`

5.1.1.9 `int _csm_list::ref`

5.1.1.10 `double _csm_list::size`

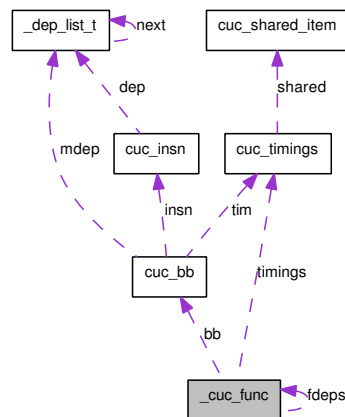
The documentation for this struct was generated from the following file:

- [cuc/cuc.h](#)

## 5.2 `_cuc_func` Struct Reference

```
#include <cuc.h>
```

Collaboration diagram for `_cuc_func`:



### Data Fields

- int `num_bb`
- `cuc_bb` `bb` [MAX\_BB]
- int `saved_regs` [MAX\_REGS]
- int `lur` [MAX\_REGS]
- int `used_regs` [MAX\_REGS]
- int `nmsched`
- int `msched` [MAX\_INSNS]
- int `mtype` [MAX\_INSNS]
- int `num_init_bb`
- int \* `init_bb_reloc`
- int `orig_time`
- int `num_runs`
- `cuc_timings` `timings`
- unsigned long `start_addr`
- unsigned long `end_addr`
- int `memory_order`
- int `nfdeps`
- struct `_cuc_func` \*\* `fdeps`
- int `tmp`

## 5.2.1 Field Documentation

- 5.2.1.1 `cuc_bb _cuc_func::bb[MAX_BB]`
- 5.2.1.2 `unsigned long _cuc_func::end_addr`
- 5.2.1.3 `struct _cuc_func** _cuc_func::fdeps` [read]
- 5.2.1.4 `int* _cuc_func::init_bb_reloc`
- 5.2.1.5 `int _cuc_func::lur[MAX_REGS]`
- 5.2.1.6 `int _cuc_func::memory_order`
- 5.2.1.7 `int _cuc_func::msched[MAX_INSNS]`
- 5.2.1.8 `int _cuc_func::mtype[MAX_INSNS]`
- 5.2.1.9 `int _cuc_func::nfdeps`
- 5.2.1.10 `int _cuc_func::nmsched`
- 5.2.1.11 `int _cuc_func::num_bb`
- 5.2.1.12 `int _cuc_func::num_init_bb`
- 5.2.1.13 `int _cuc_func::num_runs`
- 5.2.1.14 `int _cuc_func::orig_time`
- 5.2.1.15 `int _cuc_func::saved_regs[MAX_REGS]`
- 5.2.1.16 `unsigned long _cuc_func::start_addr`
- 5.2.1.17 `cuc_timings _cuc_func::timings`
- 5.2.1.18 `int _cuc_func::tmp`
- 5.2.1.19 `int _cuc_func::used_regs[MAX_REGS]`

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

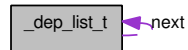
- [cuc/cuc.h](#)



## 5.3 `_dep_list_t` Struct Reference

```
#include <cuc.h>
```

Collaboration diagram for `_dep_list_t`:



### Data Fields

- unsigned long [ref](#)
- struct `_dep_list_t` \* [next](#)

### 5.3.1 Field Documentation

**5.3.1.1** `struct _dep_list_t* _dep_list_t::next` [read]

**5.3.1.2** `unsigned long _dep_list_t::ref`

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

- [cuc/cuc.h](#)

## 5.4 archf Struct Reference

```
#include <dyngen.h>
```

### Data Fields

- unsigned int(\* [get\\_real\\_func\\_len](#))(void \*func, unsigned int len, char \*name)
- void(\* [gen\\_reloc](#))(FILE \*f, struct [reloc](#) \*reloc, unsigned int param)
- void(\* [gen\\_func\\_reloc](#))(FILE \*f, struct [reloc](#) \*reloc)

### 5.4.1 Field Documentation

**5.4.1.1 void(\* archf::gen\_func\_reloc)(FILE \*f, struct reloc \*reloc)**

**5.4.1.2 void(\* archf::gen\_reloc)(FILE \*f, struct reloc \*reloc, unsigned int param)**

**5.4.1.3 unsigned int(\* archf::get\_real\_func\_len)(void \*func, unsigned int len, char \*name)**

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

- [cpu/or32/dyngen.h](#)

## 5.5 ata\_device Struct Reference

```
#include <atadevice.h>
```

### Data Fields

- struct {
  - void \* `host`
  - int `dev`
  - int `pio_mode`
  - int `dma_mode`
  - uint16\_t `dbuf` [4096]
  - uint16\_t \* `dbuf_ptr`
  - uint16\_t `dbuf_cnt`
  - int `state`
  - unsigned int `heads_per_cylinder`
  - unsigned int `sectors_per_track`
  - uint32\_t `lba`
  - int `nr_sect`
  - void(\* `end_t_func`)(struct `ata_device` \*)
- `internals`
- struct {
  - uint8\_t `command`
  - uint8\_t `cylinder_low`
  - uint8\_t `cylinder_high`
  - uint8\_t `device_control`
  - uint8\_t `device_head`
  - uint8\_t `error`
  - uint8\_t `features`
  - uint8\_t `sector_count`
  - uint8\_t `sector_number`
  - uint8\_t `status`
  - uint16\_t `dataport_i`
- `regs`
- struct {
  - int `iordy`
  - int `intrq`
  - int `dmarq`
  - int `pdiagi`
  - int `pdiago`
  - int `daspi`
  - int `daspo`
- `sigs`
- struct {
  - char \* `file`
  - FILE \* `stream`
  - int `type`
  - uint32\_t `size`
  - uint32\_t `size_sect`

```
int packet
unsigned int heads
unsigned int sectors
char * firmware
unsigned int mwdma
unsigned int pio
} conf
```



## 5.5.1 Field Documentation

5.5.1.1 `uint8_t ata_device::command`

5.5.1.2 `struct { ... } ata_device::conf`

5.5.1.3 `uint8_t ata_device::cylinder_high`

5.5.1.4 `uint8_t ata_device::cylinder_low`

5.5.1.5 `int ata_device::daspi`

5.5.1.6 `int ata_device::daspo`

5.5.1.7 `uint16_t ata_device::dataport_i`

5.5.1.8 `uint16_t ata_device::dbuf[4096]`

5.5.1.9 `uint16_t ata_device::dbuf_cnt`

5.5.1.10 `uint16_t* ata_device::dbuf_ptr`

5.5.1.11 `int ata_device::dev`

5.5.1.12 `uint8_t ata_device::device_control`

5.5.1.13 `uint8_t ata_device::device_head`

5.5.1.14 `int ata_device::dma_mode`

5.5.1.15 `int ata_device::dmarq`

5.5.1.16 `void(* ata_device::end_t_func)(struct ata_device *)`

5.5.1.17 `uint8_t ata_device::error`

5.5.1.18 `uint8_t ata_device::features`

5.5.1.19 `char* ata_device::file`

5.5.1.20 `char* ata_device::firmware`

5.5.1.21 `unsigned int ata_device::heads`

5.5.1.22 `unsigned int ata_device::heads_per_cylinder`

5.5.1.23 `void* ata_device::host`

5.5.1.24 `struct { ... } ata_device::internals`

5.5.1.25 `int ata_device::intrq`

5.5.1.26 `int ata_device::iordy`

5.5.1.27 `uint32_t ata_device::iba`

5.5.1.28 `unsigned int ata_device::mwdma`

5.5.1.29 `int ata_device::nr_sect`

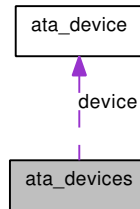
5.5.1.30 `int ata_device::packet`

- [peripheral/atadevice.h](#)

## 5.6 ata\_devices Struct Reference

```
#include <atadevice.h>
```

Collaboration diagram for ata\_devices:



### Data Fields

- struct [ata\\_device](#) `device` [2]

### 5.6.1 Field Documentation

**5.6.1.1** struct `ata_device` `ata_devices::device[2]` [read]

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

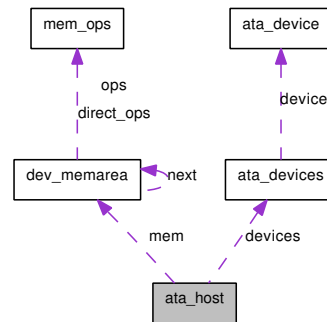
- [peripheral/atadevice.h](#)



## 5.7 ata\_host Struct Reference

```
#include <atahost.h>
```

Collaboration diagram for ata\_host:



### Data Fields

- int [enabled](#)
- [oraddr\\_t](#) baseaddr
- struct [dev\\_memarea](#) \* mem
- int irq
- int dev\_id
- int rev
- int dev\_sel
- [uint8\\_t](#) pio\_mode0\_t1
- [uint8\\_t](#) pio\_mode0\_t2
- [uint8\\_t](#) pio\_mode0\_t4
- [uint8\\_t](#) pio\_mode0\_teoc
- [uint8\\_t](#) dma\_mode0\_tm
- [uint8\\_t](#) dma\_mode0\_td
- [uint8\\_t](#) dma\_mode0\_teoc
- struct {
  - [uint32\\_t](#) ctrl
  - [uint32\\_t](#) stat
  - [uint32\\_t](#) pctr
  - [uint32\\_t](#) pftr0
  - [uint32\\_t](#) pftr1
  - [uint32\\_t](#) dtr0
  - [uint32\\_t](#) dtr1
  - [uint32\\_t](#) txb
  - [uint32\\_t](#) rxb
 } [regs](#)
- struct [ata\\_devices](#) devices

## 5.7.1 Field Documentation

- 5.7.1.1 `oraddr_t ata_host::baseaddr`
- 5.7.1.2 `uint32_t ata_host::ctrl`
- 5.7.1.3 `int ata_host::dev_id`
- 5.7.1.4 `int ata_host::dev_sel`
- 5.7.1.5 `struct ata_devices ata_host::devices` [read]
- 5.7.1.6 `uint8_t ata_host::dma_mode0_td`
- 5.7.1.7 `uint8_t ata_host::dma_mode0_tec`
- 5.7.1.8 `uint8_t ata_host::dma_mode0_tm`
- 5.7.1.9 `uint32_t ata_host::dtr0`
- 5.7.1.10 `uint32_t ata_host::dtr1`
- 5.7.1.11 `int ata_host::enabled`
- 5.7.1.12 `int ata_host::irq`
- 5.7.1.13 `struct dev_memarea* ata_host::mem` [read]
- 5.7.1.14 `uint32_t ata_host::pctr`
- 5.7.1.15 `uint32_t ata_host::pftr0`
- 5.7.1.16 `uint32_t ata_host::pftr1`
- 5.7.1.17 `uint8_t ata_host::pio_mode0_t1`
- 5.7.1.18 `uint8_t ata_host::pio_mode0_t2`
- 5.7.1.19 `uint8_t ata_host::pio_mode0_t4`
- 5.7.1.20 `uint8_t ata_host::pio_mode0_tec`
- 5.7.1.21 `struct { ... } ata_host::regs`
- 5.7.1.22 `int ata_host::rev`
- 5.7.1.23 `uint32_t ata_host::rxb`
- 5.7.1.24 `uint32_t ata_host::stat`
- 5.7.1.25 `uint32_t ata_host::txb`

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

- [peripheral/atahost.h](#)

## 5.8 bff Struct Reference

```
#include <dyngen.h>
```

### Data Fields

- void **\***(**\*** [open\\_obj](#) )(const char **\***object)
- void(**\*** [close\\_obj](#) )(void **\***)
- char **\***(**\*** [get\\_func\\_name](#) )(void **\***, unsigned int [func](#))
- void **\***(**\*** [get\\_func\\_start](#) )(void **\***, unsigned int [func](#))
- unsigned int(**\*** [get\\_func\\_len](#) )(void **\***, unsigned int [func](#))
- int(**\*** [get\\_func\\_reloc](#) )(void **\***, unsigned int [func](#), unsigned int [relocn](#), struct [reloc](#) **\***reloc)

### 5.8.1 Field Documentation

**5.8.1.1** void(**\*** [bff::close\\_obj](#))(void **\***)

**5.8.1.2** unsigned int(**\*** [bff::get\\_func\\_len](#))(void **\***, unsigned int [func](#))

**5.8.1.3** char(**\*** [bff::get\\_func\\_name](#))(void **\***, unsigned int [func](#))

**5.8.1.4** int(**\*** [bff::get\\_func\\_reloc](#))(void **\***, unsigned int [func](#), unsigned int [relocn](#), struct [reloc](#) **\***reloc)

**5.8.1.5** void(**\*** [bff::get\\_func\\_start](#))(void **\***, unsigned int [func](#))

**5.8.1.6** void(**\*** [bff::open\\_obj](#))(const char **\***object)

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

- [cpu/or32/dyngen.h](#)

## 5.9 BMP\_HEADER Struct Reference

### Data Fields

- unsigned short int [type](#)
- unsigned int [size](#)
- unsigned short int [reserved1](#)
- unsigned short int [reserved2](#)
- unsigned int [offset](#)

### 5.9.1 Field Documentation

**5.9.1.1** unsigned int `BMP_HEADER::offset`

**5.9.1.2** unsigned short int `BMP_HEADER::reserved1`

**5.9.1.3** unsigned short int `BMP_HEADER::reserved2`

**5.9.1.4** unsigned int `BMP_HEADER::size`

**5.9.1.5** unsigned short int `BMP_HEADER::type`

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

- [peripheral/vga.c](#)

## 5.10 bpb\_entry Struct Reference

### Data Fields

- struct {
  - [oraddr\\_t](#) `addr`
  - int `taken`
  - int `lru`
  - } `way` [`BPB_WAYS`]

### 5.10.1 Field Documentation

#### 5.10.1.1 `oraddr_t bpb_entry::addr`

#### 5.10.1.2 `int bpb_entry::lru`

#### 5.10.1.3 `int bpb_entry::taken`

#### 5.10.1.4 `struct { ... } bpb_entry::way[BPB_WAYS]`

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

- [bpb/branch-predict.c](#)

## 5.11 bpbstat Struct Reference

```
#include <stats.h>
```

### Data Fields

- int [hit](#)
- int [miss](#)
- int [correct](#)
- int [incorrect](#)

### 5.11.1 Field Documentation

**5.11.1.1** int `bpbstat::correct`

**5.11.1.2** int `bpbstat::hit`

**5.11.1.3** int `bpbstat::incorrect`

**5.11.1.4** int `bpbstat::miss`

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

- `cpu/common/stats.h`

## 5.12 branchstat Struct Reference

### Data Fields

- int [taken](#)
- int [nottaken](#)
- int [forward](#)
- int [backward](#)

### 5.12.1 Field Documentation

#### 5.12.1.1 int branchstat::backward

#### 5.12.1.2 int branchstat::forward

#### 5.12.1.3 int branchstat::nottaken

#### 5.12.1.4 int branchstat::taken

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

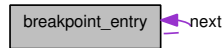
- [cpu/common/stats.c](#)



## 5.13 breakpoint\_entry Struct Reference

```
#include <labels.h>
```

Collaboration diagram for breakpoint\_entry:



### Data Fields

- [oraddr\\_t](#) addr
- struct [breakpoint\\_entry](#) \* next

### 5.13.1 Detailed Description

Structure representing a breakpoint

### 5.13.2 Field Documentation

**5.13.2.1** [oraddr\\_t](#) breakpoint\_entry::addr

**5.13.2.2** [struct breakpoint\\_entry\\*](#) breakpoint\_entry::next [read]

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

- [cpu/common/labels.h](#)

## 5.14 btic\_entry Struct Reference

### Data Fields

- struct {
  - [oraddr\\_t](#) `addr`
  - int `lru`
  - char \* `insn`
  - } `way` [`BTIC_WAYS`]

### 5.14.1 Field Documentation

5.14.1.1 `oraddr_t btic_entry::addr`

5.14.1.2 `char* btic_entry::insn`

5.14.1.3 `int btic_entry::lru`

5.14.1.4 `struct { ... } btic_entry::way[BTIC_WAYS]`

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

- [bpb/branch-predict.c](#)

## 5.15 bticstat Struct Reference

```
#include <stats.h>
```

### Data Fields

- int [hit](#)
- int [miss](#)

### 5.15.1 Field Documentation

#### 5.15.1.1 int bticstat::hit

#### 5.15.1.2 int bticstat::miss

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

- [cpu/common/stats.h](#)

## 5.16 cachestats\_entry Struct Reference

```
#include <stats.h>
```

### Data Fields

- int [readhit](#)
- int [readmiss](#)
- int [writehit](#)
- int [writemiss](#)

### 5.16.1 Field Documentation

**5.16.1.1** int cachestats\_entry::readhit

**5.16.1.2** int cachestats\_entry::readmiss

**5.16.1.3** int cachestats\_entry::writehit

**5.16.1.4** int cachestats\_entry::writemiss

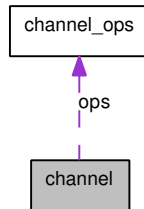
The documentation for this struct was generated from the following file:

- [cpu/common/stats.h](#)

## 5.17 channel Struct Reference

```
#include <channel.h>
```

Collaboration diagram for channel:



### Data Fields

- struct [channel\\_ops](#) \* ops
- void \* data

#### 5.17.1 Detailed Description

A data structure representing a [channel](#). Its operations and data

#### 5.17.2 Field Documentation

##### 5.17.2.1 void\* channel::data

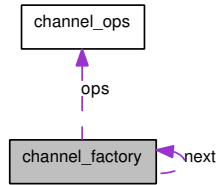
##### 5.17.2.2 struct channel\_ops\* channel::ops [read]

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

- [peripheral/channels/channel.h](#)

## 5.18 channel\_factory Struct Reference

Collaboration diagram for channel\_factory:



### Data Fields

- `const char * name`
- `struct channel_ops * ops`
- `struct channel_factory * next`

### 5.18.1 Field Documentation

**5.18.1.1** `const char* channel_factory::name`

**5.18.1.2** `struct channel_factory* channel_factory::next` [read]

**5.18.1.3** `struct channel_ops* channel_factory::ops` [read]

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

- `peripheral/channels/channel.c`

## 5.19 channel\_ops Struct Reference

```
#include <channel.h>
```

### Data Fields

- void **\***(**\*** [init](#))(const char **\***)
- int(**\*** [open](#))(void **\***)
- void(**\*** [close](#))(void **\***)
- int(**\*** [read](#))(void **\***, char **\***, int)
- int(**\*** [write](#))(void **\***, const char **\***, int)
- void(**\*** [free](#))(void **\***)
- int(**\*** [isok](#))(void **\***)
- char **\***(**\*** [status](#))(void **\***)

### 5.19.1 Detailed Description

A data structure representing all the functions required on a [channel](#)

### 5.19.2 Field Documentation

**5.19.2.1** void(**\*** [channel\\_ops::close](#))(void **\***)

**5.19.2.2** void(**\*** [channel\\_ops::free](#))(void **\***)

**5.19.2.3** void(**\*** [channel\\_ops::init](#))(const char **\***)

**5.19.2.4** int(**\*** [channel\\_ops::isok](#))(void **\***)

**5.19.2.5** int(**\*** [channel\\_ops::open](#))(void **\***)

**5.19.2.6** int(**\*** [channel\\_ops::read](#))(void **\***, char **\***, int)

**5.19.2.7** char(**\*** [channel\\_ops::status](#))(void **\***)

**5.19.2.8** int(**\*** [channel\\_ops::write](#))(void **\***, const char **\***, int)

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

- peripheral/channels/[channel.h](#)

## 5.20 COFF\_AOUTHDR Struct Reference

```
#include <coff.h>
```

### Data Fields

- char [magic](#) [2]
- char [vstamp](#) [2]
- char [tsize](#) [4]
- char [dsize](#) [4]
- char [bsize](#) [4]
- char [entry](#) [4]
- char [text\\_start](#) [4]
- char [data\\_start](#) [4]

### 5.20.1 Field Documentation

**5.20.1.1 char COFF\_AOUTHDR::bsize[4]**

**5.20.1.2 char COFF\_AOUTHDR::data\_start[4]**

**5.20.1.3 char COFF\_AOUTHDR::dsize[4]**

**5.20.1.4 char COFF\_AOUTHDR::entry[4]**

**5.20.1.5 char COFF\_AOUTHDR::magic[2]**

**5.20.1.6 char COFF\_AOUTHDR::text\_start[4]**

**5.20.1.7 char COFF\_AOUTHDR::tsize[4]**

**5.20.1.8 char COFF\_AOUTHDR::vstamp[2]**

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

- [cpu/common/coff.h](#)



## 5.21 COFF\_auxent Union Reference

```
#include <coff.h>
```

### Data Fields

- struct {
    - char [x\\_tagndx](#) [4]
    - union {
      - struct {
        - char [x\\_inno](#) [2]
        - char [x\\_size](#) [2]
      - } [x\\_insz](#)
      - char [x\\_fsize](#) [4]
    - } [x\\_misc](#)
    - union {
      - struct {
        - char [x\\_innoptr](#) [4]
        - char [x\\_endndx](#) [4]
      - } [x\\_fcn](#)
      - struct {
        - char [x\\_dimen](#) [E\_DIMNUM][2]
      - } [x\\_ary](#)
    - } [x\\_fcary](#)
    - char [x\\_tvndx](#) [2]
  - } [x\\_sym](#)
- union {
  - char [x\\_fname](#) [E\_FILNMLEN]
  - struct {
    - char [x\\_zeroes](#) [4]
    - char [x\\_offset](#) [4]
  - } [x\\_n](#)
- } [x\\_file](#)
- struct {
  - char [x\\_scnlen](#) [4]
  - char [x\\_nreloc](#) [2]
  - char [x\\_nlinno](#) [2]
- } [x\\_scn](#)
- struct {
  - char [x\\_tvfill](#) [4]
  - char [x\\_tvlen](#) [2]
  - char [x\\_tvran](#) [2][2]
- } [x\\_tv](#)



### 5.21.1 Field Documentation

5.21.1.1 struct { ... } ::@27 COFF\_auxent::x\_ary

5.21.1.2 char COFF\_auxent::x\_dimen[E\_DIMNUM][2]

5.21.1.3 char COFF\_auxent::x\_endndx[4]

5.21.1.4 struct { ... } ::@26 COFF\_auxent::x\_fcn

5.21.1.5 union { ... } COFF\_auxent::x\_fcary

5.21.1.6 union { ... } COFF\_auxent::x\_file

5.21.1.7 char COFF\_auxent::x\_fname[E\_FILNMLEN]

5.21.1.8 char COFF\_auxent::x\_fsize[4]

5.21.1.9 char COFF\_auxent::x\_inno[2]

5.21.1.10 char COFF\_auxent::x\_innoptr[4]

5.21.1.11 struct { ... } ::@25 COFF\_auxent::x\_lnsz

5.21.1.12 union { ... } COFF\_auxent::x\_misc

5.21.1.13 struct { ... } COFF\_auxent::x\_n

5.21.1.14 char COFF\_auxent::x\_nlinno[2]

5.21.1.15 char COFF\_auxent::x\_nreloc[2]

5.21.1.16 char COFF\_auxent::x\_offset[4]

5.21.1.17 struct { ... } COFF\_auxent::x\_scn

5.21.1.18 char COFF\_auxent::x\_scnlen[4]

5.21.1.19 char COFF\_auxent::x\_size[2]

5.21.1.20 struct { ... } COFF\_auxent::x\_sym

5.21.1.21 char COFF\_auxent::x\_tagndx[4]

5.21.1.22 struct { ... } COFF\_auxent::x\_tv

5.21.1.23 char COFF\_auxent::x\_tvfill[4]

5.21.1.24 char COFF\_auxent::x\_tvlen[2]

5.21.1.25 char COFF\_auxent::x\_tvndx[2]

5.21.1.26 char COFF\_auxent::x\_tvran[2][2]

5.21.1.27 char COFF\_auxent::x\_zeroes[4]

---

Generated on Tue Feb 24 14:22:00 2009 for OrlinSim. The OpenRISC 1000 Architectural Simulator by Doxygen

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

- [cpu/common/coff.h](#)

## 5.22 COFF\_filehdr Struct Reference

```
#include <coff.h>
```

### Data Fields

- char [f\\_magic](#) [2]
- char [f\\_nscns](#) [2]
- char [f\\_timdat](#) [4]
- char [f\\_sympr](#) [4]
- char [f\\_nsyms](#) [4]
- char [f\\_opthdr](#) [2]
- char [f\\_flags](#) [2]

### 5.22.1 Field Documentation

**5.22.1.1** char COFF\_filehdr::f\_flags[2]

**5.22.1.2** char COFF\_filehdr::f\_magic[2]

**5.22.1.3** char COFF\_filehdr::f\_nscns[2]

**5.22.1.4** char COFF\_filehdr::f\_nsyms[4]

**5.22.1.5** char COFF\_filehdr::f\_opthdr[2]

**5.22.1.6** char COFF\_filehdr::f\_sympr[4]

**5.22.1.7** char COFF\_filehdr::f\_timdat[4]

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

- [cpu/common/coff.h](#)

## 5.23 COFF\_lineno Struct Reference

```
#include <coff.h>
```

### Data Fields

- union {
  - char [l\\_symndx](#) [4]
  - char [l\\_paddr](#) [4] } [l\\_addr](#)
- char [l\\_inno](#) [2]

### 5.23.1 Field Documentation

**5.23.1.1 union { ... } COFF\_lineno::l\_addr**

**5.23.1.2 char COFF\_lineno::l\_inno[2]**

**5.23.1.3 char COFF\_lineno::l\_paddr[4]**

**5.23.1.4 char COFF\_lineno::l\_symndx[4]**

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

- [cpu/common/coff.h](#)

## 5.24 COFF\_reloc Struct Reference

```
#include <coff.h>
```

### Data Fields

- char [r\\_vaddr](#) [4]
- char [r\\_symndx](#) [4]
- char [r\\_type](#) [2]

### 5.24.1 Field Documentation

**5.24.1.1** char COFF\_reloc::r\_symndx[4]

**5.24.1.2** char COFF\_reloc::r\_type[2]

**5.24.1.3** char COFF\_reloc::r\_vaddr[4]

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

- [cpu/common/coff.h](#)

## 5.25 COFF\_scnhdr Struct Reference

```
#include <coff.h>
```

### Data Fields

- char [s\\_name](#) [8]
- char [s\\_paddr](#) [4]
- char [s\\_vaddr](#) [4]
- char [s\\_size](#) [4]
- char [s\\_scnptr](#) [4]
- char [s\\_relptr](#) [4]
- char [s\\_innoptr](#) [4]
- char [s\\_nreloc](#) [2]
- char [s\\_nlnno](#) [2]
- char [s\\_flags](#) [4]

### 5.25.1 Field Documentation

**5.25.1.1** char COFF\_scnhdr::s\_flags[4]

**5.25.1.2** char COFF\_scnhdr::s\_innoptr[4]

**5.25.1.3** char COFF\_scnhdr::s\_name[8]

**5.25.1.4** char COFF\_scnhdr::s\_nlnno[2]

**5.25.1.5** char COFF\_scnhdr::s\_nreloc[2]

**5.25.1.6** char COFF\_scnhdr::s\_paddr[4]

**5.25.1.7** char COFF\_scnhdr::s\_relptr[4]

**5.25.1.8** char COFF\_scnhdr::s\_scnptr[4]

**5.25.1.9** char COFF\_scnhdr::s\_size[4]

**5.25.1.10** char COFF\_scnhdr::s\_vaddr[4]

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

- [cpu/common/coff.h](#)



## 5.26 COFF\_slib Struct Reference

```
#include <coff.h>
```

### Data Fields

- char [sl\\_entz](#) [4]
- char [sl\\_pathndx](#) [4]

### 5.26.1 Field Documentation

**5.26.1.1** char COFF\_slib::sl\_entz[4]

**5.26.1.2** char COFF\_slib::sl\_pathndx[4]

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

- [cpu/common/coff.h](#)

## 5.27 COFF\_syment Struct Reference

```
#include <coff.h>
```

### Data Fields

- union {
  - char [e\\_name](#) [E\_SYMNMLEN]
  - struct {
    - char [e\\_zeroes](#) [4]
    - char [e\\_offset](#) [4]
  - } [e](#)
- char [e\\_value](#) [4]
- char [e\\_snum](#) [2]
- char [e\\_type](#) [2]
- char [e\\_sclass](#) [1]
- char [e\\_numaux](#) [1]

### 5.27.1 Field Documentation

**5.27.1.1** union { ... } COFF\_syment::e

**5.27.1.2** struct { ... } COFF\_syment::e

**5.27.1.3** char COFF\_syment::e\_name[E\_SYMNMLEN]

**5.27.1.4** char COFF\_syment::e\_numaux[1]

**5.27.1.5** char COFF\_syment::e\_offset[4]

**5.27.1.6** char COFF\_syment::e\_sclass[1]

**5.27.1.7** char COFF\_syment::e\_snum[2]

**5.27.1.8** char COFF\_syment::e\_type[2]

**5.27.1.9** char COFF\_syment::e\_value[4]

**5.27.1.10** char COFF\_syment::e\_zeroes[4]

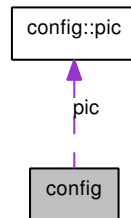
The documentation for this struct was generated from the following file:

- [cpu/common/coff.h](#)

## 5.28 config Struct Reference

```
#include <sim-config.h>
```

Collaboration diagram for config:



### Data Structures

- struct [pic](#)

### Data Fields

- struct {
  - void \* [class\\_ptr](#)
  - unsigned long int(\* [read\\_up](#))(void \*[class\\_ptr](#), unsigned long int addr, unsigned long int mask)
  - void(\* [write\\_up](#))(void \*[class\\_ptr](#), unsigned long int addr, unsigned long int mask, unsigned long int wdata)
 } [ext](#)
- struct {
  - int [debug](#)
  - int [verbose](#)
  - int [profile](#)
  - char \* [prof\\_fn](#)
  - int [mprofile](#)
  - char \* [mprof\\_fn](#)
  - int [history](#)
  - int [exe\\_log](#)
  - int [exe\\_log\\_type](#)
  - long long int [exe\\_log\\_start](#)
  - long long int [exe\\_log\\_end](#)
  - int [exe\\_log\\_marker](#)
  - char \* [exe\\_log\\_fn](#)
  - long [clkcycle\\_ps](#)
  - int [strict\\_npc](#)
 } [sim](#)
- struct {
  - int [enabled](#)
  - int [server\\_port](#)
  - int [log\\_enabled](#)
  - int [hide\\_device\\_id](#)
  - char \* [vapi\\_fn](#)
 } [vapi](#)

- struct {  
    char \* `timings_fn`  
    int `memory_order`  
    int `calling_convention`  
    int `enable_bursts`  
    int `no_multicycle`  
} `cuc`
- struct {  
    int `superscalar`  
    int `hazards`  
    int `dependstats`  
    int `sbuf_len`  
} `cpu`
- struct {  
    int `enabled`  
    int `nways`  
    int `nsets`  
    int `blocksize`  
    int `ustates`  
    int `store_missdelay`  
    int `store_hitdelay`  
    int `load_missdelay`  
    int `load_hitdelay`  
} `dc`
- struct `config::pic` `pic`
- struct {  
    int `enabled`  
} `pm`
- struct {  
    int `enabled`  
    int `sbp_bnf_fwd`  
    int `sbp_bf_fwd`  
    int `btic`  
    int `missdelay`  
    int `hitdelay`  
} `bpb`
- struct {  
    int `enabled`  
    int `gdb_enabled`  
    int `rsp_enabled`  
    int `server_port`  
    int `rsp_port`  
    unsigned long `vapi_id`  
} `debug`

### 5.28.1 Detailed Description

Data structure for configuration data



## 5.28.2 Field Documentation

- 5.28.2.1 `int config::blocksize`
- 5.28.2.2 `struct { ... } config::bpb`
- 5.28.2.3 `int config::btic`
- 5.28.2.4 `int config::calling_convention`
- 5.28.2.5 `void* config::class_ptr`
- 5.28.2.6 `long config::clkcycle_ps`
- 5.28.2.7 `struct { ... } config::cpu`
- 5.28.2.8 `struct { ... } config::cuc`
- 5.28.2.9 `struct { ... } config::dc`
- 5.28.2.10 `struct { ... } config::debug`
- 5.28.2.11 `int config::debug`
- 5.28.2.12 `int config::dependstats`
- 5.28.2.13 `int config::enable_bursts`
- 5.28.2.14 `int config::enabled`
- 5.28.2.15 `int config::exe_log`
- 5.28.2.16 `long long int config::exe_log_end`
- 5.28.2.17 `char* config::exe_log_fn`
- 5.28.2.18 `int config::exe_log_marker`
- 5.28.2.19 `long long int config::exe_log_start`
- 5.28.2.20 `int config::exe_log_type`
- 5.28.2.21 `struct { ... } config::ext`
- 5.28.2.22 `int config::gdb_enabled`
- 5.28.2.23 `int config::hazards`
- 5.28.2.24 `int config::hide_device_id`
- 5.28.2.25 `int config::history`
- 5.28.2.26 `int config::hitdelay`
- 5.28.2.27 `int config::load_hitdelay`
- 5.28.2.28 `int config::load_missdelay`
- 5.28.2.29 `int config::log_enabled`
- 5.28.2.30 `int config::memory_order`

- [sim-config.h](#)



## 5.29 config::pic Struct Reference

```
#include <sim-config.h>
```

### Data Fields

- int [enabled](#)
- int [edge\\_trigger](#)

### 5.29.1 Field Documentation

#### 5.29.1.1 int config::pic::edge\_trigger

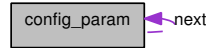
#### 5.29.1.2 int config::pic::enabled

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

- [sim-config.h](#)

## 5.30 config\_param Struct Reference

Collaboration diagram for config\_param:



### Data Fields

- char \* [name](#)
- enum [param\\_t](#) [type](#)
- void(\* [func](#) )(union [param\\_val](#), void \*dat)
- struct [config\\_param](#) \* [next](#)

### 5.30.1 Field Documentation

**5.30.1.1** void(\* [config\\_param::func](#))(union [param\\_val](#), void \*dat)

**5.30.1.2** char\* [config\\_param::name](#)

**5.30.1.3** struct [config\\_param](#)\* [config\\_param::next](#) [[read](#)]

**5.30.1.4** enum [param\\_t](#) [config\\_param::type](#)

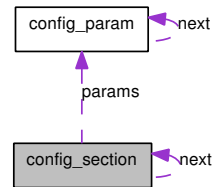
The documentation for this struct was generated from the following file:

- [sim-config.c](#)

## 5.31 config\_section Struct Reference

```
#include <sim-config.h>
```

Collaboration diagram for config\_section:



### Data Fields

- char \* `name`
- void \*(\* `sec_start`)(void)
- void(\* `sec_end`)(void \*)
- void \* `dat`
- struct `config_param` \* `params`
- struct `config_section` \* `next`

### 5.31.1 Field Documentation

**5.31.1.1** void\* `config_section::dat`

**5.31.1.2** char\* `config_section::name`

**5.31.1.3** struct `config_section`\* `config_section::next` [read]

**5.31.1.4** struct `config_param`\* `config_section::params` [read]

**5.31.1.5** void(\* `config_section::sec_end`)(void \*)

**5.31.1.6** void(\* `config_section::sec_start`)(void)

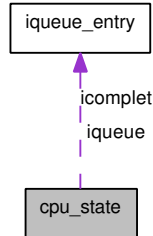
The documentation for this struct was generated from the following file:

- [sim-config.h](#)

## 5.32 cpu\_state Struct Reference

```
#include <execute.h>
```

Collaboration diagram for `cpu_state`:



### Data Fields

- `uorreg_t reg` [MAX\_GPRS]
- `uorreg_t sprs` [MAX\_SPRS]
- `oraddr_t insn_ea`
- `int delay_insn`
- `int npc_not_valid`
- `oraddr_t pc`
- `oraddr_t pc_delay`
- `uint32_t pic_lines`
- `struct iqueue_entry iqueue`
- `struct iqueue_entry icomplet`

### 5.32.1 Detailed Description

The main structure holding the current execution state of the CPU

Not to be confused with `runtime`, which holds the state of the simulation.

`insn_ea` field is only used to get `dump_exe_log()` correct.

`iqueue` and `icomplet` fields are only used in `analysis()`.

The micro-operation queue, `opqs`, is only used to speed up `recompile_page()`.

### 5.32.2 Field Documentation

#### 5.32.2.1 int cpu\_state::delay\_insn

Is current instr in delay slot

#### 5.32.2.2 struct iqueue\_entry cpu\_state::icomplet [read]

Decode of instr before this

**5.32.2.3** `oraddr_t cpu_state::insn_ea`

EA of instrs that have an EA

**5.32.2.4** `struct iqueue_entry cpu_state::iqueue` [read]

Decode of just executed instr

**5.32.2.5** `int cpu_state::npc_not_valid`

NPC updated while stalled

**5.32.2.6** `oraddr_t cpu_state::pc`

PC (and translated PC)

**5.32.2.7** `oraddr_t cpu_state::pc_delay`

Delay instr EA register

**5.32.2.8** `uint32_t cpu_state::pic_lines`

State of PIC lines

**5.32.2.9** `uorreg_t cpu_state::reg[MAX_GPRS]`

General purpose registers

**5.32.2.10** `uorreg_t cpu_state::sprs[MAX_SPRS]`

Special purpose registers

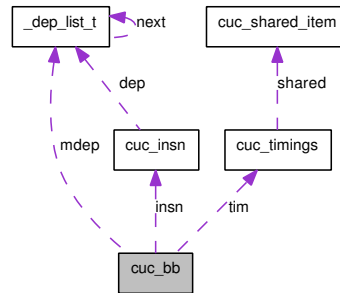
The documentation for this struct was generated from the following file:

- [cpu/common/execute.h](#)

### 5.33 cuc\_bb Struct Reference

```
#include <cuc.h>
```

Collaboration diagram for cuc\_bb:



#### Data Fields

- unsigned long `type`
- int `first`
- int `last`
- int `prev` [2]
- int `next` [2]
- int `tmp`
- `cuc_insn` \* `insn`
- int `ninsn`
- int `last_used_reg` [MAX\_REGS]
- `dep_list` \* `mdep`
- int `nmemory`
- int `cnt`
- int `unrolled`
- int `ntim`
- `cuc_timings` \* `tim`
- int `selected_tim`

### 5.33.1 Field Documentation

5.33.1.1 int cuc\_bb::cnt

5.33.1.2 int cuc\_bb::first

5.33.1.3 cuc\_insn\* cuc\_bb::insn

5.33.1.4 int cuc\_bb::last

5.33.1.5 int cuc\_bb::last\_used\_reg[MAX\_REGS]

5.33.1.6 dep\_list\* cuc\_bb::mdep

5.33.1.7 int cuc\_bb::next[2]

5.33.1.8 int cuc\_bb::ninsn

5.33.1.9 int cuc\_bb::nmemory

5.33.1.10 int cuc\_bb::ntim

5.33.1.11 int cuc\_bb::prev[2]

5.33.1.12 int cuc\_bb::selected\_tim

5.33.1.13 cuc\_timings\* cuc\_bb::tim

5.33.1.14 int cuc\_bb::tmp

5.33.1.15 unsigned long cuc\_bb::type

5.33.1.16 int cuc\_bb::unrolled

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

- [cuc/cuc.h](#)

## 5.34 `cuc_conv` Struct Reference

```
#include <insn.h>
```

### Data Fields

- const char \* [from](#)
- const int [to](#)

### 5.34.1 Field Documentation

#### 5.34.1.1 `const char* cuc_conv::from`

#### 5.34.1.2 `const int cuc_conv::to`

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

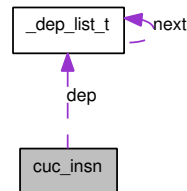
- [cuc/insn.h](#)



## 5.35 cuc\_insn Struct Reference

```
#include <cuc.h>
```

Collaboration diagram for cuc\_insn:



### Data Fields

- int `type`
- int `index`
- int `opt` [MAX\_OPERANDS]
- unsigned long `op` [MAX\_OPERANDS]
- `dep_list * dep`
- unsigned long `insn`
- char `disasm` [40]
- unsigned long `max`
- int `tmp`

### 5.35.1 Field Documentation

5.35.1.1 `dep_list* cuc_insn::dep`

5.35.1.2 `char cuc_insn::disasm[40]`

5.35.1.3 `int cuc_insn::index`

5.35.1.4 `unsigned long cuc_insn::insn`

5.35.1.5 `unsigned long cuc_insn::max`

5.35.1.6 `unsigned long cuc_insn::op[MAX_OPERANDS]`

5.35.1.7 `int cuc_insn::opt[MAX_OPERANDS]`

5.35.1.8 `int cuc_insn::tmp`

5.35.1.9 `int cuc_insn::type`

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

- [cuc/cuc.h](#)

## 5.36 `cuc_known_insn` Struct Reference

```
#include <insn.h>
```

### Data Fields

- char \* [name](#)
- int [comutative](#)
- char \* [rtl](#)

### 5.36.1 Field Documentation

**5.36.1.1** int `cuc_known_insn::comutative`

**5.36.1.2** char\* `cuc_known_insn::name`

**5.36.1.3** char\* `cuc_known_insn::rtl`

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

- [cuc/insn.h](#)

## 5.37 `cuc_shared_item` Struct Reference

```
#include <cuc.h>
```

### Data Fields

- `int ref`
- `int cmatch`

### 5.37.1 Field Documentation

#### 5.37.1.1 `int cuc_shared_item::cmatch`

#### 5.37.1.2 `int cuc_shared_item::ref`

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

- `cuc/cuc.h`

## 5.38 `cuc_timing_table` Struct Reference

```
#include <insn.h>
```

### Data Fields

- double [delay](#)
- double [size](#)
- double [delayi](#)
- double [sizei](#)

### 5.38.1 Field Documentation

**5.38.1.1** double `cuc_timing_table::delay`

**5.38.1.2** double `cuc_timing_table::delayi`

**5.38.1.3** double `cuc_timing_table::size`

**5.38.1.4** double `cuc_timing_table::sizei`

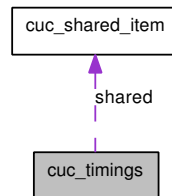
The documentation for this struct was generated from the following file:

- [cuc/insn.h](#)

## 5.39 cuc\_timings Struct Reference

```
#include <cuc.h>
```

Collaboration diagram for cuc\_timings:



### Data Fields

- int [b](#)
- int [preroll](#)
- int [unroll](#)
- int [nshared](#)
- [cuc\\_shared\\_item](#) \* [shared](#)
- int [new\\_time](#)
- double [size](#)

### 5.39.1 Field Documentation

**5.39.1.1** int [cuc\\_timings::b](#)

**5.39.1.2** int [cuc\\_timings::new\\_time](#)

**5.39.1.3** int [cuc\\_timings::nshared](#)

**5.39.1.4** int [cuc\\_timings::preroll](#)

**5.39.1.5** [cuc\\_shared\\_item](#)\* [cuc\\_timings::shared](#)

**5.39.1.6** double [cuc\\_timings::size](#)

**5.39.1.7** int [cuc\\_timings::unroll](#)

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

- [cuc/cuc.h](#)

## 5.40 dc\_set Struct Reference

### Data Fields

- struct {
  - uint32\_t [line](#) [MAX\_DC\_BLOCK\_SIZE/4]
  - [oraddr\\_t](#) [tagaddr](#)
  - int [lru](#)
- } [way](#) [MAX\_DC\_WAYS]

### 5.40.1 Field Documentation

**5.40.1.1** [uint32\\_t dc\\_set::line](#)[MAX\_DC\_BLOCK\_SIZE/4]

**5.40.1.2** [int dc\\_set::lru](#)

**5.40.1.3** [oraddr\\_t dc\\_set::tagaddr](#)

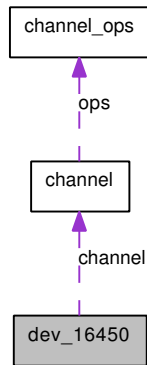
**5.40.1.4** [struct { ... } dc\\_set::way](#)[MAX\_DC\_WAYS]

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

- [cache/dcache-model.c](#)

## 5.41 dev\_16450 Struct Reference

Collaboration diagram for dev\_16450:



### Data Fields

- struct {
  - uint8\_t `txbuf` [UART\_MAX\_FIFO\_LEN]
  - uint16\_t `rxbuf` [UART\_MAX\_FIFO\_LEN]
  - uint8\_t `dll`
  - uint8\_t `dlh`
  - uint8\_t `ier`
  - uint8\_t `iir`
  - uint8\_t `fcr`
  - uint8\_t `lcr`
  - uint8\_t `mcr`
  - uint8\_t `lsr`
  - uint8\_t `msr`
  - uint8\_t `scr`
 } `regs`
- struct {
  - uint8\_t `txser`
  - uint16\_t `rxser`
  - uint8\_t `loopback`
 } `iregs`
- struct {
  - int `txbuf_head`
  - int `txbuf_tail`
  - int `rxbuf_head`
  - int `rxbuf_tail`
  - unsigned int `txbuf_full`
  - unsigned int `rxbuf_full`
  - int `receiveing`
  - int `recv_break`
  - int `ints`
 } `istat`

- unsigned long `char_clks`
- struct {
  - unsigned long `char_clks`
  - uint8\_t `dll`
  - uint8\_t `dlh`
  - uint8\_t `lcr`
  - int `skew`} `vapi`
- unsigned long `vapi_buf` [UART\_VAPI\_BUF\_LEN]
- int `vapi_buf_head_ptr`
- int `vapi_buf_tail_ptr`
- int `fifo_len`
- struct `channel` \* `channel`
- int `enabled`
- int `jitter`
- `oraddr_t` `baseaddr`
- int `irq`
- unsigned long `vapi_id`
- int `uart16550`
- char \* `channel_str`





### 5.41.1 Field Documentation

- 5.41.1.1 `oraddr_t dev_16450::baseaddr`
- 5.41.1.2 `struct channel* dev_16450::channel` [read]
- 5.41.1.3 `char* dev_16450::channel_str`
- 5.41.1.4 `unsigned long dev_16450::char_clks`
- 5.41.1.5 `uint8_t dev_16450::dlh`
- 5.41.1.6 `uint8_t dev_16450::dll`
- 5.41.1.7 `int dev_16450::enabled`
- 5.41.1.8 `uint8_t dev_16450::fcr`
- 5.41.1.9 `int dev_16450::fifo_len`
- 5.41.1.10 `uint8_t dev_16450::ier`
- 5.41.1.11 `uint8_t dev_16450::iir`
- 5.41.1.12 `int dev_16450::ints`
- 5.41.1.13 `struct { ... } dev_16450::iregs`
- 5.41.1.14 `int dev_16450::irq`
- 5.41.1.15 `struct { ... } dev_16450::istat`
- 5.41.1.16 `int dev_16450::jitter`
- 5.41.1.17 `uint8_t dev_16450::lcr`
- 5.41.1.18 `uint8_t dev_16450::loopback`
- 5.41.1.19 `uint8_t dev_16450::lsr`
- 5.41.1.20 `uint8_t dev_16450::mcr`
- 5.41.1.21 `uint8_t dev_16450::msr`
- 5.41.1.22 `int dev_16450::receiveing`
- 5.41.1.23 `int dev_16450::recv_break`
- 5.41.1.24 `struct { ... } dev_16450::regs`
- 5.41.1.25 `uint16_t dev_16450::rxbuf[UART_MAX_FIFO_LEN]`
- 5.41.1.26 `unsigned int dev_16450::rxbuf_full`
- 5.41.1.27 `int dev_16450::rxbuf_head`
- 5.41.1.28 `int dev_16450::rxbuf_tail`
- 5.41.1.29 `uint16_t dev_16450::rxser`
- 5.41.1.30 `uint8_t dev_16450::scr`

- [peripheral/16450.c](#)

## 5.42 dev\_generic Struct Reference

### Public Types

- enum { [GENERIC\\_READ](#), [GENERIC\\_WRITE](#) }
- enum { [GENERIC\\_BYTE](#), [GENERIC\\_HW](#), [GENERIC\\_WORD](#) }

### Data Fields

- enum dev\_generic:: { ... } [trans\\_direction](#)
- enum dev\_generic:: { ... } [trans\\_size](#)
- uint32\_t [value](#)
- int [enabled](#)
- int [byte\\_enabled](#)
- int [hw\\_enabled](#)
- int [word\\_enabled](#)
- char \* [name](#)
- oraddr\_t [baseaddr](#)
- uint32\_t [size](#)

### 5.42.1 Detailed Description

State associated with the generic device.

### 5.42.2 Member Enumeration Documentation

#### 5.42.2.1 anonymous enum

Enumerator:

*GENERIC\_READ*

*GENERIC\_WRITE*

#### 5.42.2.2 anonymous enum

Enumerator:

*GENERIC\_BYTE*

*GENERIC\_HW*

*GENERIC\_WORD*

### 5.42.3 Field Documentation

5.42.3.1 `oraddr_t dev_generic::baseaddr`

5.42.3.2 `int dev_generic::byte_enabled`

5.42.3.3 `int dev_generic::enabled`

5.42.3.4 `int dev_generic::hw_enabled`

5.42.3.5 `char* dev_generic::name`

5.42.3.6 `uint32_t dev_generic::size`

5.42.3.7 `enum { ... } dev_generic::trans_direction`

5.42.3.8 `enum { ... } dev_generic::trans_size`

5.42.3.9 `uint32_t dev_generic::value`

5.42.3.10 `int dev_generic::word_enabled`

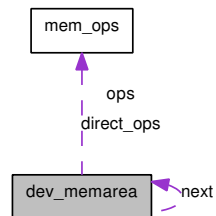
The documentation for this struct was generated from the following file:

- [peripheral/generic.c](#)

## 5.43 dev\_memarea Struct Reference

```
#include <abstract.h>
```

Collaboration diagram for dev\_memarea:



### Data Fields

- struct dev\_memarea \* next
- oraddr\_t addr\_mask
- oraddr\_t addr\_compare
- uint32\_t size
- oraddr\_t size\_mask
- int valid
- FILE \* log
- struct mem\_ops ops
- struct mem\_ops direct\_ops

#### 5.43.1 Detailed Description

Memory regions assigned to devices

## 5.43.2 Field Documentation

5.43.2.1 oraddr\_t dev\_memarea::addr\_compare

5.43.2.2 oraddr\_t dev\_memarea::addr\_mask

5.43.2.3 struct mem\_ops dev\_memarea::direct\_ops [read]

5.43.2.4 FILE\* dev\_memarea::log

5.43.2.5 struct dev\_memarea\* dev\_memarea::next [read]

5.43.2.6 struct mem\_ops dev\_memarea::ops [read]

5.43.2.7 uint32\_t dev\_memarea::size

5.43.2.8 oraddr\_t dev\_memarea::size\_mask

5.43.2.9 int dev\_memarea::valid

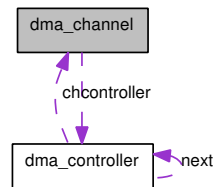
The documentation for this struct was generated from the following file:

- [cpu/common/abstract.h](#)

## 5.44 dma\_channel Struct Reference

```
#include <dma.h>
```

Collaboration diagram for dma\_channel:



### Data Fields

- struct [dma\\_controller](#) \* controller
- unsigned [channel\\_number](#)
- unsigned long [channel\\_mask](#)
- unsigned [referenced](#)
- unsigned [load\\_next\\_descriptor\\_when\\_done](#)
- unsigned long [current\\_descriptor](#)
- [oraddr\\_t](#) source
- [oraddr\\_t](#) destination
- [oraddr\\_t](#) source\_mask
- [oraddr\\_t](#) destination\_mask
- unsigned long [chunk\\_size](#)
- unsigned long [total\\_size](#)
- unsigned long [words\\_transferred](#)
- struct {
  - unsigned long [csr](#)
  - unsigned long [sz](#)
  - unsigned long [a0](#)
  - unsigned long [am0](#)
  - unsigned long [a1](#)
  - unsigned long [am1](#)
  - unsigned long [desc](#)
  - unsigned long [swptr](#)
- } [regs](#)
- unsigned [dma\\_req\\_i](#)
- unsigned [dma\\_ack\\_o](#)
- unsigned [dma\\_nd\\_i](#)



### 5.44.1 Field Documentation

- 5.44.1.1 unsigned long dma\_channel::a0
- 5.44.1.2 unsigned long dma\_channel::a1
- 5.44.1.3 unsigned long dma\_channel::am0
- 5.44.1.4 unsigned long dma\_channel::am1
- 5.44.1.5 unsigned long dma\_channel::channel\_mask
- 5.44.1.6 unsigned dma\_channel::channel\_number
- 5.44.1.7 unsigned long dma\_channel::chunk\_size
- 5.44.1.8 struct dma\_controller\* dma\_channel::controller [read]
- 5.44.1.9 unsigned long dma\_channel::csr
- 5.44.1.10 unsigned long dma\_channel::current\_descriptor
- 5.44.1.11 unsigned long dma\_channel::desc
- 5.44.1.12 oraddr\_t dma\_channel::destination
- 5.44.1.13 oraddr\_t dma\_channel::destination\_mask
- 5.44.1.14 unsigned dma\_channel::dma\_ack\_o
- 5.44.1.15 unsigned dma\_channel::dma\_nd\_i
- 5.44.1.16 unsigned dma\_channel::dma\_req\_i
- 5.44.1.17 unsigned dma\_channel::load\_next\_descriptor\_when\_done
- 5.44.1.18 unsigned dma\_channel::referenced
- 5.44.1.19 struct { ... } dma\_channel::regs
- 5.44.1.20 oraddr\_t dma\_channel::source
- 5.44.1.21 oraddr\_t dma\_channel::source\_mask
- 5.44.1.22 unsigned long dma\_channel::swptr
- 5.44.1.23 unsigned long dma\_channel::sz
- 5.44.1.24 unsigned long dma\_channel::total\_size
- 5.44.1.25 unsigned long dma\_channel::words\_transferred

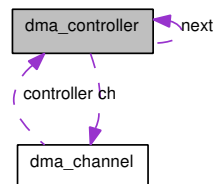
The documentation for this struct was generated from the following file:

- [peripheral/dma.h](#)

## 5.45 dma\_controller Struct Reference

```
#include <dma.h>
```

Collaboration diagram for dma\_controller:



### Data Fields

- int `enabled`
- `oraddr_t` `baseaddr`
- unsigned `irq`
- int `vapi_id`
- struct {
  - unsigned long `csr`
  - unsigned long `int_msk_a`
  - unsigned long `int_msk_b`
  - unsigned long `int_src_a`
  - unsigned long `int_src_b`} `regs`
- struct `dma_channel` `ch` [DMA\_NUM\_CHANNELS]
- struct `dma_controller` \* `next`

## 5.45.1 Field Documentation

5.45.1.1 `oraddr_t dma_controller::baseaddr`

5.45.1.2 `struct dma_channel dma_controller::ch[DMA_NUM_CHANNELS]` [read]

5.45.1.3 `unsigned long dma_controller::csr`

5.45.1.4 `int dma_controller::enabled`

5.45.1.5 `unsigned long dma_controller::int_msk_a`

5.45.1.6 `unsigned long dma_controller::int_msk_b`

5.45.1.7 `unsigned long dma_controller::int_src_a`

5.45.1.8 `unsigned long dma_controller::int_src_b`

5.45.1.9 `unsigned dma_controller::irq`

5.45.1.10 `struct dma_controller* dma_controller::next` [read]

5.45.1.11 `struct { ... } dma_controller::regs`

5.45.1.12 `int dma_controller::vapi_id`

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

- [peripheral/dma.h](#)

## 5.46 dmmu Struct Reference

```
#include <dmmu.h>
```

### Data Fields

- int `enabled`
- int `nways`
- int `nsets`
- int `pagesize`
- int `pagesize_log2`
- oraddr\_t `page_offset_mask`
- oraddr\_t `page_mask`
- oraddr\_t `vpn_mask`
- int `lru_reload`
- oraddr\_t `set_mask`
- int `entrysize`
- int `ustates`
- int `missdelay`
- int `hitdelay`

## 5.46.1 Field Documentation

5.46.1.1 int dmmu::enabled

5.46.1.2 int dmmu::entrysize

5.46.1.3 int dmmu::hitdelay

5.46.1.4 int dmmu::lru\_reload

5.46.1.5 int dmmu::missdelay

5.46.1.6 int dmmu::nsets

5.46.1.7 int dmmu::nways

5.46.1.8 oraddr\_t dmmu::page\_mask

5.46.1.9 oraddr\_t dmmu::page\_offset\_mask

5.46.1.10 int dmmu::pagesize

5.46.1.11 int dmmu::pagesize\_log2

5.46.1.12 oraddr\_t dmmu::set\_mask

5.46.1.13 int dmmu::ustates

5.46.1.14 oraddr\_t dmmu::vpn\_mask

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

- [mmu/dmmu.h](#)

## 5.47 dmmustats\_entry Struct Reference

```
#include <stats.h>
```

### Data Fields

- int [loads\\_tlbhit](#)
- int [loads\\_tlbmiss](#)
- int [loads\\_pagefaults](#)
- int [stores\\_tlbhit](#)
- int [stores\\_tlbmiss](#)
- int [stores\\_pagefaults](#)

### 5.47.1 Field Documentation

**5.47.1.1** int dmmustats\_entry::loads\_pagefaults

**5.47.1.2** int dmmustats\_entry::loads\_tlbhit

**5.47.1.3** int dmmustats\_entry::loads\_tlbmiss

**5.47.1.4** int dmmustats\_entry::stores\_pagefaults

**5.47.1.5** int dmmustats\_entry::stores\_tlbhit

**5.47.1.6** int dmmustats\_entry::stores\_tlbmiss

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

- [cpu/common/stats.h](#)

## 5.48 dstats\_entry Struct Reference

### Data Fields

- int [insn1](#)
- int [insn2](#)
- int [cnt\\_dynamic](#)
- int [depend](#)

### 5.48.1 Field Documentation

5.48.1.1 int dstats\_entry::cnt\_dynamic

5.48.1.2 int dstats\_entry::depend

5.48.1.3 int dstats\_entry::insn1

5.48.1.4 int dstats\_entry::insn2

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

- [cpu/common/stats.c](#)



## 5.49 dyn\_page Struct Reference

```
#include <dyn-rec.h>
```

### Data Fields

- [oraddr\\_t or\\_page](#)
- void \* [host\\_page](#)
- unsigned int [host\\_len](#)
- int [dirty](#)
- int [delayr](#)
- uint16\_t [ts\\_bound](#) [2049]
- void \*\* [locs](#)
- uint32\_t \* [insns](#)
- unsigned int \* [insn\\_indexes](#)

### 5.49.1 Field Documentation

**5.49.1.1 int dyn\_page::delayr**

**5.49.1.2 int dyn\_page::dirty**

**5.49.1.3 unsigned int dyn\_page::host\_len**

**5.49.1.4 void\* dyn\_page::host\_page**

**5.49.1.5 unsigned int\* dyn\_page::insn\_indexes**

**5.49.1.6 uint32\_t\* dyn\_page::insns**

**5.49.1.7 void\*\* dyn\_page::locs**

**5.49.1.8 oraddr\_t dyn\_page::or\_page**

**5.49.1.9 uint16\_t dyn\_page::ts\_bound[2049]**

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

- [cpu/or32/dyn-rec.h](#)

## 5.50 dynamic Struct Reference

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

### Data Fields

- [Elf32\\_Sword d\\_tag](#)
- union {
  - [Elf32\\_Sword d\\_val](#)
  - [Elf32\\_Addr d\\_ptr](#)
- [d\\_un](#)

### 5.50.1 Field Documentation

#### 5.50.1.1 Elf32\_Addr dynamic::d\_ptr

#### 5.50.1.2 Elf32\_Sword dynamic::d\_tag

#### 5.50.1.3 union { ... } dynamic::d\_un

#### 5.50.1.4 Elf32\_Sword dynamic::d\_val

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

- [cpu/common/elf.h](#)

## 5.51 elf32\_hdr 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](#)

### 5.51.1 Field Documentation

- 5.51.1.1 Elf32\_Half elf32\_hdr::e\_ehsize
- 5.51.1.2 Elf32\_Addr elf32\_hdr::e\_entry
- 5.51.1.3 Elf32\_Word elf32\_hdr::e\_flags
- 5.51.1.4 unsigned char elf32\_hdr::e\_ident[EI\_NIDENT]
- 5.51.1.5 Elf32\_Half elf32\_hdr::e\_machine
- 5.51.1.6 Elf32\_Half elf32\_hdr::e\_phentsize
- 5.51.1.7 Elf32\_Half elf32\_hdr::e\_phnum
- 5.51.1.8 Elf32\_Off elf32\_hdr::e\_phoff
- 5.51.1.9 Elf32\_Half elf32\_hdr::e\_shentsize
- 5.51.1.10 Elf32\_Half elf32\_hdr::e\_shnum
- 5.51.1.11 Elf32\_Off elf32\_hdr::e\_shoff
- 5.51.1.12 Elf32\_Half elf32\_hdr::e\_shstrndx
- 5.51.1.13 Elf32\_Half elf32\_hdr::e\_type
- 5.51.1.14 Elf32\_Word elf32\_hdr::e\_version

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

- [cpu/common/elf.h](#)

## 5.52 elf32\_note Struct Reference

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

### Data Fields

- [Elf32\\_Word n\\_namesz](#)
- [Elf32\\_Word n\\_descsz](#)
- [Elf32\\_Word n\\_type](#)

### 5.52.1 Field Documentation

**5.52.1.1** [Elf32\\_Word elf32\\_note::n\\_descsz](#)

**5.52.1.2** [Elf32\\_Word elf32\\_note::n\\_namesz](#)

**5.52.1.3** [Elf32\\_Word elf32\\_note::n\\_type](#)

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

- [cpu/common/elf.h](#)

## 5.53 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](#)

### 5.53.1 Field Documentation

**5.53.1.1 Elf32\_Word elf32\_phdr::p\_align**

**5.53.1.2 Elf32\_Word elf32\_phdr::p\_filesz**

**5.53.1.3 Elf32\_Word elf32\_phdr::p\_flags**

**5.53.1.4 Elf32\_Word elf32\_phdr::p\_memsz**

**5.53.1.5 Elf32\_Off elf32\_phdr::p\_offset**

**5.53.1.6 Elf32\_Addr elf32\_phdr::p\_paddr**

**5.53.1.7 Elf32\_Word elf32\_phdr::p\_type**

**5.53.1.8 Elf32\_Addr elf32\_phdr::p\_vaddr**

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

- [cpu/common/elf.h](#)

## 5.54 elf32\_rel Struct Reference

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

### Data Fields

- [Elf32\\_Addr r\\_offset](#)
- [Elf32\\_Word r\\_info](#)

### 5.54.1 Field Documentation

#### 5.54.1.1 Elf32\_Word elf32\_rel::r\_info

#### 5.54.1.2 Elf32\_Addr elf32\_rel::r\_offset

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

- [cpu/common/elf.h](#)

## 5.55 elf32\_rela Struct Reference

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

### Data Fields

- [Elf32\\_Addr r\\_offset](#)
- [Elf32\\_Word r\\_info](#)
- [Elf32\\_Sword r\\_addend](#)

### 5.55.1 Field Documentation

**5.55.1.1 Elf32\_Sword elf32\_rela::r\_addend**

**5.55.1.2 Elf32\_Word elf32\_rela::r\_info**

**5.55.1.3 Elf32\_Addr elf32\_rela::r\_offset**

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

- [cpu/common/elf.h](#)



## 5.56 elf32\_shdr Struct Reference

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

### Data Fields

- [Elf32\\_Word sh\\_name](#)
- [Elf32\\_Word sh\\_type](#)
- [Elf32\\_Word sh\\_flags](#)
- [Elf32\\_Addr sh\\_addr](#)
- [Elf32\\_Off sh\\_offset](#)
- [Elf32\\_Word sh\\_size](#)
- [Elf32\\_Word sh\\_link](#)
- [Elf32\\_Word sh\\_info](#)
- [Elf32\\_Word sh\\_addralign](#)
- [Elf32\\_Word sh\\_entsize](#)

### 5.56.1 Field Documentation

**5.56.1.1** Elf32\_Addr elf32\_shdr::sh\_addr

**5.56.1.2** Elf32\_Word elf32\_shdr::sh\_addralign

**5.56.1.3** Elf32\_Word elf32\_shdr::sh\_entsize

**5.56.1.4** Elf32\_Word elf32\_shdr::sh\_flags

**5.56.1.5** Elf32\_Word elf32\_shdr::sh\_info

**5.56.1.6** Elf32\_Word elf32\_shdr::sh\_link

**5.56.1.7** Elf32\_Word elf32\_shdr::sh\_name

**5.56.1.8** Elf32\_Off elf32\_shdr::sh\_offset

**5.56.1.9** Elf32\_Word elf32\_shdr::sh\_size

**5.56.1.10** Elf32\_Word elf32\_shdr::sh\_type

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

- [cpu/common/elf.h](#)

## 5.57 elf32\_sym Struct Reference

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

### Data Fields

- [Elf32\\_Word st\\_name](#)
- [Elf32\\_Addr st\\_value](#)
- [Elf32\\_Word st\\_size](#)
- unsigned char [st\\_info](#)
- unsigned char [st\\_other](#)
- [Elf32\\_Half st\\_shndx](#)

### 5.57.1 Field Documentation

**5.57.1.1** unsigned char `elf32_sym::st_info`

**5.57.1.2** [Elf32\\_Word](#) `elf32_sym::st_name`

**5.57.1.3** unsigned char `elf32_sym::st_other`

**5.57.1.4** [Elf32\\_Half](#) `elf32_sym::st_shndx`

**5.57.1.5** [Elf32\\_Word](#) `elf32_sym::st_size`

**5.57.1.6** [Elf32\\_Addr](#) `elf32_sym::st_value`

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

- [cpu/common/elf.h](#)

## 5.58 Elf64\_Dyn Struct Reference

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

### Data Fields

- unsigned long long [d\\_tag](#)
- union {
  - unsigned long long [d\\_val](#)
  - unsigned long long [d\\_ptr](#)
- } [d\\_un](#)

### 5.58.1 Field Documentation

**5.58.1.1 unsigned long long Elf64\_Dyn::d\_ptr**

**5.58.1.2 unsigned long long Elf64\_Dyn::d\_tag**

**5.58.1.3 union { ... } Elf64\_Dyn::d\_un**

**5.58.1.4 unsigned long long Elf64\_Dyn::d\_val**

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

- [cpu/common/elf.h](#)

## 5.59 elf64\_hdr Struct Reference

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

### Data Fields

- unsigned char [e\\_ident](#) [16]
- short int [e\\_type](#)
- short unsigned int [e\\_machine](#)
- int [e\\_version](#)
- unsigned long long [e\\_entry](#)
- unsigned long long [e\\_phoff](#)
- unsigned long long [e\\_shoff](#)
- int [e\\_flags](#)
- short int [e\\_ehsize](#)
- short int [e\\_phentsize](#)
- short int [e\\_phnum](#)
- short int [e\\_shentsize](#)
- short int [e\\_shnum](#)
- short int [e\\_shstrndx](#)

## 5.59.1 Field Documentation

- 5.59.1.1 short int elf64\_hdr::e\_ehsize
- 5.59.1.2 unsigned long long elf64\_hdr::e\_entry
- 5.59.1.3 int elf64\_hdr::e\_flags
- 5.59.1.4 unsigned char elf64\_hdr::e\_ident[16]
- 5.59.1.5 short unsigned int elf64\_hdr::e\_machine
- 5.59.1.6 short int elf64\_hdr::e\_phentsize
- 5.59.1.7 short int elf64\_hdr::e\_phnum
- 5.59.1.8 unsigned long long elf64\_hdr::e\_phoff
- 5.59.1.9 short int elf64\_hdr::e\_shentsize
- 5.59.1.10 short int elf64\_hdr::e\_shnum
- 5.59.1.11 unsigned long long elf64\_hdr::e\_shoff
- 5.59.1.12 short int elf64\_hdr::e\_shstrndx
- 5.59.1.13 short int elf64\_hdr::e\_type
- 5.59.1.14 int elf64\_hdr::e\_version

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

- [cpu/common/elf.h](#)

## 5.60 elf64\_note Struct Reference

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

### Data Fields

- unsigned int [n\\_namesz](#)
- unsigned int [n\\_descsz](#)
- unsigned int [n\\_type](#)

### 5.60.1 Field Documentation

**5.60.1.1** unsigned int `elf64_note::n_descsz`

**5.60.1.2** unsigned int `elf64_note::n_namesz`

**5.60.1.3** unsigned int `elf64_note::n_type`

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

- [cpu/common/elf.h](#)

## 5.61 elf64\_phdr Struct Reference

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

### Data Fields

- int [p\\_type](#)
- int [p\\_flags](#)
- unsigned long long [p\\_offset](#)
- unsigned long long [p\\_vaddr](#)
- unsigned long long [p\\_paddr](#)
- unsigned long long [p\\_filesz](#)
- unsigned long long [p\\_memsz](#)
- unsigned long long [p\\_align](#)

### 5.61.1 Field Documentation

**5.61.1.1 unsigned long long elf64\_phdr::p\_align**

**5.61.1.2 unsigned long long elf64\_phdr::p\_filesz**

**5.61.1.3 int elf64\_phdr::p\_flags**

**5.61.1.4 unsigned long long elf64\_phdr::p\_memsz**

**5.61.1.5 unsigned long long elf64\_phdr::p\_offset**

**5.61.1.6 unsigned long long elf64\_phdr::p\_paddr**

**5.61.1.7 int elf64\_phdr::p\_type**

**5.61.1.8 unsigned long long elf64\_phdr::p\_vaddr**

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

- [cpu/common/elf.h](#)

## 5.62 elf64\_rel Struct Reference

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

### Data Fields

- unsigned long long [r\\_offset](#)
- unsigned long long [r\\_info](#)

### 5.62.1 Field Documentation

#### 5.62.1.1 unsigned long long elf64\_rel::r\_info

#### 5.62.1.2 unsigned long long elf64\_rel::r\_offset

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

- [cpu/common/elf.h](#)



## 5.63 elf64\_rela Struct Reference

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

### Data Fields

- unsigned long long [r\\_offset](#)
- unsigned long long [r\\_info](#)
- unsigned long long [r\\_addend](#)

### 5.63.1 Field Documentation

**5.63.1.1** unsigned long long `elf64_rela::r_addend`

**5.63.1.2** unsigned long long `elf64_rela::r_info`

**5.63.1.3** unsigned long long `elf64_rela::r_offset`

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

- [cpu/common/elf.h](#)

## 5.64 elf64\_shdr Struct Reference

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

### Data Fields

- unsigned int [sh\\_name](#)
- unsigned int [sh\\_type](#)
- unsigned long long [sh\\_flags](#)
- unsigned long long [sh\\_addr](#)
- unsigned long long [sh\\_offset](#)
- unsigned long long [sh\\_size](#)
- unsigned int [sh\\_link](#)
- unsigned int [sh\\_info](#)
- unsigned long long [sh\\_addralign](#)
- unsigned long long [sh\\_entsize](#)

### 5.64.1 Field Documentation

**5.64.1.1** unsigned long long `elf64_shdr::sh_addr`

**5.64.1.2** unsigned long long `elf64_shdr::sh_addralign`

**5.64.1.3** unsigned long long `elf64_shdr::sh_entsize`

**5.64.1.4** unsigned long long `elf64_shdr::sh_flags`

**5.64.1.5** unsigned int `elf64_shdr::sh_info`

**5.64.1.6** unsigned int `elf64_shdr::sh_link`

**5.64.1.7** unsigned int `elf64_shdr::sh_name`

**5.64.1.8** unsigned long long `elf64_shdr::sh_offset`

**5.64.1.9** unsigned long long `elf64_shdr::sh_size`

**5.64.1.10** unsigned int `elf64_shdr::sh_type`

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

- `cpu/common/elf.h`

## 5.65 elf64\_sym Struct Reference

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

### Data Fields

- unsigned int [st\\_name](#)
- unsigned char [st\\_info](#)
- unsigned char [st\\_other](#)
- unsigned short [st\\_shndx](#)
- unsigned long long [st\\_value](#)
- unsigned long long [st\\_size](#)

### 5.65.1 Field Documentation

**5.65.1.1** unsigned char `elf64_sym::st_info`

**5.65.1.2** unsigned int `elf64_sym::st_name`

**5.65.1.3** unsigned char `elf64_sym::st_other`

**5.65.1.4** unsigned short `elf64_sym::st_shndx`

**5.65.1.5** unsigned long long `elf64_sym::st_size`

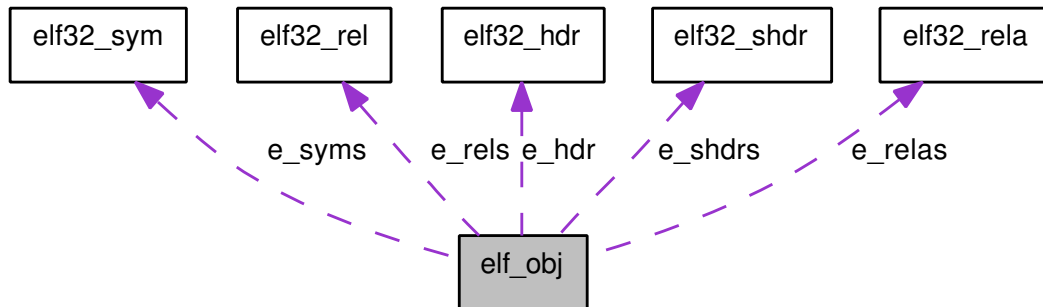
**5.65.1.6** unsigned long long `elf64_sym::st_value`

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

- [cpu/common/elf.h](#)

## 5.66 elf\_obj Struct Reference

Collaboration diagram for elf\_obj:



### Data Fields

- [Elf32\\_Ehdr](#) e\_hdr
- [Elf32\\_Shdr](#) \* e\_shdrs
- void \*\* e\_sections
- [Elf32\\_Sym](#) \* e\_syms
- unsigned int e\_sym\_num
- unsigned int e\_sym\_str\_tab
- [Elf32\\_Rel](#) \* e\_rels
- unsigned int e\_rel\_num
- unsigned int e\_rel\_sym
- unsigned int e\_rel\_sec
- [Elf32\\_Rela](#) \* e\_relas
- unsigned int e\_rela\_num
- unsigned int e\_rela\_sym
- unsigned int e\_rela\_sec

## 5.66.1 Field Documentation

5.66.1.1 Elf32\_Ehdr elf\_obj::e\_hdr

5.66.1.2 unsigned int elf\_obj::e\_rel\_num

5.66.1.3 unsigned int elf\_obj::e\_rel\_sec

5.66.1.4 unsigned int elf\_obj::e\_rel\_sym

5.66.1.5 unsigned int elf\_obj::e\_rela\_num

5.66.1.6 unsigned int elf\_obj::e\_rela\_sec

5.66.1.7 unsigned int elf\_obj::e\_rela\_sym

5.66.1.8 Elf32\_Rela\* elf\_obj::e\_relas

5.66.1.9 Elf32\_Rel\* elf\_obj::e\_rels

5.66.1.10 void\*\* elf\_obj::e\_sections

5.66.1.11 Elf32\_Shdr\* elf\_obj::e\_shdrs

5.66.1.12 unsigned int elf\_obj::e\_sym\_num

5.66.1.13 unsigned int elf\_obj::e\_sym\_str\_tab

5.66.1.14 Elf32\_Sym\* elf\_obj::e\_syms

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

- [cpu/or32/dyngen-elf.c](#)

## 5.67 eth\_device Struct Reference

### Data Fields

- int `enabled`
- `oraddr_t` `baseaddr`
- unsigned `dma`
- unsigned `tx_channel`
- unsigned `rx_channel`
- unsigned char `mac_address` [ETHER\_ADDR\_LEN]
- unsigned long `mac_int`
- unsigned long `base_vapi_id`
- char \* `rxfile`
- char \* `txfile`
- int `txfd`
- int `rxfd`
- `off_t` `loopback_offset`
- char \* `sockif`
- int `rtx_sock`
- int `rtx_type`
- struct ifreq `ifr`
- `fd_set` `rfd`s
- `fd_set` `wfd`s
- struct {
  - unsigned long `state`
  - unsigned long `bd_index`
  - unsigned long `bd`
  - unsigned long `bd_addr`
  - unsigned `working`
  - unsigned `waiting_for_dma`
  - unsigned `error`
  - long `packet_length`
  - unsigned `minimum_length`
  - unsigned `maximum_length`
  - unsigned `add_crc`
  - unsigned `crc_dly`
  - unsigned long `crc_value`
  - long `bytes_left`
  - long `bytes_sent`
- } `tx`
- struct {
  - unsigned long `state`
  - unsigned long `bd_index`
  - unsigned long `bd`
  - unsigned long `bd_addr`
  - int `fd`
  - `off_t` \* `offset`
  - unsigned `working`
  - unsigned `error`
  - unsigned `waiting_for_dma`
  - long `packet_length`

```
    long bytes_read
    long bytes_left
} rx
```

- struct {
    - unsigned long moder
    - unsigned long int\_source
    - unsigned long int\_mask
    - unsigned long ipgt
    - unsigned long ipgr1
    - unsigned long ipgr2
    - unsigned long packetlen
    - unsigned long collconf
    - unsigned long tx\_bd\_num
    - unsigned long controlmoder
    - unsigned long miimoder
    - unsigned long miicommand
    - unsigned long miiaddress
    - unsigned long miitx\_data
    - unsigned long miirx\_data
    - unsigned long miistatus
    - unsigned long hash0
    - unsigned long hash1
    - unsigned long bd\_ram [ETH\_BD\_SPACE/4]
- ```
} regs
```

- unsigned char rx\_buff [ETH\_MAXPL]

- unsigned char tx\_buff [ETH\_MAXPL]

- unsigned char lo\_buff [ETH\_MAXPL]





## 5.67.1 Field Documentation

- 5.67.1.1 unsigned eth\_device::add\_crc
- 5.67.1.2 unsigned long eth\_device::base\_vapi\_id
- 5.67.1.3 oraddr\_t eth\_device::baseaddr
- 5.67.1.4 unsigned long eth\_device::bd
- 5.67.1.5 unsigned long eth\_device::bd\_addr
- 5.67.1.6 unsigned long eth\_device::bd\_index
- 5.67.1.7 unsigned long eth\_device::bd\_ram[ETH\_BD\_SPACE/4]
- 5.67.1.8 long eth\_device::bytes\_left
- 5.67.1.9 long eth\_device::bytes\_read
- 5.67.1.10 long eth\_device::bytes\_sent
- 5.67.1.11 unsigned long eth\_device::collconf
- 5.67.1.12 unsigned long eth\_device::controlmoder
- 5.67.1.13 unsigned eth\_device::crc\_dly
- 5.67.1.14 unsigned long eth\_device::crc\_value
- 5.67.1.15 unsigned eth\_device::dma
- 5.67.1.16 int eth\_device::enabled
- 5.67.1.17 unsigned eth\_device::error
- 5.67.1.18 int eth\_device::fd
- 5.67.1.19 unsigned long eth\_device::hash0
- 5.67.1.20 unsigned long eth\_device::hash1
- 5.67.1.21 struct ifreq eth\_device::ifr [read]
- 5.67.1.22 unsigned long eth\_device::int\_mask
- 5.67.1.23 unsigned long eth\_device::int\_source
- 5.67.1.24 unsigned long eth\_device::ipgr1
- 5.67.1.25 unsigned long eth\_device::ipgr2
- 5.67.1.26 unsigned long eth\_device::ipgt
- 5.67.1.27 unsigned char eth\_device::loopback\_offset
- 5.67.1.28 off\_t eth\_device::loopback\_offset
- 5.67.1.29 unsigned char eth\_device::mac\_address[ETHER\_ADDR\_LEN]
- 5.67.1.30 unsigned long eth\_device::mac\_int

- [peripheral/eth.c](#)

## 5.68 ether\_addr Struct Reference

### Data Fields

- `u_int8_t ether_addr_octet` [ETH\_ALEN]

### 5.68.1 Field Documentation

#### 5.68.1.1 `u_int8_t ether_addr::ether_addr_octet`[ETH\_ALEN]

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

- `peripheral/eth.c`

## 5.69 ether\_header Struct Reference

### Data Fields

- `u_int8_t ether_dhost` [ETH\_ALEN]
- `u_int8_t ether_shost` [ETH\_ALEN]
- `u_int16_t ether_type`

### 5.69.1 Field Documentation

**5.69.1.1** `u_int8_t ether_header::ether_dhost`[ETH\_ALEN]

**5.69.1.2** `u_int8_t ether_header::ether_shost`[ETH\_ALEN]

**5.69.1.3** `u_int16_t ether_header::ether_type`

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

- `peripheral/eth.c`

## 5.70 fb\_state Struct Reference

### Data Fields

- int `enabled`
- unsigned long `pal` [256]
- int `ctrl`
- int `pic`
- int `in_refresh`
- int `refresh_count`
- `oraddr_t` `addr`
- `oraddr_t` `cam_addr`
- int `camerax`
- int `cameray`
- int `camera_pos`
- `oraddr_t` `baseaddr`
- int `refresh`
- int `refresh_rate`
- char \* `filename`

## 5.70.1 Field Documentation

- 5.70.1.1 `oraddr_t fb_state::addr`
- 5.70.1.2 `oraddr_t fb_state::baseaddr`
- 5.70.1.3 `oraddr_t fb_state::cam_addr`
- 5.70.1.4 `int fb_state::camera_pos`
- 5.70.1.5 `int fb_state::camerax`
- 5.70.1.6 `int fb_state::cameray`
- 5.70.1.7 `int fb_state::ctrl`
- 5.70.1.8 `int fb_state::enabled`
- 5.70.1.9 `char* fb_state::filename`
- 5.70.1.10 `int fb_state::in_refresh`
- 5.70.1.11 `unsigned long fb_state::pal[256]`
- 5.70.1.12 `int fb_state::pic`
- 5.70.1.13 `int fb_state::refresh`
- 5.70.1.14 `int fb_state::refresh_count`
- 5.70.1.15 `int fb_state::refresh_rate`

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

- [peripheral/fb.c](#)

## 5.71 fd\_channel Struct Reference

```
#include <fd.h>
```

### Data Fields

- int [fdin](#)
- int [fdout](#)

### 5.71.1 Detailed Description

Data structure to represent a [channel](#) through file descriptors

### 5.71.2 Field Documentation

#### 5.71.2.1 int fd\_channel::fdin

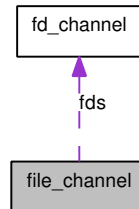
#### 5.71.2.2 int fd\_channel::fdout

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

- [peripheral/channels/fd.h](#)

## 5.72 file\_channel Struct Reference

Collaboration diagram for file\_channel:



### Data Fields

- struct [fd\\_channel](#) `fds`
- char \* [namein](#)
- char \* [nameout](#)

### 5.72.1 Detailed Description

Data structure representing a [channel](#) to/from a file

### 5.72.2 Field Documentation

**5.72.2.1** struct [fd\\_channel](#) `file_channel::fds` [`read`]

**5.72.2.2** char\* `file_channel::namein`

**5.72.2.3** char\* `file_channel::nameout`

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

- [peripheral/channels/file.c](#)



## 5.73 fstats\_entry Struct Reference

### Data Fields

- enum insn\_type [insn1](#)
- enum insn\_type [insn2](#)
- int [cnt\\_dynamic](#)
- int [depend](#)

### 5.73.1 Field Documentation

**5.73.1.1** int fstats\_entry::cnt\_dynamic

**5.73.1.2** int fstats\_entry::depend

**5.73.1.3** enum insn\_type fstats\_entry::insn1

**5.73.1.4** enum insn\_type fstats\_entry::insn2

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

- [cpu/common/stats.c](#)

## 5.74 func\_struct Struct Reference

```
#include <profiler.h>
```

### Data Fields

- unsigned int [addr](#)
- char [name](#) [33]
- long [cum\\_cycles](#)
- long [calls](#)

### 5.74.1 Detailed Description

Data structure for information about functions

### 5.74.2 Field Documentation

#### 5.74.2.1 unsigned int func\_struct::addr

Start address of function

#### 5.74.2.2 long func\_struct::calls

Calls to this function

#### 5.74.2.3 long func\_struct::cum\_cycles

Total cycles spent in function

#### 5.74.2.4 char func\_struct::name[33]

Name of the function

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

- [profiler.h](#)

## 5.75 gpio\_device Struct Reference

### Data Fields

- int `enabled`
- `oraddr_t` `baseaddr`
- int `irq`
- unsigned `gpio_number`
- unsigned long `base_vapi_id`
- unsigned long `auxiliary_inputs`
- struct {
  - unsigned long `in`
  - unsigned long `out`
  - unsigned long `oe`
  - unsigned long `inte`
  - unsigned long `ptrig`
  - unsigned long `aux`
  - unsigned long `ctrl`
  - unsigned long `ints`
  - int `external_clock`
- struct {
  - unsigned long `in`
  - unsigned long `out`
  - unsigned long `oe`
  - unsigned long `inte`
  - unsigned long `ptrig`
  - unsigned long `aux`
  - unsigned long `ctrl`
  - unsigned long `ints`
  - int `external_clock`

### 5.75.1 Field Documentation

- 5.75.1.1 unsigned long gpio\_device::aux
- 5.75.1.2 unsigned long gpio\_device::auxiliary\_inputs
- 5.75.1.3 unsigned long gpio\_device::base\_vapi\_id
- 5.75.1.4 oraddr\_t gpio\_device::baseaddr
- 5.75.1.5 unsigned long gpio\_device::ctrl
- 5.75.1.6 struct { ... } gpio\_device::curr
- 5.75.1.7 int gpio\_device::enabled
- 5.75.1.8 int gpio\_device::external\_clock
- 5.75.1.9 unsigned gpio\_device::gpio\_number
- 5.75.1.10 unsigned long gpio\_device::in
- 5.75.1.11 unsigned long gpio\_device::inte
- 5.75.1.12 unsigned long gpio\_device::ints
- 5.75.1.13 int gpio\_device::irq
- 5.75.1.14 struct { ... } gpio\_device::next
- 5.75.1.15 unsigned long gpio\_device::oe
- 5.75.1.16 unsigned long gpio\_device::out
- 5.75.1.17 unsigned long gpio\_device::ptrig

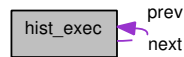
The documentation for this struct was generated from the following file:

- [peripheral/gpio.c](#)

## 5.76 hist\_exec Struct Reference

```
#include <execute.h>
```

Collaboration diagram for hist\_exec:



### Data Fields

- [oraddr\\_t addr](#)
- struct [hist\\_exec](#) \* [prev](#)
- struct [hist\\_exec](#) \* [next](#)

### 5.76.1 Detailed Description

History of execution

### 5.76.2 Field Documentation

#### 5.76.2.1 oraddr\_t hist\_exec::addr

**5.76.2.2** struct [hist\\_exec](#)\* [hist\\_exec::next](#) [read]

**5.76.2.3** struct [hist\\_exec](#)\* [hist\\_exec::prev](#) [read]

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

- [cpu/common/execute.h](#)

## 5.77 ic Struct Reference

```
#include <icache-model.h>
```

### Data Fields

- uint8\_t \* [mem](#)
- unsigned int \* [lrus](#)
- [oraddr\\_t](#) \* [tags](#)
- int [enabled](#)
- unsigned int [nways](#)
- unsigned int [nsets](#)
- unsigned int [blocksize](#)
- unsigned int [ustates](#)
- int [missdelay](#)
- int [hitdelay](#)
- unsigned int [blocksize\\_log2](#)
- [oraddr\\_t](#) [set\\_mask](#)
- [oraddr\\_t](#) [tagaddr\\_mask](#)
- [oraddr\\_t](#) [last\\_way](#)
- [oraddr\\_t](#) [block\\_offset\\_mask](#)
- [oraddr\\_t](#) [block\\_mask](#)
- unsigned int [ustates\\_reload](#)

## 5.77.1 Field Documentation

5.77.1.1 oraddr\_t ic::block\_mask

5.77.1.2 oraddr\_t ic::block\_offset\_mask

5.77.1.3 unsigned int ic::blocksize

5.77.1.4 unsigned int ic::blocksize\_log2

5.77.1.5 int ic::enabled

5.77.1.6 int ic::hitdelay

5.77.1.7 oraddr\_t ic::last\_way

5.77.1.8 unsigned int\* ic::lrus

5.77.1.9 uint8\_t\* ic::mem

5.77.1.10 int ic::missdelay

5.77.1.11 unsigned int ic::nsets

5.77.1.12 unsigned int ic::nways

5.77.1.13 oraddr\_t ic::set\_mask

5.77.1.14 oraddr\_t ic::tagaddr\_mask

5.77.1.15 oraddr\_t\* ic::tags

5.77.1.16 unsigned int ic::ustates

5.77.1.17 unsigned int ic::ustates\_reload

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

- [cache/icache-model.h](#)

## 5.78 immu Struct Reference

```
#include <immu.h>
```

### Data Fields

- int `enabled`
- int `nways`
- int `nsets`
- `oraddr_t` `pagesize`
- int `pagesize_log2`
- `oraddr_t` `page_offset_mask`
- `oraddr_t` `page_mask`
- `oraddr_t` `vpn_mask`
- int `lru_reload`
- `oraddr_t` `set_mask`
- int `entrysize`
- int `ustates`
- int `missdelay`
- int `hitdelay`



## 5.78.1 Field Documentation

5.78.1.1 `int immu::enabled`

5.78.1.2 `int immu::entrysize`

5.78.1.3 `int immu::hitdelay`

5.78.1.4 `int immu::lru_reload`

5.78.1.5 `int immu::missdelay`

5.78.1.6 `int immu::nsets`

5.78.1.7 `int immu::nways`

5.78.1.8 `oraddr_t immu::page_mask`

5.78.1.9 `oraddr_t immu::page_offset_mask`

5.78.1.10 `oraddr_t immu::pagesize`

5.78.1.11 `int immu::pagesize_log2`

5.78.1.12 `oraddr_t immu::set_mask`

5.78.1.13 `int immu::ustates`

5.78.1.14 `oraddr_t immu::vpn_mask`

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

- [mmu/immu.h](#)

## 5.79 immustats\_entry Struct Reference

```
#include <stats.h>
```

### Data Fields

- int [fetch\\_tlbhit](#)
- int [fetch\\_tlbmiss](#)
- int [fetch\\_pagefaults](#)

### 5.79.1 Field Documentation

**5.79.1.1** int immustats\_entry::fetch\_pagefaults

**5.79.1.2** int immustats\_entry::fetch\_tlbhit

**5.79.1.3** int immustats\_entry::fetch\_tlbmiss

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

- [cpu/common/stats.h](#)

## 5.80 INFOHEADER Struct Reference

### Data Fields

- unsigned int [size](#)
- int [width](#)
- int [height](#)
- unsigned short int [planes](#)
- unsigned short int [bits](#)
- unsigned int [compression](#)
- unsigned int [imagesize](#)
- int [xresolution](#)
- int [yresolution](#)
- unsigned int [ncolours](#)
- unsigned int [importantcolours](#)

### 5.80.1 Field Documentation

**5.80.1.1 unsigned short int INFOHEADER::bits**

**5.80.1.2 unsigned int INFOHEADER::compression**

**5.80.1.3 int INFOHEADER::height**

**5.80.1.4 unsigned int INFOHEADER::imagesize**

**5.80.1.5 unsigned int INFOHEADER::importantcolours**

**5.80.1.6 unsigned int INFOHEADER::ncolours**

**5.80.1.7 unsigned short int INFOHEADER::planes**

**5.80.1.8 unsigned int INFOHEADER::size**

**5.80.1.9 int INFOHEADER::width**

**5.80.1.10 int INFOHEADER::xresolution**

**5.80.1.11 int INFOHEADER::yresolution**

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

- [peripheral/vga.c](#)

## 5.81 iqueue\_entry Struct Reference

```
#include <abstract.h>
```

### Data Fields

- int [insn\\_index](#)
- uint32\_t [insn](#)
- oraddr\_t [insn\\_addr](#)

### 5.81.1 Detailed Description

Instruction queue

### 5.81.2 Field Documentation

#### 5.81.2.1 uint32\_t iqueue\_entry::insn

#### 5.81.2.2 oraddr\_t iqueue\_entry::insn\_addr

#### 5.81.2.3 int iqueue\_entry::insn\_index

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

- [cpu/common/abstract.h](#)

## 5.82 jtr\_chain\_message Struct Reference

```
#include <gdb.h>
```

### Data Fields

- [uint32\\_t command](#)
- [uint32\\_t length](#)
- [uint32\\_t chain](#)

### 5.82.1 Field Documentation

#### 5.82.1.1 uint32\_t jtr\_chain\_message::chain

#### 5.82.1.2 uint32\_t jtr\_chain\_message::command

#### 5.82.1.3 uint32\_t jtr\_chain\_message::length

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

- [debug/gdb.h](#)

## 5.83 jtr\_chain\_response Struct Reference

```
#include <gdb.h>
```

### Data Fields

- [int32\\_t status](#)

### 5.83.1 Field Documentation

#### 5.83.1.1 int32\_t jtr\_chain\_response::status

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

- [debug/gdb.h](#)

## 5.84 `jtr_failure_response` Struct Reference

```
#include <gdb.h>
```

### Data Fields

- `int32_t status`

### 5.84.1 Field Documentation

#### 5.84.1.1 `int32_t jtr_failure_response::status`

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

- `debug/gdb.h`

## 5.85 jtr\_read\_block\_message Struct Reference

```
#include <gdb.h>
```

### Data Fields

- uint32\_t [command](#)
- uint32\_t [length](#)
- uint32\_t [address](#)
- int32\_t [num\\_regs](#)

### 5.85.1 Field Documentation

5.85.1.1 uint32\_t jtr\_read\_block\_message::address

5.85.1.2 uint32\_t jtr\_read\_block\_message::command

5.85.1.3 uint32\_t jtr\_read\_block\_message::length

5.85.1.4 int32\_t jtr\_read\_block\_message::num\_regs

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

- [debug/gdb.h](#)



## 5.86 jtr\_read\_block\_response Struct Reference

```
#include <gdb.h>
```

### Data Fields

- [int32\\_t status](#)
- [int32\\_t num\\_regs](#)
- [uint32\\_t data](#) [1]

### 5.86.1 Field Documentation

**5.86.1.1** [uint32\\_t jtr\\_read\\_block\\_response::data\[1\]](#)

**5.86.1.2** [int32\\_t jtr\\_read\\_block\\_response::num\\_regs](#)

**5.86.1.3** [int32\\_t jtr\\_read\\_block\\_response::status](#)

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

- [debug/gdb.h](#)

## 5.87 jtr\_read\_message Struct Reference

```
#include <gdb.h>
```

### Data Fields

- [uint32\\_t command](#)
- [uint32\\_t length](#)
- [uint32\\_t address](#)

### 5.87.1 Field Documentation

**5.87.1.1** [uint32\\_t jtr\\_read\\_message::address](#)

**5.87.1.2** [uint32\\_t jtr\\_read\\_message::command](#)

**5.87.1.3** [uint32\\_t jtr\\_read\\_message::length](#)

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

- [debug/gdb.h](#)

## 5.88 jtr\_read\_response Struct Reference

```
#include <gdb.h>
```

### Data Fields

- [int32\\_t status](#)
- [uint32\\_t data\\_h](#)
- [uint32\\_t data\\_l](#)

### 5.88.1 Field Documentation

**5.88.1.1** [uint32\\_t jtr\\_read\\_response::data\\_h](#)

**5.88.1.2** [uint32\\_t jtr\\_read\\_response::data\\_l](#)

**5.88.1.3** [int32\\_t jtr\\_read\\_response::status](#)

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

- [debug/gdb.h](#)

## 5.89 jtr\_write\_block\_message Struct Reference

```
#include <gdb.h>
```

### Data Fields

- [uint32\\_t command](#)
- [uint32\\_t length](#)
- [uint32\\_t address](#)
- [int32\\_t num\\_regs](#)
- [uint32\\_t data \[1\]](#)

### 5.89.1 Field Documentation

**5.89.1.1** [uint32\\_t jtr\\_write\\_block\\_message::address](#)

**5.89.1.2** [uint32\\_t jtr\\_write\\_block\\_message::command](#)

**5.89.1.3** [uint32\\_t jtr\\_write\\_block\\_message::data\[1\]](#)

**5.89.1.4** [uint32\\_t jtr\\_write\\_block\\_message::length](#)

**5.89.1.5** [int32\\_t jtr\\_write\\_block\\_message::num\\_regs](#)

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

- [debug/gdb.h](#)

## 5.90 jtr\_write\_block\_response Struct Reference

```
#include <gdb.h>
```

### Data Fields

- [int32\\_t status](#)

### 5.90.1 Field Documentation

#### 5.90.1.1 int32\_t jtr\_write\_block\_response::status

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

- [debug/gdb.h](#)

## 5.91 jtr\_write\_message Struct Reference

```
#include <gdb.h>
```

### Data Fields

- [uint32\\_t command](#)
- [uint32\\_t length](#)
- [uint32\\_t address](#)
- [uint32\\_t data\\_h](#)
- [uint32\\_t data\\_l](#)

### 5.91.1 Field Documentation

**5.91.1.1** `uint32_t jtr_write_message::address`

**5.91.1.2** `uint32_t jtr_write_message::command`

**5.91.1.3** `uint32_t jtr_write_message::data_h`

**5.91.1.4** `uint32_t jtr_write_message::data_l`

**5.91.1.5** `uint32_t jtr_write_message::length`

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

- [debug/gdb.h](#)

## 5.92 jtr\_write\_response Struct Reference

```
#include <gdb.h>
```

### Data Fields

- [int32\\_t status](#)

### 5.92.1 Field Documentation

#### 5.92.1.1 int32\_t jtr\_write\_response::status

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

- [debug/gdb.h](#)

## 5.93 kbd\_state Struct Reference

### Data Fields

- uint8\_t [buf](#) [KBD\_MAX\_BUF]
- unsigned long [buf\\_count](#)
- unsigned long [buf\\_head](#)
- unsigned long [buf\\_tail](#)
- FILE \* [rxfs](#)
- int [ccmd](#)
- uint8\_t [kcmd](#)
- uint8\_t [ccmdbyte](#)
- unsigned long [kresp](#)
- long [slowdown](#)
- int [enabled](#)
- int [irq](#)
- oraddr\_t [baseaddr](#)
- char \* [rxfile](#)

### 5.93.1 Field Documentation

5.93.1.1 [oraddr\\_t kbd\\_state::baseaddr](#)

5.93.1.2 [uint8\\_t kbd\\_state::buf\[KBD\\_MAX\\_BUF\]](#)

5.93.1.3 [unsigned long kbd\\_state::buf\\_count](#)

5.93.1.4 [unsigned long kbd\\_state::buf\\_head](#)

5.93.1.5 [unsigned long kbd\\_state::buf\\_tail](#)

5.93.1.6 [int kbd\\_state::ccmd](#)

5.93.1.7 [uint8\\_t kbd\\_state::ccmdbyte](#)

5.93.1.8 [int kbd\\_state::enabled](#)

5.93.1.9 [int kbd\\_state::irq](#)

5.93.1.10 [uint8\\_t kbd\\_state::kcmd](#)

5.93.1.11 [unsigned long kbd\\_state::kresp](#)

5.93.1.12 [char\\* kbd\\_state::rxfile](#)

5.93.1.13 [FILE\\* kbd\\_state::rxfs](#)

5.93.1.14 [long kbd\\_state::slowdown](#)

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

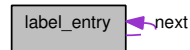
- [peripheral/ps2kbd.c](#)



## 5.94 label\_entry Struct Reference

```
#include <labels.h>
```

Collaboration diagram for label\_entry:



### Data Fields

- char \* [name](#)
- [oraddr\\_t](#) [addr](#)
- struct [label\\_entry](#) \* [next](#)

### 5.94.1 Detailed Description

Structure for holding one label per particular memory location

### 5.94.2 Field Documentation

**5.94.2.1** [oraddr\\_t](#) [label\\_entry::addr](#)

**5.94.2.2** [char\\*](#) [label\\_entry::name](#)

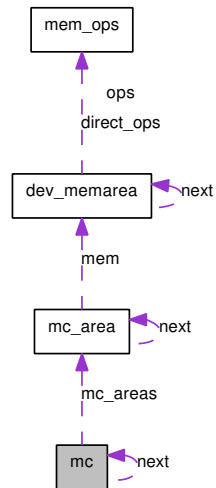
**5.94.2.3** [struct label\\_entry\\*](#) [label\\_entry::next](#) [read]

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

- [cpu/common/labels.h](#)

## 5.95 mc Struct Reference

Collaboration diagram for mc:



### Data Fields

- `uint32_t` `csr`
- `uint32_t` `poc`
- `uint32_t` `ba_mask`
- `uint32_t` `csc` [N\_CE]
- `uint32_t` `tms` [N\_CE]
- `oraddr_t` `baseaddr`
- `int` `enabled`
- `int` `index`
- `struct mc_area *` `mc_areas`
- `struct mc *` `next`

## 5.95.1 Field Documentation

5.95.1.1 `uint32_t mc::ba_mask`

5.95.1.2 `oraddr_t mc::baseaddr`

5.95.1.3 `uint32_t mc::csc[N_CE]`

5.95.1.4 `uint32_t mc::csr`

5.95.1.5 `int mc::enabled`

5.95.1.6 `int mc::index`

5.95.1.7 `struct mc_area* mc::mc_areas` [read]

5.95.1.8 `struct mc* mc::next` [read]

5.95.1.9 `uint32_t mc::poc`

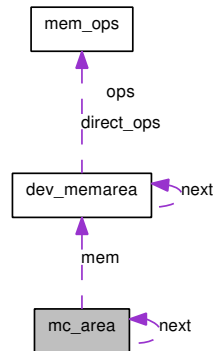
5.95.1.10 `uint32_t mc::tms[N_CE]`

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

- [peripheral/mc.c](#)

## 5.96 mc\_area Struct Reference

Collaboration diagram for mc\_area:



### Data Fields

- struct [dev\\_memarea](#) \* [mem](#)
- unsigned int [cs](#)
- int [mc](#)
- struct [mc\\_area](#) \* [next](#)

### 5.96.1 Field Documentation

**5.96.1.1** unsigned int [mc\\_area::cs](#)

**5.96.1.2** int [mc\\_area::mc](#)

**5.96.1.3** struct [dev\\_memarea](#)\* [mc\\_area::mem](#) [read]

**5.96.1.4** struct [mc\\_area](#)\* [mc\\_area::next](#) [read]

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

- [peripheral/mc.c](#)

## 5.97 mem\_config Struct Reference

### Public Types

- enum { [MT\\_UNKNOWN](#), [MT\\_PATTERN](#), [MT\\_RANDOM](#) }

### Data Fields

- int [ce](#)
- int [mc](#)
- [oraddr\\_t](#) [baseaddr](#)
- unsigned int [size](#)
- char \* [name](#)
- char \* [log](#)
- int [delayr](#)
- int [delayw](#)
- void \* [mem](#)
- int [pattern](#)
- int [random\\_seed](#)
- enum [mem\\_config::](#) { ... } [type](#)

### 5.97.1 Member Enumeration Documentation

#### 5.97.1.1 anonymous enum

**Enumerator:**

*MT\_UNKNOWN*

*MT\_PATTERN*

*MT\_RANDOM*

## 5.97.2 Field Documentation

5.97.2.1 `oraddr_t mem_config::baseaddr`

5.97.2.2 `int mem_config::ce`

5.97.2.3 `int mem_config::delayr`

5.97.2.4 `int mem_config::delayw`

5.97.2.5 `char* mem_config::log`

5.97.2.6 `int mem_config::mc`

5.97.2.7 `void* mem_config::mem`

5.97.2.8 `char* mem_config::name`

5.97.2.9 `int mem_config::pattern`

5.97.2.10 `int mem_config::random_seed`

5.97.2.11 `unsigned int mem_config::size`

5.97.2.12 `enum { ... } mem_config::type`

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

- [peripheral/memory.c](#)

## 5.98 mem\_ops Struct Reference

```
#include <abstract.h>
```

### Data Fields

- uint32\_t(\* [readfunc32](#))(oraddr\_t, void \*)
- uint16\_t(\* [readfunc16](#))(oraddr\_t, void \*)
- uint8\_t(\* [readfunc8](#))(oraddr\_t, void \*)
- void \* [read\\_dat8](#)
- void \* [read\\_dat16](#)
- void \* [read\\_dat32](#)
- void(\* [writefunc32](#))(oraddr\_t, uint32\_t, void \*)
- void(\* [writefunc16](#))(oraddr\_t, uint16\_t, void \*)
- void(\* [writefunc8](#))(oraddr\_t, uint8\_t, void \*)
- void \* [write\\_dat8](#)
- void \* [write\\_dat16](#)
- void \* [write\\_dat32](#)
- void(\* [writeprog32](#))(oraddr\_t, uint32\_t, void \*)
- void(\* [writeprog8](#))(oraddr\_t, uint8\_t, void \*)
- void \* [writeprog32\\_dat](#)
- void \* [writeprog8\\_dat](#)
- int [delayr](#)
- int [delayw](#)
- const char \* [log](#)

### 5.98.1 Detailed Description

All the memory operations possible

## 5.98.2 Field Documentation

5.98.2.1 `int mem_ops::delayr`

5.98.2.2 `int mem_ops::delayw`

5.98.2.3 `const char* mem_ops::log`

5.98.2.4 `void* mem_ops::read_dat16`

5.98.2.5 `void* mem_ops::read_dat32`

5.98.2.6 `void* mem_ops::read_dat8`

5.98.2.7 `uint16_t(* mem_ops::readfunc16)(oraddr_t, void *)`

5.98.2.8 `uint32_t(* mem_ops::readfunc32)(oraddr_t, void *)`

5.98.2.9 `uint8_t(* mem_ops::readfunc8)(oraddr_t, void *)`

5.98.2.10 `void* mem_ops::write_dat16`

5.98.2.11 `void* mem_ops::write_dat32`

5.98.2.12 `void* mem_ops::write_dat8`

5.98.2.13 `void(* mem_ops::writefunc16)(oraddr_t, uint16_t, void *)`

5.98.2.14 `void(* mem_ops::writefunc32)(oraddr_t, uint32_t, void *)`

5.98.2.15 `void(* mem_ops::writefunc8)(oraddr_t, uint8_t, void *)`

5.98.2.16 `void(* mem_ops::writeprog32)(oraddr_t, uint32_t, void *)`

5.98.2.17 `void* mem_ops::writeprog32_dat`

5.98.2.18 `void(* mem_ops::writeprog8)(oraddr_t, uint8_t, void *)`

5.98.2.19 `void* mem_ops::writeprog8_dat`

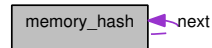
The documentation for this struct was generated from the following file:

- [cpu/common/abstract.h](#)



## 5.99 memory\_hash Struct Reference

Collaboration diagram for memory\_hash:



### Data Fields

- struct [memory\\_hash](#) \* [next](#)
- [oraddr\\_t](#) [addr](#)
- unsigned long [cnt](#) [3]

### 5.99.1 Detailed Description

Hash table data structure

### 5.99.2 Field Documentation

#### 5.99.2.1 [oraddr\\_t](#) [memory\\_hash::addr](#)

#### 5.99.2.2 unsigned long [memory\\_hash::cnt](#)[3]

#### 5.99.2.3 struct [memory\\_hash](#)\* [memory\\_hash::next](#) [read]

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

- [mprofiler.c](#)

## 5.100 mp\_entry Struct Reference

Collaboration diagram for mp\_entry:



### Data Fields

- enum [mp\\_type](#) type
- unsigned long int [addr](#)
- unsigned long int [instr](#)
- struct [mp\\_entry](#) \* [next](#)

### 5.100.1 Detailed Description

Data structure for a matchpoint hash table entry

### 5.100.2 Field Documentation

#### 5.100.2.1 unsigned long int mp\_entry::addr

Address with the matchpoint

#### 5.100.2.2 unsigned long int mp\_entry::instr

Substituted instruction

#### 5.100.2.3 struct mp\_entry\* mp\_entry::next [read]

Next entry with this hash

#### 5.100.2.4 enum mp\_type mp\_entry::type

Type of matchpoint

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

- [debug/rsp-server.c](#)

## 5.101 mprofentry\_struct Struct Reference

```
#include <profile.h>
```

### Data Fields

- [oraddr\\_t addr](#)
- unsigned char [type](#)

### 5.101.1 Field Documentation

#### 5.101.1.1 oraddr\_t mprofentry\_struct::addr

#### 5.101.1.2 unsigned char mprofentry\_struct::type

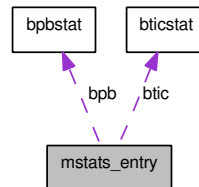
The documentation for this struct was generated from the following file:

- [support/profile.h](#)

## 5.102 mstats\_entry Struct Reference

```
#include <stats.h>
```

Collaboration diagram for mstats\_entry:



### Data Fields

- int [byteadd](#)
- int [bf](#) [2][2]
- int [bnf](#) [2][2]
- struct [bpbstat](#) [bpb](#)
- struct [bticstat](#) [btic](#)

### 5.102.1 Field Documentation

**5.102.1.1** int [mstats\\_entry::bf](#)[2][2]

**5.102.1.2** int [mstats\\_entry::bnf](#)[2][2]

**5.102.1.3** struct [bpbstat](#) [mstats\\_entry::bpb](#) [read]

**5.102.1.4** struct [bticstat](#) [mstats\\_entry::btic](#) [read]

**5.102.1.5** int [mstats\\_entry::byteadd](#)

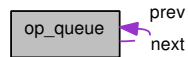
The documentation for this struct was generated from the following file:

- [cpu/common/stats.h](#)

## 5.103 op\_queue Struct Reference

```
#include <dyn32-defs.h>
```

Collaboration diagram for op\_queue:



### Data Fields

- unsigned int [num\\_ops](#)
- unsigned int [ops\\_len](#)
- unsigned int \* [ops](#)
- unsigned int [num\\_ops\\_param](#)
- unsigned int [ops\\_param\\_len](#)
- unsigned int \* [ops\\_param](#)
- unsigned int [jump\\_local](#)
- [oraddr\\_t](#) [jump\\_local\\_loc](#)
- unsigned int [not\\_jump\\_loc](#)
- int [xref](#)
- [oraddr\\_t](#) [insn\\_addr](#)
- unsigned int [reg\\_t](#) [3]
- unsigned int [tflags](#) [3]
- int [insn\\_index](#)
- unsigned int [param\\_type](#) [5]
- [orreg\\_t](#) [param](#) [5]
- unsigned int [param\\_num](#)
- uint32\_t [insn](#)
- struct [op\\_queue](#) \* [prev](#)
- struct [op\\_queue](#) \* [next](#)

### 5.103.1 Field Documentation

- 5.103.1.1 `uint32_t op_queue::insn`
- 5.103.1.2 `oraddr_t op_queue::insn_addr`
- 5.103.1.3 `int op_queue::insn_index`
- 5.103.1.4 `unsigned int op_queue::jump_local`
- 5.103.1.5 `oraddr_t op_queue::jump_local_loc`
- 5.103.1.6 `struct op_queue* op_queue::next` [read]
- 5.103.1.7 `unsigned int op_queue::not_jump_loc`
- 5.103.1.8 `unsigned int op_queue::num_ops`
- 5.103.1.9 `unsigned int op_queue::num_ops_param`
- 5.103.1.10 `unsigned int* op_queue::ops`
- 5.103.1.11 `unsigned int op_queue::ops_len`
- 5.103.1.12 `unsigned int* op_queue::ops_param`
- 5.103.1.13 `unsigned int op_queue::ops_param_len`
- 5.103.1.14 `orreg_t op_queue::param[5]`
- 5.103.1.15 `unsigned int op_queue::param_num`
- 5.103.1.16 `unsigned int op_queue::param_type[5]`
- 5.103.1.17 `struct op_queue* op_queue::prev` [read]
- 5.103.1.18 `unsigned int op_queue::reg_t[3]`
- 5.103.1.19 `unsigned int op_queue::tflags[3]`
- 5.103.1.20 `int op_queue::xref`

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

- [cpu/or32/dyn32-defs.h](#)

## 5.104 param\_val Union Reference

```
#include <sim-config.h>
```

### Data Fields

- char \* [str\\_val](#)
- int [int\\_val](#)
- long long int [longlong\\_val](#)
- [oraddr\\_t](#) [addr\\_val](#)

### 5.104.1 Detailed Description

Union of all possible paramter values

### 5.104.2 Field Documentation

#### 5.104.2.1 [oraddr\\_t](#) [param\\_val::addr\\_val](#)

#### 5.104.2.2 int [param\\_val::int\\_val](#)

#### 5.104.2.3 long long int [param\\_val::longlong\\_val](#)

#### 5.104.2.4 char\* [param\\_val::str\\_val](#)

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

- [sim-config.h](#)

## 5.105 raw\_stats Struct Reference

```
#include <stats.h>
```

### Data Fields

- int [reg](#) [64]
- int [range](#) [RAW\_RANGE]

### 5.105.1 Field Documentation

**5.105.1.1** int `raw_stats::range`[RAW\_RANGE]

**5.105.1.2** int `raw_stats::reg`[64]

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

- `cpu/common/stats.h`



## 5.106 reloc Struct Reference

```
#include <dyngen.h>
```

### Data Fields

- unsigned int [func\\_offset](#)
- unsigned int [addend](#)
- int [type](#)
- const char \* [name](#)

### 5.106.1 Field Documentation

**5.106.1.1** unsigned int `reloc::addend`

**5.106.1.2** unsigned int `reloc::func_offset`

**5.106.1.3** const char\* `reloc::name`

**5.106.1.4** int `reloc::type`

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

- [cpu/or32/dyngen.h](#)

## 5.107 `rsp_buf` Struct Reference

### Data Fields

- char `data` [GDB\_BUF\_MAX]
- int `len`

#### 5.107.1 Detailed Description

Data structure for RSP buffers. Can't be null terminated, since it may include zero bytes

#### 5.107.2 Field Documentation

**5.107.2.1** char `rsp_buf::data`[GDB\_BUF\_MAX]

**5.107.2.2** int `rsp_buf::len`

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

- [debug/rsp-server.c](#)

## 5.108 runtime Struct Reference

```
#include <sim-config.h>
```

### Data Fields

- struct {
  - FILE \* [fprof](#)
  - FILE \* [fmprof](#)
  - FILE \* [fexe\\_log](#)
  - FILE \* [fout](#)
  - char \* [filename](#)
  - int [iprompt](#)
  - int [iprompt\\_run](#)
  - long long [cycles](#)
  - long long int [end\\_cycles](#)
  - double [time\\_point](#)
  - unsigned long int [ext\\_int\\_set](#)
  - unsigned long int [ext\\_int\\_clr](#)
  - int [mem\\_cycles](#)
  - int [loadcycles](#)
  - int [storecycles](#)
  - long long [reset\\_cycles](#)
  - int [hush](#)
- } [sim](#)
- struct {
  - long long [instructions](#)
  - long long [reset\\_instructions](#)
  - int [stalled](#)
  - int [hazardwait](#)
  - int [supercycles](#)
- } [cpu](#)
- struct {
  - int [enabled](#)
  - FILE \* [vapi\\_file](#)
  - int [server\\_port](#)
- } [vapi](#)
- struct {
  - int [mdelay](#) [4]
  - double [cycle\\_duration](#)
- } [cuc](#)

### 5.108.1 Detailed Description

Data structure for run time data



## 5.108.2 Field Documentation

- 5.108.2.1 struct { ... } runtime::cpu
- 5.108.2.2 struct { ... } runtime::cuc
- 5.108.2.3 double runtime::cycle\_duration
- 5.108.2.4 long long runtime::cycles
- 5.108.2.5 int runtime::enabled
- 5.108.2.6 long long int runtime::end\_cycles
- 5.108.2.7 unsigned long int runtime::ext\_int\_clr
- 5.108.2.8 unsigned long int runtime::ext\_int\_set
- 5.108.2.9 FILE\* runtime::fexe\_log
- 5.108.2.10 char\* runtime::filename
- 5.108.2.11 FILE\* runtime::fmprof
- 5.108.2.12 FILE\* runtime::fout
- 5.108.2.13 FILE\* runtime::fprof
- 5.108.2.14 int runtime::hazardwait
- 5.108.2.15 int runtime::hush
- 5.108.2.16 long long runtime::instructions
- 5.108.2.17 int runtime::iprompt
- 5.108.2.18 int runtime::iprompt\_run
- 5.108.2.19 int runtime::loadcycles
- 5.108.2.20 int runtime::mdelay[4]
- 5.108.2.21 int runtime::mem\_cycles
- 5.108.2.22 long long runtime::reset\_cycles
- 5.108.2.23 long long runtime::reset\_instructions
- 5.108.2.24 int runtime::server\_port
- 5.108.2.25 struct { ... } runtime::sim
- 5.108.2.26 int runtime::stalled
- 5.108.2.27 int runtime::storecycles

---

Generated on Tue Feb 24 14:27:06 2009 for O1KSim: The OpenRISC 1000 Architectural Simulator by Doxygen

5.108.2.28 int runtime::supercycles

5.108.2.29 double runtime::time\_point

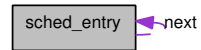
5.108.2.30 struct { ... } runtime::vapi

- [sim-config.h](#)

## 5.109 sched\_entry Struct Reference

```
#include <sched.h>
```

Collaboration diagram for sched\_entry:



### Data Fields

- `int32_t` [time](#)
- `void *` [param](#)
- `void(* func)(void *)`
- `struct sched_entry *` [next](#)

### 5.109.1 Detailed Description

Structure for holding one job entry

### 5.109.2 Field Documentation

**5.109.2.1** `void(* sched_entry::func)(void *)`

**5.109.2.2** `struct sched_entry* sched_entry::next` [read]

**5.109.2.3** `void* sched_entry::param`

**5.109.2.4** `int32_t sched_entry::time`

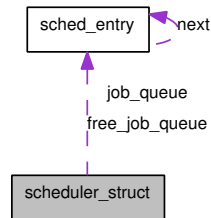
The documentation for this struct was generated from the following file:

- [support/sched.h](#)

## 5.110 scheduler\_struct Struct Reference

```
#include <sched.h>
```

Collaboration diagram for scheduler\_struct:



### Data Fields

- struct `sched_entry` \* `free_job_queue`
- struct `sched_entry` \* `job_queue`

### 5.110.1 Detailed Description

Heap of jobs

### 5.110.2 Field Documentation

**5.110.2.1** struct `sched_entry`\* `scheduler_struct::free_job_queue` [read]

**5.110.2.2** struct `sched_entry`\* `scheduler_struct::job_queue` [read]

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

- support/[sched.h](#)



## 5.111 `sim_command` Struct Reference

### Data Fields

- `const char * name`
- `int(* cmd_handle)(int argc, char **argv)`

### 5.111.1 Field Documentation

**5.111.1.1** `int(* sim_command::cmd_handle)(int argc, char **argv)`

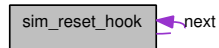
**5.111.1.2** `const char* sim_command::name`

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

- `sim-cmd.c`

## 5.112 `sim_reset_hook` Struct Reference

Collaboration diagram for `sim_reset_hook`:



### Data Fields

- `void * dat`
- `void(* reset_hook)(void *)`
- `struct sim_reset_hook * next`

#### 5.112.1 Detailed Description

Struct for list of reset hooks

#### 5.112.2 Field Documentation

**5.112.2.1** `void* sim_reset_hook::dat`

**5.112.2.2** `struct sim_reset_hook* sim_reset_hook::next` [read]

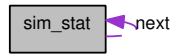
**5.112.2.3** `void(* sim_reset_hook::reset_hook)(void *)`

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

- [toplevel-support.c](#)

## 5.113 sim\_stat Struct Reference

Collaboration diagram for sim\_stat:



### Data Fields

- void(\* [stat\\_func](#) )(void \*[dat](#))
- void \* [dat](#)
- struct [sim\\_stat](#) \* [next](#)

### 5.113.1 Field Documentation

**5.113.1.1 void\* [sim\\_stat::dat](#)**

**5.113.1.2 struct [sim\\_stat](#)\* [sim\\_stat::next](#) [read]**

**5.113.1.3 void(\* [sim\\_stat::stat\\_func](#))(void \*[dat](#))**

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

- [sim-cmd.c](#)

## 5.114 spr\_bit\_def Struct Reference

### Data Fields

- `const char * name`
- `uorreg_t mask`

### 5.114.1 Field Documentation

#### 5.114.1.1 `uorreg_t spr_bit_def::mask`

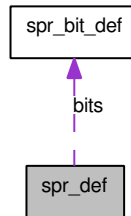
#### 5.114.1.2 `const char* spr_bit_def::name`

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

- `cpu/or1k/spr-dump.c`

## 5.115 spr\_def Struct Reference

Collaboration diagram for spr\_def:



### Data Fields

- [uint16\\_t from\\_spr](#)
- [uint16\\_t to\\_spr](#)
- [const char \\* name](#)
- [struct spr\\_bit\\_def \\* bits](#)

### 5.115.1 Field Documentation

**5.115.1.1** [struct spr\\_bit\\_def\\* spr\\_def::bits](#) [read]

**5.115.1.2** [uint16\\_t spr\\_def::from\\_spr](#)

**5.115.1.3** [const char\\* spr\\_def::name](#)

**5.115.1.4** [uint16\\_t spr\\_def::to\\_spr](#)

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

- [cpu/or1k/spr-dump.c](#)

## 5.116 sstats\_entry Struct Reference

### Data Fields

- int [insn](#)
- int [cnt\\_dynamic](#)

### 5.116.1 Field Documentation

#### 5.116.1.1 int sstats\_entry::cnt\_dynamic

#### 5.116.1.2 int sstats\_entry::insn

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

- [cpu/common/stats.c](#)

## 5.117 `stack_struct` Struct Reference

### Data Fields

- unsigned int [addr](#)
- unsigned int [cycles](#)
- unsigned int [raddr](#)
- char [name](#) [33]

### 5.117.1 Detailed Description

Data structure representing information about a stack frame

### 5.117.2 Field Documentation

#### 5.117.2.1 unsigned int `stack_struct::addr`

Function address

#### 5.117.2.2 unsigned int `stack_struct::cycles`

Cycles of func start; subfuncs added later

#### 5.117.2.3 char `stack_struct::name[33]`

Name of the function

#### 5.117.2.4 unsigned int `stack_struct::raddr`

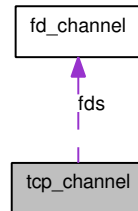
Return address

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

- [profiler.c](#)

## 5.118 tcp\_channel Struct Reference

Collaboration diagram for tcp\_channel:



### Data Fields

- struct [fd\\_channel](#) `fds`
- int [socket\\_fd](#)
- int [port\\_number](#)
- int [connected](#)
- int [nonblocking](#)

### 5.118.1 Detailed Description

Structure to represent a TCP/IP [channel](#)

### 5.118.2 Field Documentation

**5.118.2.1** int `tcp_channel::connected`

**5.118.2.2** struct `fd_channel` `tcp_channel::fds` [`read`]

**5.118.2.3** int `tcp_channel::nonblocking`

**5.118.2.4** int `tcp_channel::port_number`

**5.118.2.5** int `tcp_channel::socket_fd`

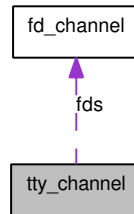
The documentation for this struct was generated from the following file:

- [peripheral/channels/tcp.c](#)



## 5.119 tty\_channel Struct Reference

Collaboration diagram for tty\_channel:



### Data Fields

- struct [fd\\_channel](#) `fds`

### 5.119.1 Detailed Description

Data structure representing a TTY [channel](#)

### 5.119.2 Field Documentation

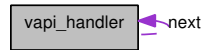
#### 5.119.2.1 struct `fd_channel` `tty_channel::fds` [read]

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

- [peripheral/channels/tty.c](#)

## 5.120 vapi\_handler Struct Reference

Collaboration diagram for vapi\_handler:



### Data Fields

- int [fd](#)
- unsigned long [base\\_id](#)
- unsigned long [num\\_ids](#)
- void(\* [read\\_func](#))(unsigned long, unsigned long, void \*)
- void \* [priv\\_dat](#)
- struct [vapi\\_handler](#) \* [next](#)
- int [temp](#)

### 5.120.1 Field Documentation

**5.120.1.1** unsigned long `vapi_handler::base_id`

**5.120.1.2** int `vapi_handler::fd`

**5.120.1.3** struct `vapi_handler*` `vapi_handler::next` [`read`]

**5.120.1.4** unsigned long `vapi_handler::num_ids`

**5.120.1.5** void\* `vapi_handler::priv_dat`

**5.120.1.6** void(\* `vapi_handler::read_func`)(unsigned long, unsigned long, void \*)

**5.120.1.7** int `vapi_handler::temp`

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

- [vapi/vapi.c](#)

## 5.121 vga\_state Struct Reference

### Data Fields

- int [enabled](#)
- int [pics](#)
- unsigned long [ctrl](#)
- unsigned long [stat](#)
- unsigned long [htim](#)
- unsigned long [vtim](#)
- int [vbindx](#)
- unsigned long [vbar](#) [2]
- unsigned [hlen](#)
- unsigned [vlen](#)
- int [pindex](#)
- unsigned long [palette](#) [2][256]
- [oraddr\\_t](#) [baseaddr](#)
- int [refresh\\_rate](#)
- int [irq](#)
- char \* [filename](#)

### 5.121.1 Field Documentation

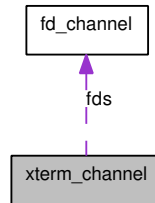
- 5.121.1.1 `oraddr_t vga_state::baseaddr`
- 5.121.1.2 `unsigned long vga_state::ctrl`
- 5.121.1.3 `int vga_state::enabled`
- 5.121.1.4 `char* vga_state::filename`
- 5.121.1.5 `unsigned vga_state::hlen`
- 5.121.1.6 `unsigned long vga_state::htim`
- 5.121.1.7 `int vga_state::irq`
- 5.121.1.8 `unsigned long vga_state::palette[2][256]`
- 5.121.1.9 `int vga_state::pics`
- 5.121.1.10 `int vga_state::pindex`
- 5.121.1.11 `int vga_state::refresh_rate`
- 5.121.1.12 `unsigned long vga_state::stat`
- 5.121.1.13 `unsigned long vga_state::vbar[2]`
- 5.121.1.14 `int vga_state::vbindx`
- 5.121.1.15 `unsigned vga_state::vlen`
- 5.121.1.16 `unsigned long vga_state::vtim`

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

- [peripheral/vga.c](#)

## 5.122 xterm\_channel Struct Reference

Collaboration diagram for xterm\_channel:



### Data Fields

- struct [fd\\_channel](#) `fds`
- int `pid`
- char \*\* `argv`

### 5.122.1 Detailed Description

Data structure to represent the connection to the xterm

### 5.122.2 Field Documentation

**5.122.2.1** char\*\* `xterm_channel::argv`

**5.122.2.2** struct [fd\\_channel](#) `xterm_channel::fds` [read]

**5.122.2.3** int `xterm_channel::pid`

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

- `peripheral/channels/xterm.c`



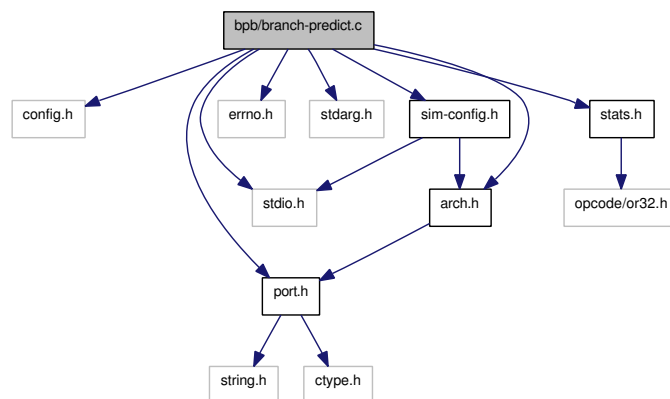
# Chapter 6

## File Documentation

### 6.1 bpb/branch-predict.c File Reference

```
#include "config.h"  
#include "port.h"  
#include <stdio.h>  
#include <errno.h>  
#include <stdarg.h>  
#include "sim-config.h"  
#include "arch.h"  
#include "stats.h"
```

Include dependency graph for branch-predict.c:



### Data Structures

- struct `bpb_entry`
- struct `bpic_entry`

## Defines

- #define `BPB_LEN` 64
- #define `BPB_WAYS` 1
- #define `BPB_PSTATES` 2
- #define `BPB_USTATES` 2
- #define `BTIC_LEN` 128
- #define `BTIC_WAYS` 2
- #define `BTIC_USTATES` 2
- #define `BTIC_BLOCKSIZE` 4

## Functions

- void `bpb_info` ()
- void `bpb_update` (`oraddr_t` addr, int taken)
- void `btic_info` ()
- void `btic_update` (`oraddr_t` targetaddr)
- static void `bpb_enabled` (union `param_val` val, void \*dat)
- static void `bpb_btic` (union `param_val` val, void \*dat)
- static void `bpb_sbp_bnf_fwd` (union `param_val` val, void \*dat)
- static void `bpb_sbp_bf_fwd` (union `param_val` val, void \*dat)
- static void `bpb_missdelay` (union `param_val` val, void \*dat)
- static void `bpb_hitdelay` (union `param_val` val, void \*dat)
- void `reg_bpb_sec` ()

## Variables

- struct `bpb_entry` `bpb` [`BPB_LEN`]
- struct `btic_entry` `btic` [`BTIC_LEN`]





## 6.1.1 Define Documentation

6.1.1.1 `#define BPB_LEN 64`

6.1.1.2 `#define BPB_PSTATES 2`

6.1.1.3 `#define BPB_USTATES 2`

6.1.1.4 `#define BPB_WAYS 1`

6.1.1.5 `#define BTIC_BLOCKSIZE 4`

6.1.1.6 `#define BTIC_LEN 128`

6.1.1.7 `#define BTIC_USTATES 2`

6.1.1.8 `#define BTIC_WAYS 2`

## 6.1.2 Function Documentation

6.1.2.1 `static void bpb_btict (union param_val val, void * dat) [static]`

6.1.2.2 `static void bpb_enabled (union param_val val, void * dat) [static]`

6.1.2.3 `static void bpb_hitdelay (union param_val val, void * dat) [static]`

6.1.2.4 `void bpb_info ()`

6.1.2.5 `static void bpb_missdelay (union param_val val, void * dat) [static]`

6.1.2.6 `static void bpb_sbp_bf_fwd (union param_val val, void * dat) [static]`

6.1.2.7 `static void bpb_sbp_bnf_fwd (union param_val val, void * dat) [static]`

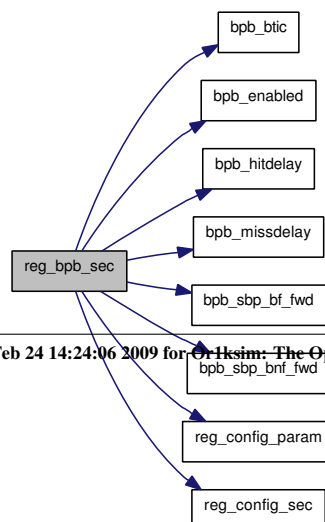
6.1.2.8 `void bpb_update (oraddr_t addr, int taken)`

6.1.2.9 `void btict_info ()`

6.1.2.10 `void btict_update (oraddr_t targetaddr)`

6.1.2.11 `void reg_bpb_sec ()`

Here is the call graph for this function:



### 6.1.3 Variable Documentation

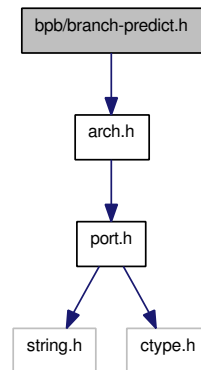
6.1.3.1 struct bpb\_entry bpb[BPB\_LEN]

6.1.3.2 struct btic\_entry btic[BTIC\_LEN]

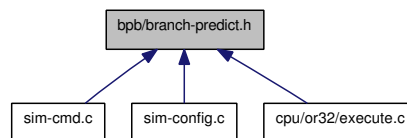
## 6.2 bpb/branch-predict.h File Reference

```
#include "arch.h"
```

Include dependency graph for branch-predict.h:



This graph shows which files directly or indirectly include this file:



## Functions

- void `bpb_info` ()
- void `bpb_update` (`oraddr_t` addr, int taken)
- void `btic_info` ()
- void `btic_update` (`oraddr_t` targetaddr)
- void `reg_bpb_sec` ()

## 6.2.1 Function Documentation

6.2.1.1 void `bpb_info` ()

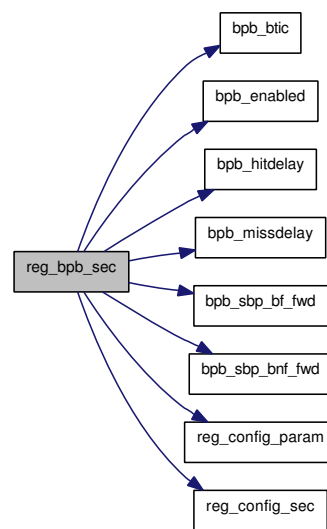
6.2.1.2 void `bpb_update` (`oraddr_t addr`, `int taken`)

6.2.1.3 void `btic_info` ()

6.2.1.4 void `btic_update` (`oraddr_t targetaddr`)

6.2.1.5 void `reg_bpb_sec` ()

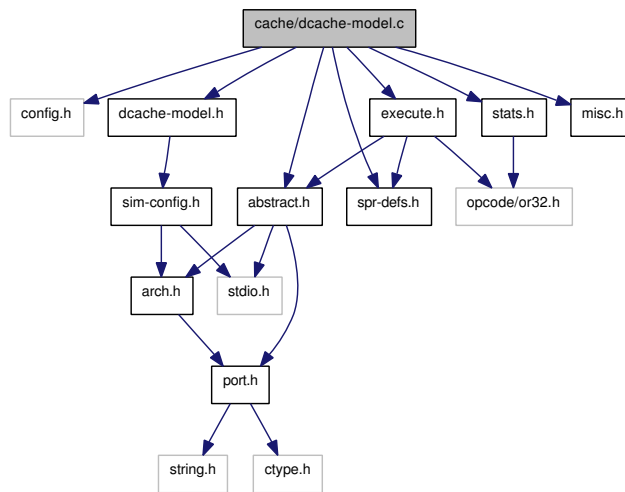
Here is the call graph for this function:



## 6.3 cache/dcache-model.c File Reference

```
#include "config.h"
#include "dcache-model.h"
#include "execute.h"
#include "spr-defs.h"
#include "abstract.h"
#include "stats.h"
#include "misc.h"
```

Include dependency graph for dcache-model.c:



### Data Structures

- struct [dc\\_set](#)

### Functions

- void [dc\\_info](#) (void)
- uint32\_t [dc\\_simulate\\_read](#) (oraddr\_t dataaddr, oraddr\_t virt\_addr, int width)
- void [dc\\_simulate\\_write](#) (oraddr\_t dataaddr, oraddr\_t virt\_addr, uint32\_t data, int width)
- void [dc\\_inv](#) (oraddr\_t dataaddr)
- static void [dc\\_enabled](#) (union [param\\_val](#) val, void \*dat)
- static void [dc\\_nsets](#) (union [param\\_val](#) val, void \*dat)
- static void [dc\\_nways](#) (union [param\\_val](#) val, void \*dat)
- static void [dc\\_blocksize](#) (union [param\\_val](#) val, void \*dat)
- static void [dc\\_ustates](#) (union [param\\_val](#) val, void \*dat)
- static void [dc\\_load\\_hitdelay](#) (union [param\\_val](#) val, void \*dat)
- static void [dc\\_load\\_missdelay](#) (union [param\\_val](#) val, void \*dat)
- static void [dc\\_store\\_hitdelay](#) (union [param\\_val](#) val, void \*dat)
- static void [dc\\_store\\_missdelay](#) (union [param\\_val](#) val, void \*dat)
- void [reg\\_dc\\_sec](#) (void)

## Variables

- struct `dc_set dc` [MAX\_DC\_SETS]

### 6.3.1 Function Documentation

#### 6.3.1.1 `static void dc_blocksize (union param_val val, void * dat)` [static]

Set the data cache block size

Value must be either MIN\_DC\_BLOCK\_SIZE or MAX\_DC\_BLOCK\_SIZE. If not issue a warning and ignore. Set the relevant field in the data cache `config` register

##### Parameters:

- ← *val* The value to use
- ← *dat* The `config` data structure (not used here)

#### 6.3.1.2 `static void dc_enabled (union param_val val, void * dat)` [static]

Enable or disable the data cache

Set the corresponding field in the UPR

##### Parameters:

- ← *val* The value to use
- ← *dat* The `config` data structure (not used here)

#### 6.3.1.3 `void dc_info (void)`

#### 6.3.1.4 `void dc_inv (oraddr_t dataaddr)`

#### 6.3.1.5 `static void dc_load_hitdelay (union param_val val, void * dat)` [static]

#### 6.3.1.6 `static void dc_load_missdelay (union param_val val, void * dat)` [static]

#### 6.3.1.7 `static void dc_nsets (union param_val val, void * dat)` [static]

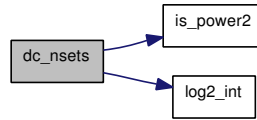
Set the number of data cache sets

Value must be a power of 2 <= MAX\_DC\_SETS. If not issue a warning and ignore. Set the relevant field in the data cache `config` register

##### Parameters:

- ← *val* The value to use
- ← *dat* The `config` data structure (not used here)

Here is the call graph for this function:



### 6.3.1.8 static void dc\_nways (union param\_val val, void \* dat) [static]

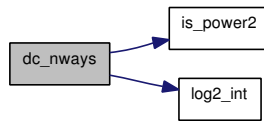
Set the number of data cache ways

Value must be a power of 2 <= MAX\_DC\_WAYS. If not issue a warning and ignore. Set the relevant field in the data cache [config](#) register

#### Parameters:

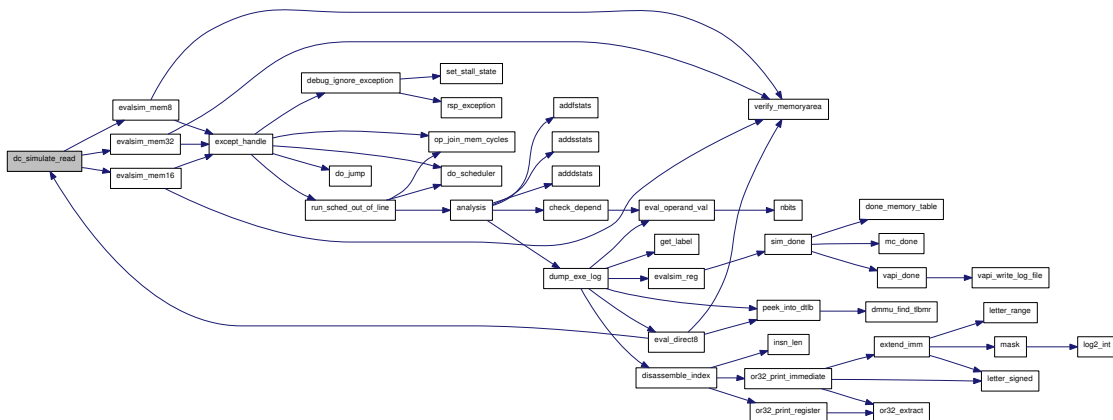
- ← *val* The value to use
- ← *dat* The [config](#) data structure (not used here)

Here is the call graph for this function:



### 6.3.1.9 uint32\_t dc\_simulate\_read (oraddr\_t dataaddr, oraddr\_t virt\_addr, int width)

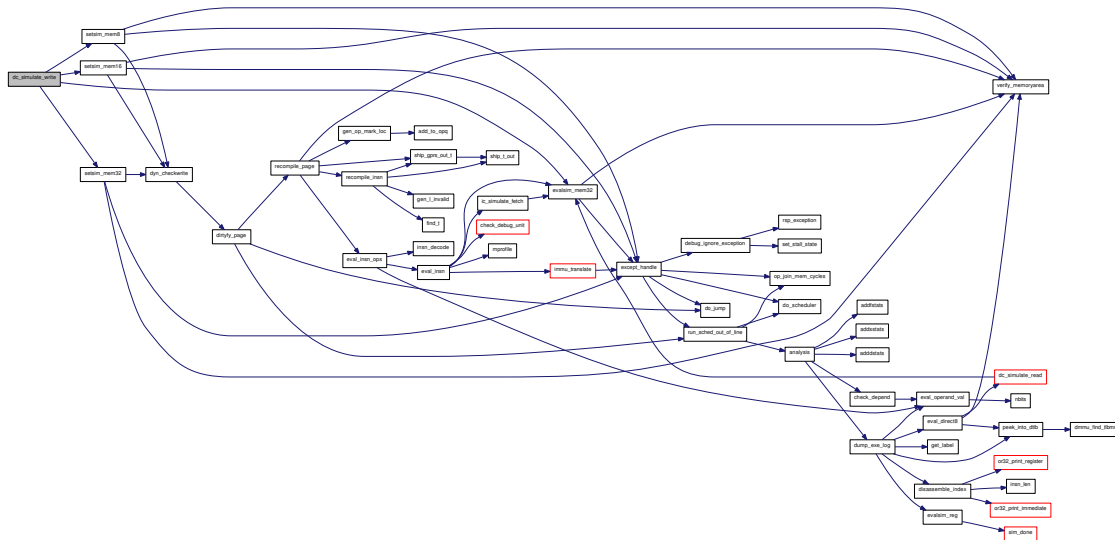
Here is the call graph for this function:





### 6.3.1.10 void dc\_simulate\_write (oraddr\_t dataaddr, oraddr\_t virt\_addr, uint32\_t data, int width)

Here is the call graph for this function:



**6.3.1.11** static void dc\_store\_hitdelay (union param\_val val, void \* dat) [static]

**6.3.1.12** static void dc\_store\_missdelay (union param\_val val, void \* dat) [static]

**6.3.1.13** static void dc\_ustates (union param\_val val, void \* dat) [static]

Set the number of data cache usage states

Value must be 2, 3 or 4. If not issue a warning and ignore.

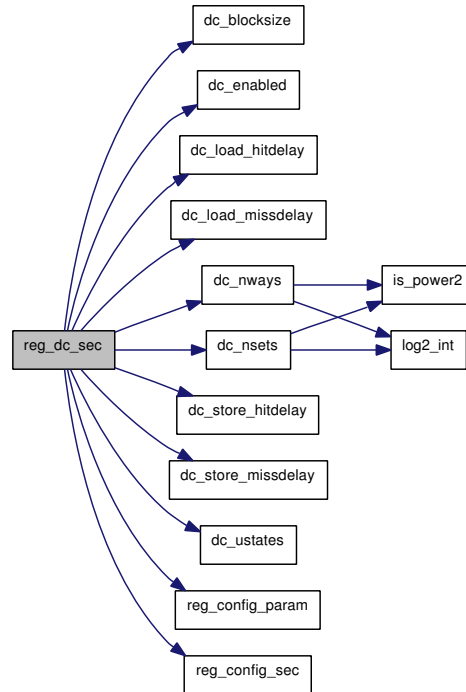
#### Parameters:

← *val* The value to use

← *dat* The [config](#) data structure (not used here)

### 6.3.1.14 void reg\_dc\_sec (void)

Here is the call graph for this function:



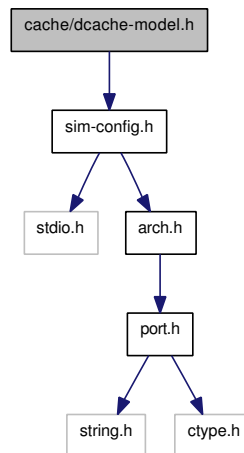
## 6.3.2 Variable Documentation

### 6.3.2.1 struct dc\_set dc[MAX\_DC\_SETS]

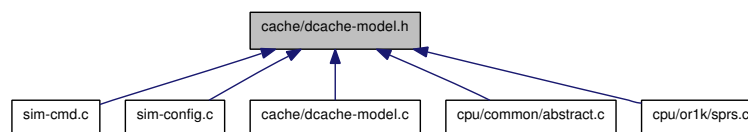
## 6.4 cache/dcache-model.h File Reference

```
#include "sim-config.h"
```

Include dependency graph for dcache-model.h:



This graph shows which files directly or indirectly include this file:



### Defines

- #define [MAX\\_DC\\_SETS](#) 1024
- #define [MAX\\_DC\\_WAYS](#) 32
- #define [MIN\\_DC\\_BLOCK\\_SIZE](#) 16
- #define [MAX\\_DC\\_BLOCK\\_SIZE](#) 32

### Functions

- [uint32\\_t dc\\_simulate\\_read](#) ([oraddr\\_t](#) dataaddr, [oraddr\\_t](#) virt\_addr, int width)
- [void dc\\_simulate\\_write](#) ([oraddr\\_t](#) dataaddr, [oraddr\\_t](#) virt\_addr, [uint32\\_t](#) data, int width)
- [void dc\\_info](#) ()
- [void dc\\_inv](#) ([oraddr\\_t](#) dataaddr)
- [void reg\\_dc\\_sec](#) ()

## 6.4.1 Define Documentation

6.4.1.1 `#define MAX_DC_BLOCK_SIZE 32`

6.4.1.2 `#define MAX_DC_SETS 1024`

6.4.1.3 `#define MAX_DC_WAYS 32`

6.4.1.4 `#define MIN_DC_BLOCK_SIZE 16`

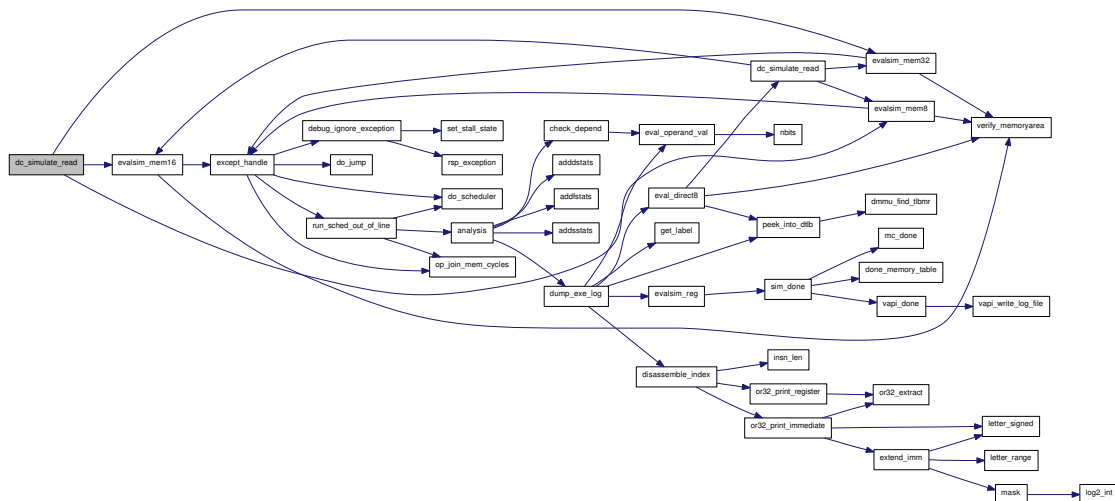
## 6.4.2 Function Documentation

6.4.2.1 `void dc_info ()`

6.4.2.2 `void dc_inv (oraddr_t dataaddr)`

6.4.2.3 `uint32_t dc_simulate_read (oraddr_t dataaddr, oraddr_t virt_addr, int width)`

Here is the call graph for this function:

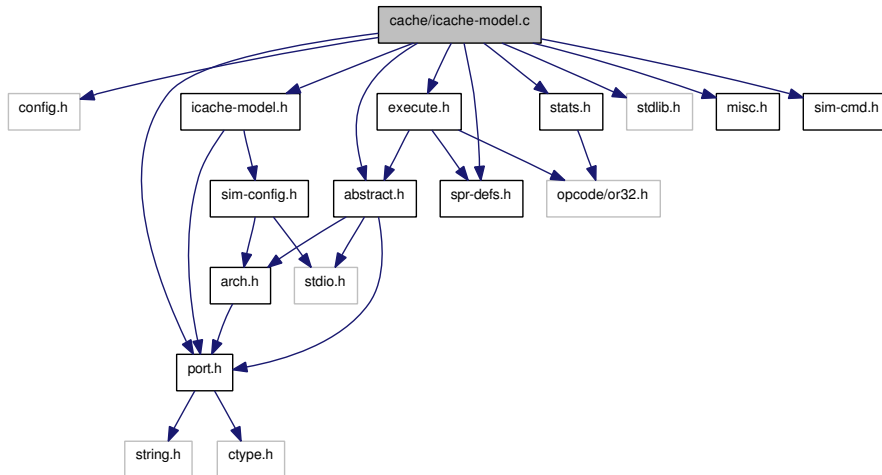




## 6.5 cache/icache-model.c File Reference

```
#include "config.h"
#include "port.h"
#include <stdlib.h>
#include "icache-model.h"
#include "execute.h"
#include "spr-defs.h"
#include "abstract.h"
#include "misc.h"
#include "stats.h"
#include "sim-cmd.h"
```

Include dependency graph for icache-model.c:



### Defines

- #define [MAX\\_IC\\_SETS](#) 1024
- #define [MAX\\_IC\\_WAYS](#) 32
- #define [MIN\\_IC\\_BLOCK\\_SIZE](#) 16
- #define [MAX\\_IC\\_BLOCK\\_SIZE](#) 32

### Functions

- static void [ic\\_info](#) (void \*dat)
- uint32\_t [ic\\_simulate\\_fetch](#) ([oraddr\\_t](#) fetchaddr, [oraddr\\_t](#) virt\_addr)
- void [ic\\_inv](#) ([oraddr\\_t](#) dataaddr)
- static void [ic\\_enabled](#) (union [param\\_val](#) val, void \*dat)
- static void [ic\\_nsets](#) (union [param\\_val](#) val, void \*dat)
- static void [ic\\_nways](#) (union [param\\_val](#) val, void \*dat)

- static void `ic_blocksize` (union `param_val` *val*, void \**dat*)
- static void `ic_ustates` (union `param_val` *val*, void \**dat*)
- static void `ic_hitdelay` (union `param_val` *val*, void \**dat*)
- static void `ic_missdelay` (union `param_val` *val*, void \**dat*)
- static void \* `ic_start_sec` ()
- static void `ic_end_sec` (void \**dat*)
- void `reg_ic_sec` (void)

## Variables

- struct `ic` \* `ic_state` = NULL

### 6.5.1 Define Documentation

**6.5.1.1** `#define MAX_IC_BLOCK_SIZE 32`

**6.5.1.2** `#define MAX_IC_SETS 1024`

**6.5.1.3** `#define MAX_IC_WAYS 32`

**6.5.1.4** `#define MIN_IC_BLOCK_SIZE 16`

### 6.5.2 Function Documentation

**6.5.2.1** `static void ic_blocksize (union param_val val, void * dat)` [`static`]

Set the instruction cache block size

Value must be either `MIN_IC_BLOCK_SIZE` or `MAX_IC_BLOCK_SIZE`. If not issue a warning and ignore. Set the relevant field in the data cache `config` register

#### Parameters:

← *val* The value to use

← *dat* The `config` data structure

**6.5.2.2** `static void ic_enabled (union param_val val, void * dat)` [`static`]

Enable or disable the instruction cache

Set the corresponding field in the UPR

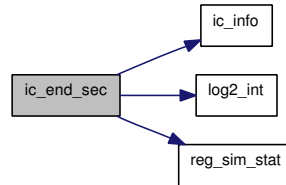
#### Parameters:

← *val* The value to use

← *dat* The `config` data structure

### 6.5.2.3 static void ic\_end\_sec (void \* *dat*) [static]

Here is the call graph for this function:



### 6.5.2.4 static void ic\_hitdelay (union param\_val *val*, void \* *dat*) [static]

### 6.5.2.5 static void ic\_info (void \* *dat*) [static]

### 6.5.2.6 void ic\_inv (oraddr\_t *dataaddr*)

### 6.5.2.7 static void ic\_missdelay (union param\_val *val*, void \* *dat*) [static]

### 6.5.2.8 static void ic\_nsets (union param\_val *val*, void \* *dat*) [static]

Set the number of instruction cache sets

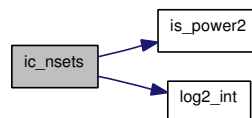
Set the corresponding field in the UPR

#### Parameters:

← *val* The value to use

← *dat* The `config` data structure

Here is the call graph for this function:



### 6.5.2.9 static void ic\_nways (union param\_val *val*, void \* *dat*) [static]

Set the number of instruction cache ways

Set the corresponding field in the UPR

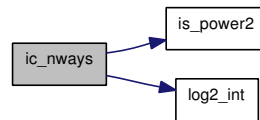
#### Parameters:

← *val* The value to use

← *dat* The `config` data structure

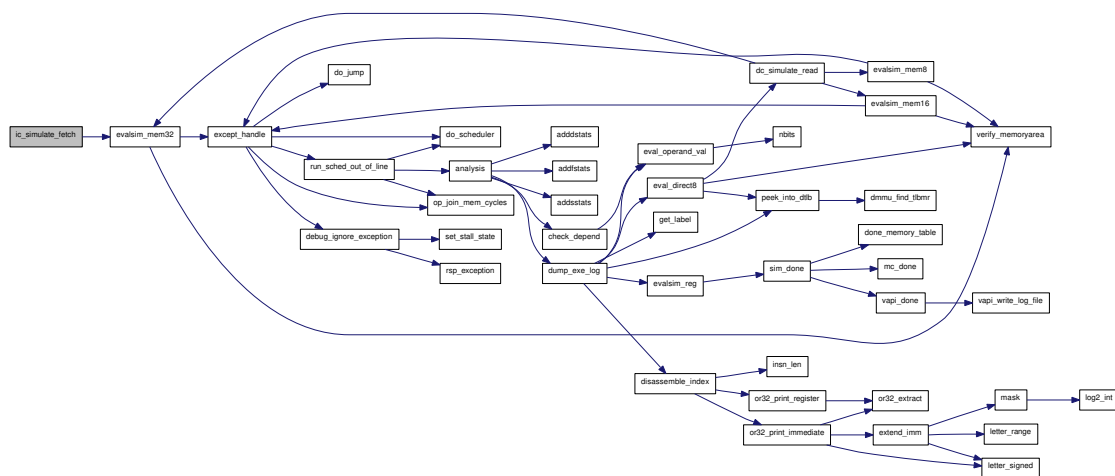


Here is the call graph for this function:



### 6.5.2.10 uint32\_t ic\_simulate\_fetch (oraddr\_t fetchaddr, oraddr\_t virt\_addr)

Here is the call graph for this function:



### 6.5.2.11 static void\* ic\_start\_sec () [static]

Initialize a new instruction cache configuration

ALL parameters are set explicitly to default values. Corresponding SPR flags are set as appropriate.

#### Returns:

The new memory configuration data structure

Here is the call graph for this function:



### 6.5.2.12 static void ic\_ustates (union param\_val val, void \* dat) [static]

Set the number of instruction cache usage states

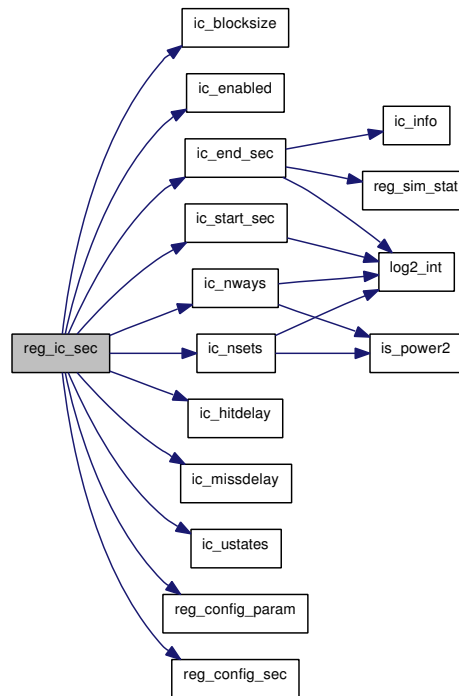
Value must be 2, 3 or 4. If not issue a warning and ignore.

**Parameters:**

- ← *val* The value to use
- ← *dat* The `config` data structure

**6.5.2.13 void reg\_ic\_sec (void)**

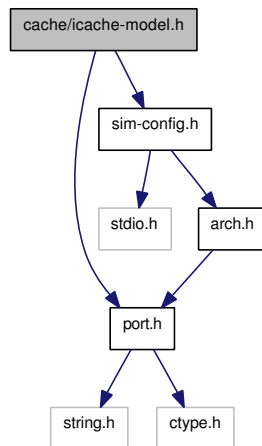
Here is the call graph for this function:

**6.5.3 Variable Documentation****6.5.3.1 struct ic\* ic\_state = NULL**

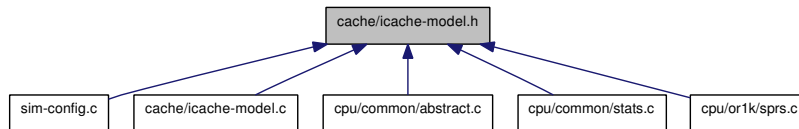
## 6.6 cache/icache-model.h File Reference

```
#include "port.h"
#include "sim-config.h"
```

Include dependency graph for icache-model.h:



This graph shows which files directly or indirectly include this file:



### Data Structures

- struct `ic`

### Functions

- `uint32_t ic_simulate_fetch (oraddr_t fetchaddr, oraddr_t virt_addr)`
- `void ic_inv (oraddr_t dataaddr)`
- `void reg_ic_sec ()`

### Variables

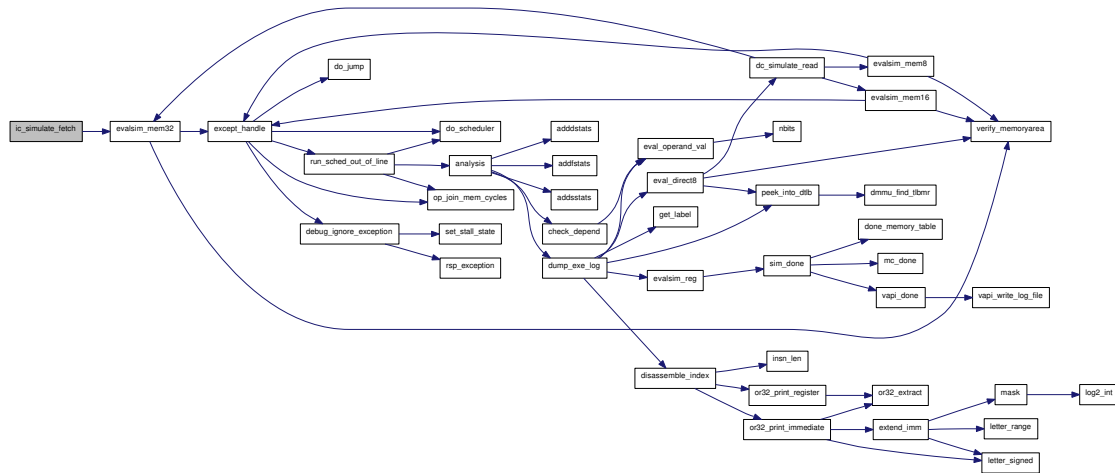
- struct `ic * ic_state`

## 6.6.1 Function Documentation

### 6.6.1.1 void ic\_inv (oraddr\_t dataaddr)

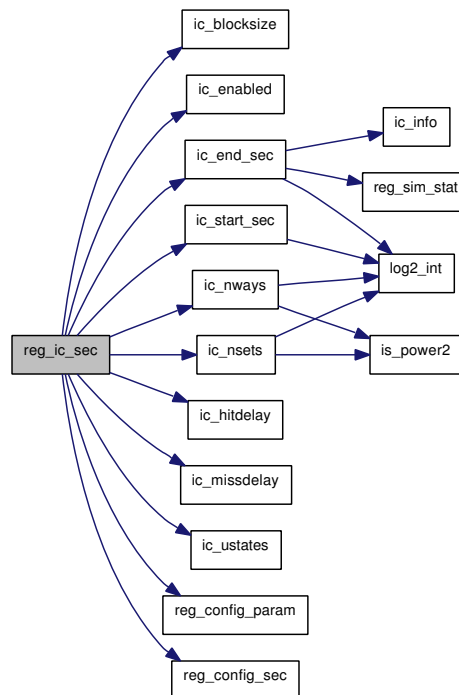
### 6.6.1.2 uint32\_t ic\_simulate\_fetch (oraddr\_t fetchaddr, oraddr\_t virt\_addr)

Here is the call graph for this function:



### 6.6.1.3 void reg\_ic\_sec ()

Here is the call graph for this function:



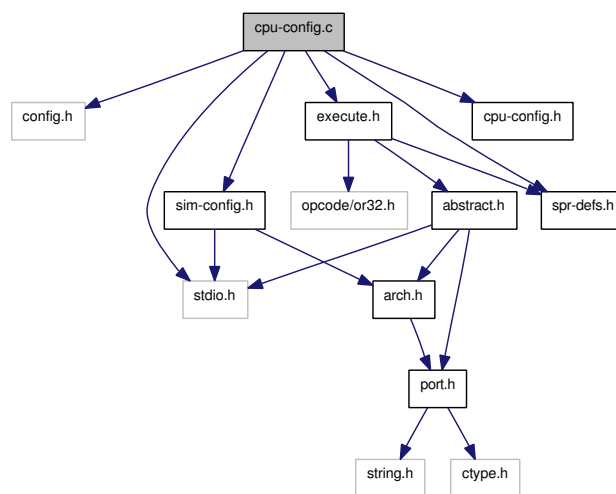
## 6.6.2 Variable Documentation

### 6.6.2.1 struct ic\* ic\_state

## 6.7 cpu-config.c File Reference

```
#include "config.h"
#include <stdio.h>
#include "cpu-config.h"
#include "sim-config.h"
#include "spr-defs.h"
#include "execute.h"
```

Include dependency graph for `cpu-config.c`:



### Defines

- #define `WARNING(s)` `fprintf(stderr, "Warning: config.%s: %s\n", cur_section → name, (s))`

### Functions

- static void `cpu_ver` (union `param_val` val, void \*dat)
- static void `cpu_cfg` (union `param_val` val, void \*dat)
- static void `cpu_rev` (union `param_val` val, void \*dat)
- static void `cpu_upr` (union `param_val` val, void \*dat)
- static void `cpu_cfgr` (union `param_val` val, void \*dat)
- static void `cpu_sr` (union `param_val` val, void \*dat)
- static void `cpu_hazards` (union `param_val` val, void \*dat)
- static void `cpu_superscalar` (union `param_val` val, void \*dat)
- static void `cpu_dependstats` (union `param_val` val, void \*dat)
- static void `cpu_sbuf_len` (union `param_val` val, void \*dat)
- void `reg_cpu_sec` ()

## 6.7.1 Define Documentation

**6.7.1.1** `#define WARNING(s) fprintf(stderr, "Warning: config.%s: %s\n", cur_section → name, (s))`

## 6.7.2 Function Documentation

**6.7.2.1** `static void cpu_cfg (union param_val val, void * dat) [static]`

Set the CPU configuration

Value must be an 8-bit integer. Larger values are truncated with a warning.

### Parameters:

← *val* The value to use

← *dat* The [config](#) data structure (not used here)

**6.7.2.2** `static void cpu_cfgr (union param_val val, void * dat) [static]`

Set the CPU configuration

Value must be just the OB32S instruction set bit. Nothing else is currently supported. If other values are specified, they will be set, but with a warning.

### Parameters:

← *val* The value to use

← *dat* The [config](#) data structure (not used here)

**6.7.2.3** `static void cpu_dependstats (union param_val val, void * dat) [static]`

**6.7.2.4** `static void cpu_hazards (union param_val val, void * dat) [static]`

**6.7.2.5** `static void cpu_rev (union param_val val, void * dat) [static]`

Set the CPU revision

Value must be an 6-bit integer. Larger values are truncated with a warning.

### Parameters:

← *val* The value to use

← *dat* The [config](#) data structure (not used here)

**6.7.2.6** `static void cpu_sbuf_len (union param_val val, void * dat) [static]`

**6.7.2.7** `static void cpu_sr (union param_val val, void * dat) [static]`

Set the CPU supervision register

Only the lowest 17 bits may be set. The top 4 bits are for context ID's (not currently supported), the rest are reserved and should not be set.

If such values are specified, the value will be set (it has no effect), but with a warning.

**Parameters:**

← *val* The value to use

← *dat* The `config` data structure (not used here)

**6.7.2.8** `static void cpu_superscalar (union param_val val, void * dat) [static]`

**6.7.2.9** `static void cpu_upr (union param_val val, void * dat) [static]`

**6.7.2.10** `static void cpu_ver (union param_val val, void * dat) [static]`

Set the CPU version

Value must be an 8-bit integer. Larger values are truncated with a warning.

**Parameters:**

← *val* The value to use

← *dat* The `config` data structure (not used here)

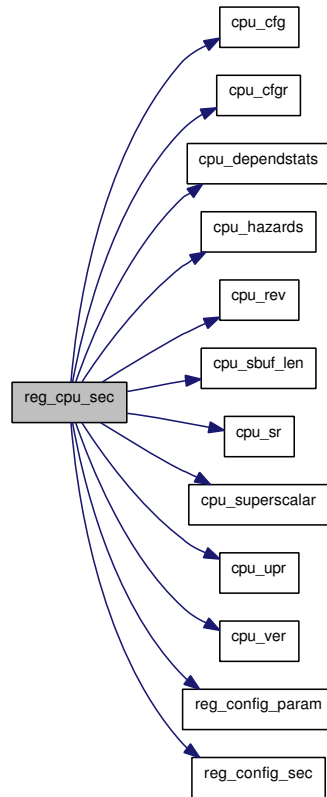
**6.7.2.11** `void reg_cpu_sec ()`

Register the functions to handle a section cpu

This section does not allocate dynamically a data structure holding its `config` information. It's all in the global `config.sim` data structure. Therefore it does not need a start and end function to initialize default values (although it might be clearer to do so). The default values are set in `init_defconfig()`.

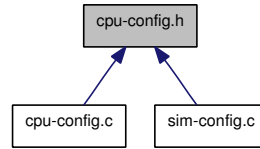


Here is the call graph for this function:



## 6.8 cpu-config.h File Reference

This graph shows which files directly or indirectly include this file:



### Functions

- void [reg\\_cpu\\_sec](#) ()

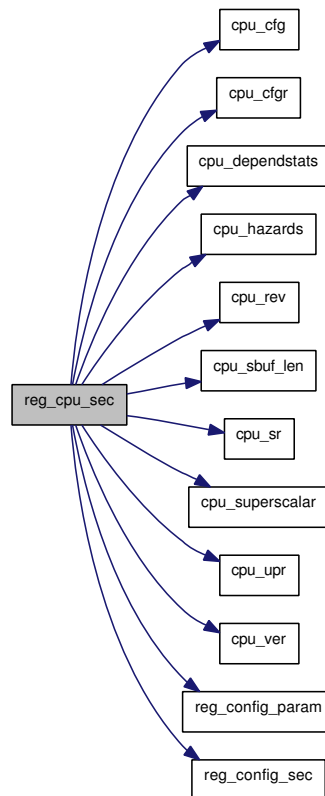
#### 6.8.1 Function Documentation

##### 6.8.1.1 void [reg\\_cpu\\_sec](#) ()

Register the functions to handle a section cpu

This section does not allocate dynamically a data structure holding its [config](#) information. It's all in the global [config.sim](#) data structure. Therefore it does not need a start and end function to initialize default values (although it might be clearer to do so). The default values are set in [init\\_defconfig](#) ().

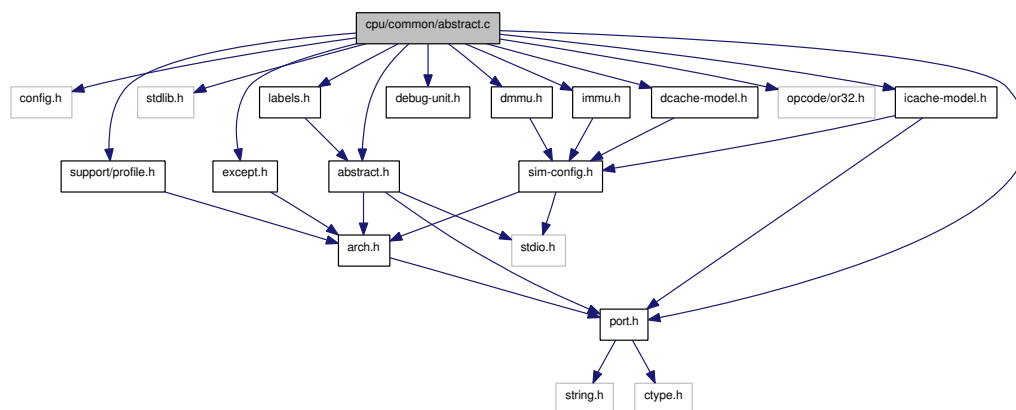
Here is the call graph for this function:



## 6.9 cpu/common/abstract.c File Reference

```
#include "config.h"
#include "port.h"
#include <stdlib.h>
#include "abstract.h"
#include "except.h"
#include "support/profile.h"
#include "debug-unit.h"
#include "icache-model.h"
#include "dcache-model.h"
#include "labels.h"
#include "opcode/or32.h"
#include "dmmu.h"
#include "immu.h"
```

Include dependency graph for abstract.c:



## Functions

- static uint32\_t [eval\\_mem\\_32\\_inv](#) (oraddr\_t, void \*)
- static uint16\_t [eval\\_mem\\_16\\_inv](#) (oraddr\_t, void \*)
- static uint8\_t [eval\\_mem\\_8\\_inv](#) (oraddr\_t, void \*)
- static uint32\_t [eval\\_mem\\_32\\_inv\\_direct](#) (oraddr\_t, void \*)
- static uint16\_t [eval\\_mem\\_16\\_inv\\_direct](#) (oraddr\_t, void \*)
- static uint8\_t [eval\\_mem\\_8\\_inv\\_direct](#) (oraddr\_t, void \*)
- static void [set\\_mem\\_32\\_inv](#) (oraddr\_t, uint32\_t, void \*)
- static void [set\\_mem\\_16\\_inv](#) (oraddr\_t, uint16\_t, void \*)
- static void [set\\_mem\\_8\\_inv](#) (oraddr\_t, uint8\_t, void \*)
- static void [set\\_mem\\_32\\_inv\\_direct](#) (oraddr\_t, uint32\_t, void \*)
- static void [set\\_mem\\_16\\_inv\\_direct](#) (oraddr\_t, uint16\_t, void \*)
- static void [set\\_mem\\_8\\_inv\\_direct](#) (oraddr\_t, uint8\_t, void \*)

- static unsigned int `bit_mask` (uint32\_t data)
- static struct `dev_memarea` \* `register_memoryarea_mask` (oraddr\_t addr\_mask, oraddr\_t addr\_-, compare, uint32\_t size, unsigned mc\_dev)
- struct `dev_memarea` \* `reg_mem_area` (oraddr\_t addr, uint32\_t size, unsigned mc\_dev, struct `mem_ops` \*ops)
- struct `dev_memarea` \* `verify_memoryarea` (oraddr\_t addr)
- void `set_mem_valid` (struct `dev_memarea` \*mem, int valid)
- void `adjust_rw_delay` (struct `dev_memarea` \*mem, int delayr, int delayw)
- uint32\_t `evalsim_mem32` (oraddr\_t memaddr, oraddr\_t vaddr)
- uint16\_t `evalsim_mem16` (oraddr\_t memaddr, oraddr\_t vaddr)
- uint8\_t `evalsim_mem8` (oraddr\_t memaddr, oraddr\_t vaddr)
- uint32\_t `eval_mem32` (oraddr\_t memaddr, int \*breakpoint)
- uint32\_t `eval_direct32` (oraddr\_t memaddr, int through\_mmu, int through\_dc)
- uint32\_t `eval_insn` (oraddr\_t memaddr, int \*breakpoint)
- uint16\_t `eval_mem16` (oraddr\_t memaddr, int \*breakpoint)
- uint16\_t `eval_direct16` (oraddr\_t memaddr, int through\_mmu, int through\_dc)
- uint8\_t `eval_mem8` (oraddr\_t memaddr, int \*breakpoint)
- uint8\_t `eval_direct8` (oraddr\_t memaddr, int through\_mmu, int through\_dc)
- void `setsim_mem32` (oraddr\_t memaddr, oraddr\_t vaddr, uint32\_t value)
- void `setsim_mem16` (oraddr\_t memaddr, oraddr\_t vaddr, uint16\_t value)
- void `setsim_mem8` (oraddr\_t memaddr, oraddr\_t vaddr, uint8\_t value)
- void `set_mem32` (oraddr\_t memaddr, uint32\_t value, int \*breakpoint)
- void `set_direct32` (oraddr\_t memaddr, uint32\_t value, int through\_mmu, int through\_dc)
- void `set_mem16` (oraddr\_t memaddr, uint16\_t value, int \*breakpoint)
- void `set_direct16` (oraddr\_t memaddr, uint16\_t value, int through\_mmu, int through\_dc)
- void `set_mem8` (oraddr\_t memaddr, uint8\_t value, int \*breakpoint)
- void `set_direct8` (oraddr\_t memaddr, uint8\_t value, int through\_mmu, int through\_dc)
- void `set_program32` (oraddr\_t memaddr, uint32\_t value)
- void `set_program8` (oraddr\_t memaddr, uint8\_t value)
- void `dump_memory` (oraddr\_t from, oraddr\_t to)
- void `disassemble_memory` (oraddr\_t from, oraddr\_t to, int nl)
- void `done_memory_table` ()
- void `memory_table_status` (void)
- char \* `generate_time_pretty` (char \*dest, long time\_ps)

## Variables

- struct `dev_memarea` \* `cur_area`
- int `data_ci`
- int `insn_ci`
- static struct `dev_memarea` \* `dev_list`
- static struct `dev_memarea` \* `mc_area` = NULL
- static oraddr\_t `cur_vadd`

## 6.9.1 Function Documentation

**6.9.1.1** void `adjust_rw_delay` (`struct dev_memarea * mem`, `int delayr`, `int delayw`)

**6.9.1.2** static unsigned int `bit_mask` (`uint32_t data`) [`static`]

**6.9.1.3** void `disassemble_memory` (`oraddr_t from`, `oraddr_t to`, `int nl`)

Disassemble memory to the current output

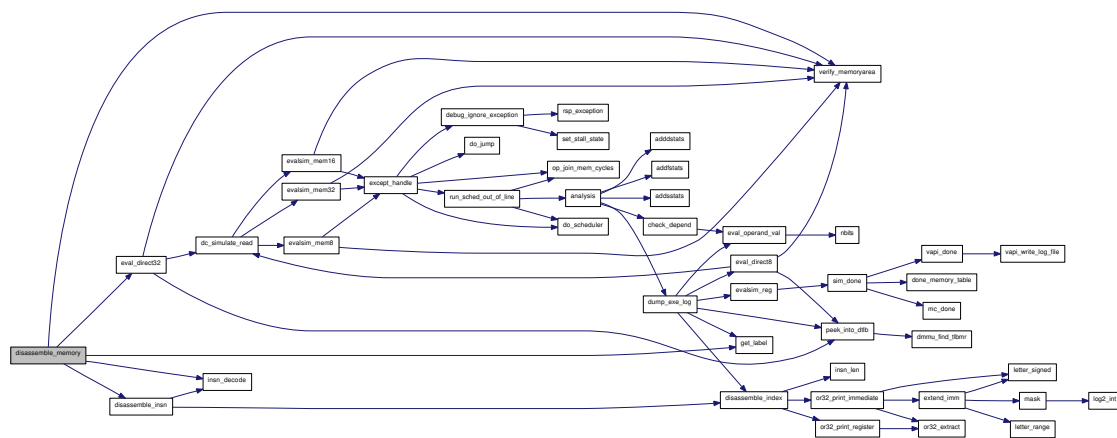
Output format is symbolic disassembly, one instruction per line. Start each line with its address and (optionally) its symbolic name.

There are all sorts of ways to trip this up, but they are unlikely. The validity of a memory area is taken from the address of the start of a line to be printed, so assumes the following 3 bytes are present. This could be fooled by ridiculous memory declarations.

### Parameters:

- ← *from* Start address of the area of memory
- ← *to* End address of the area of memory
- ← *nl* If non-zero (true) print a newline at the end of each line

Here is the call graph for this function:



**6.9.1.4** void `done_memory_table` ()

**6.9.1.5** void `dump_memory` (`oraddr_t from`, `oraddr_t to`)

Dump memory to the current output

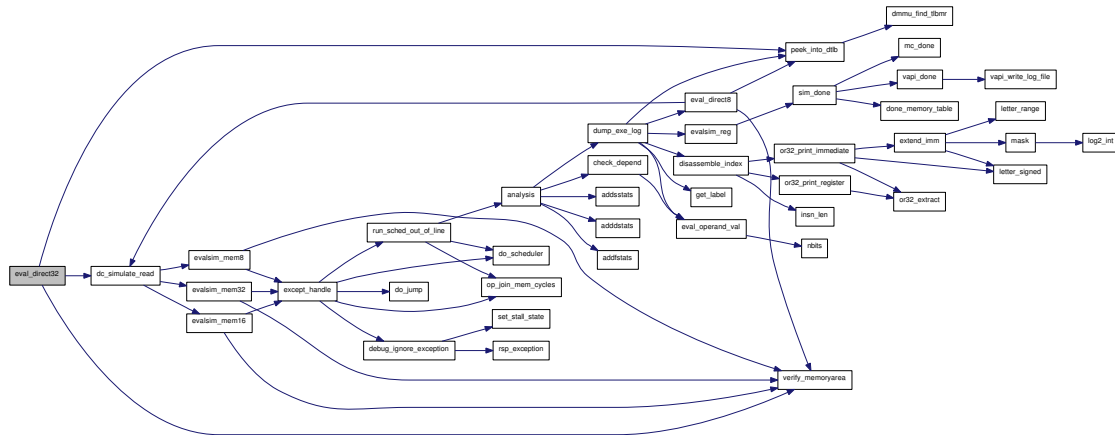
Output format is hex bytes, 16 bytes per line. Start each line with its address and (optionally) its symbolic name. Always end with a newline.

There are all sorts of ways to trip this up, but they are unlikely. The validity of a memory area is taken from the address of the start of a line to be printed, so assumes the following 15 bytes are present. This could be fooled by ridiculous memory declarations.



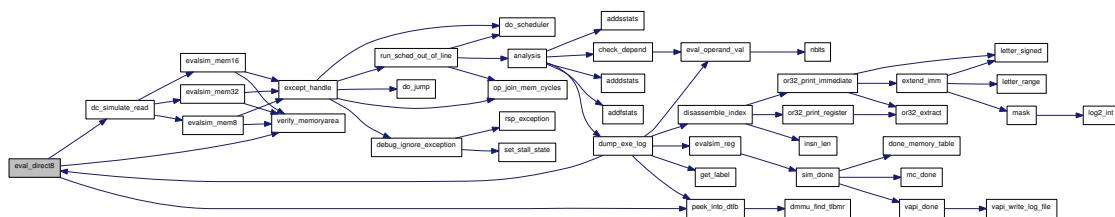
### 6.9.1.7 uint32\_t eval\_direct32 (oraddr\_t memaddr, int through\_mmu, int through\_dc)

Here is the call graph for this function:



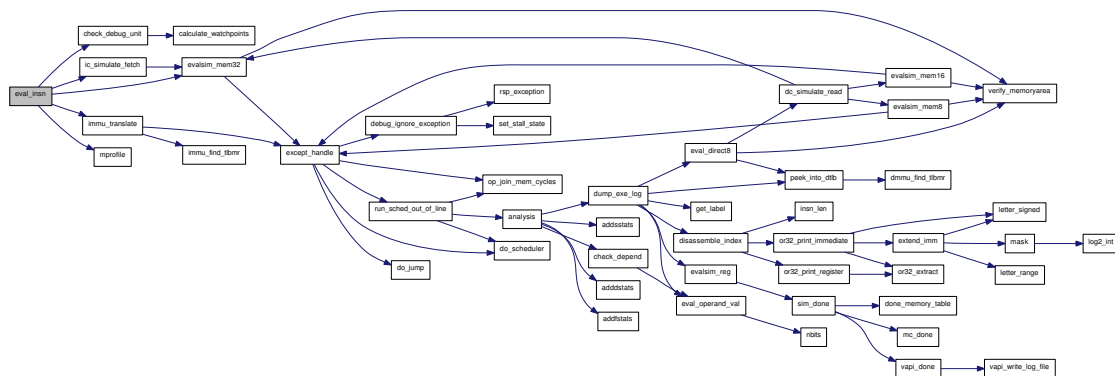
### 6.9.1.8 uint8\_t eval\_direct8 (oraddr\_t memaddr, int through\_mmu, int through\_dc)

Here is the call graph for this function:



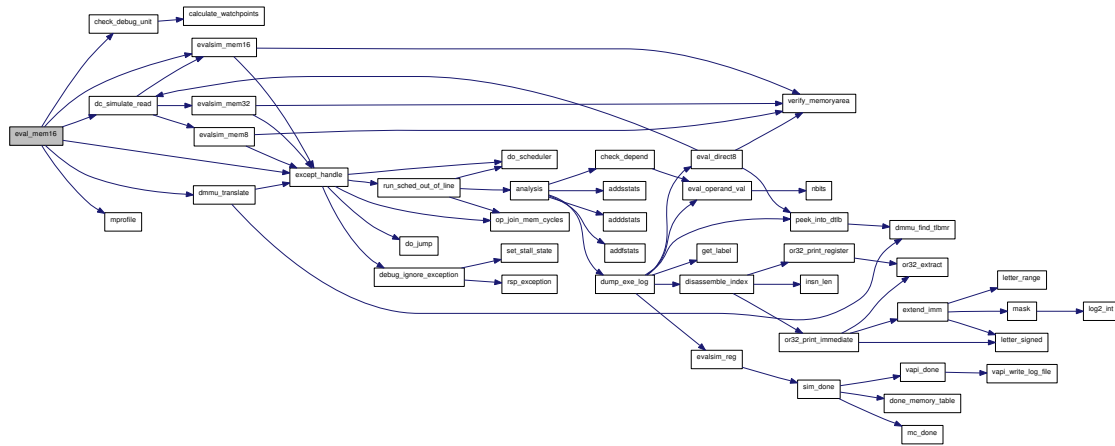
### 6.9.1.9 uint32\_t eval\_insn (oraddr\_t memaddr, int \* breakpoint)

Here is the call graph for this function:



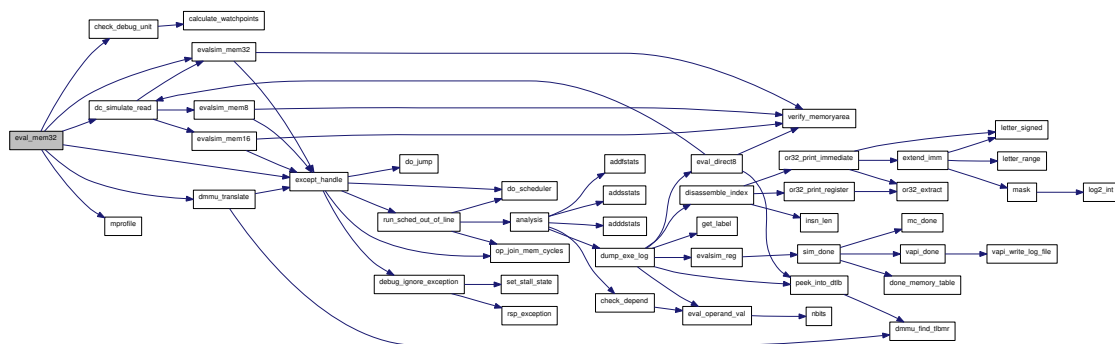
### 6.9.1.10 uint16\_t eval\_mem16 (oraddr\_t memaddr, int \* breakpoint)

Here is the call graph for this function:



### 6.9.1.11 uint32\_t eval\_mem32 (oraddr\_t memaddr, int \* breakpoint)

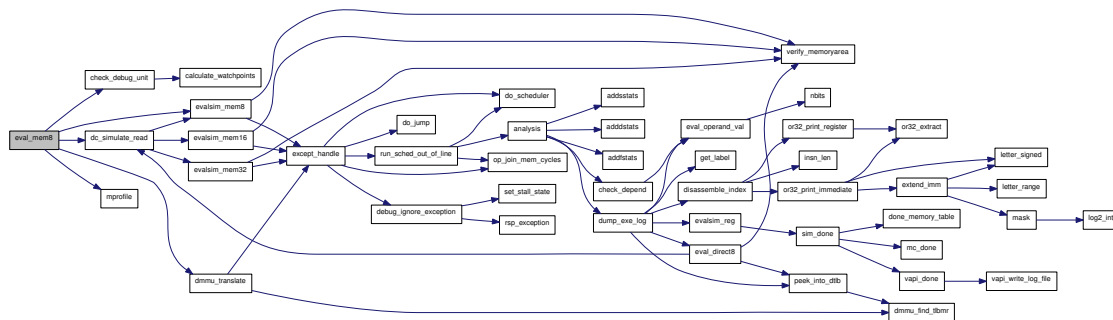
Here is the call graph for this function:





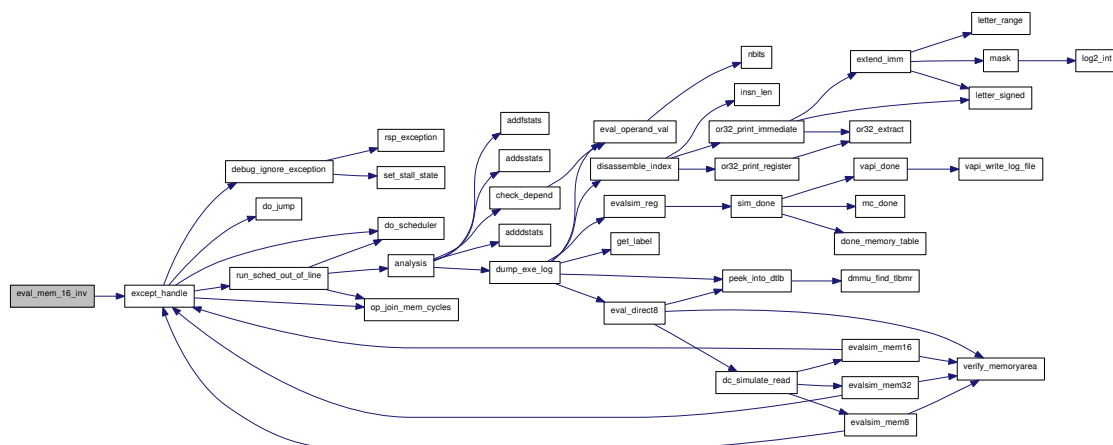
## 6.9.1.12 uint8\_t eval\_mem8 (oraddr\_t memaddr, int \* breakpoint)

Here is the call graph for this function:



## 6.9.1.13 static uint16\_t eval\_mem\_16\_inv (oraddr\_t memaddr, void \* dat) [static]

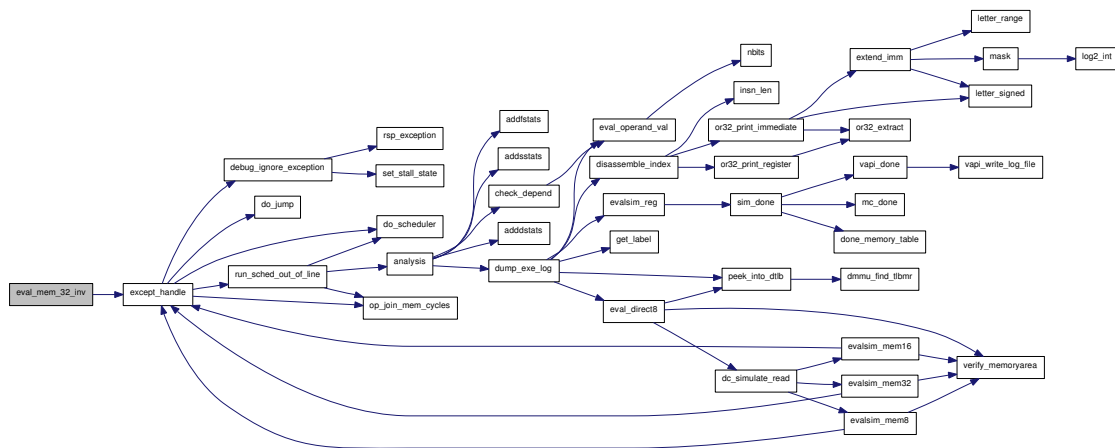
Here is the call graph for this function:



**6.9.1.14** `uint16_t eval_mem_16_inv_direct (oraddr_t memaddr, void * dat)` [static]

**6.9.1.15** `static uint32_t eval_mem_32_inv (oraddr_t memaddr, void * dat)` [static]

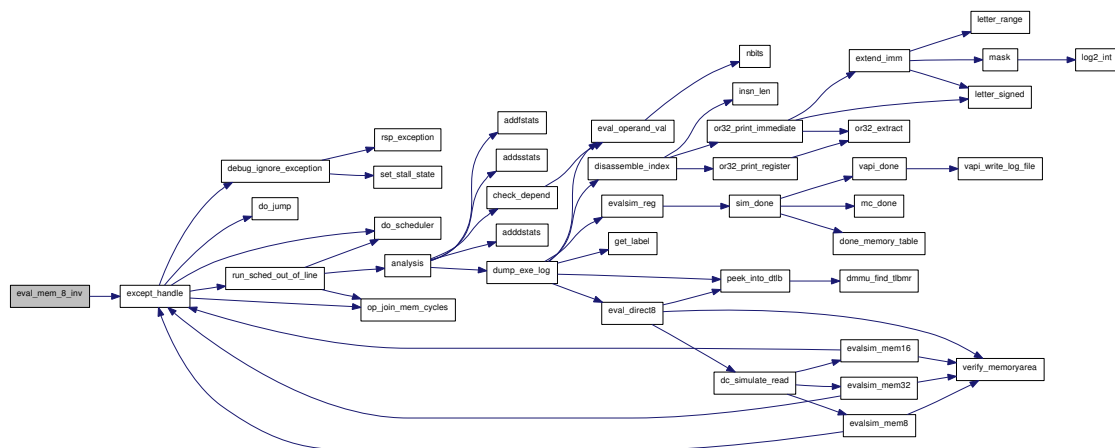
Here is the call graph for this function:



**6.9.1.16** `uint32_t eval_mem_32_inv_direct (oraddr_t memaddr, void * dat)` [static]

**6.9.1.17** `static uint8_t eval_mem_8_inv (oraddr_t memaddr, void * dat)` [static]

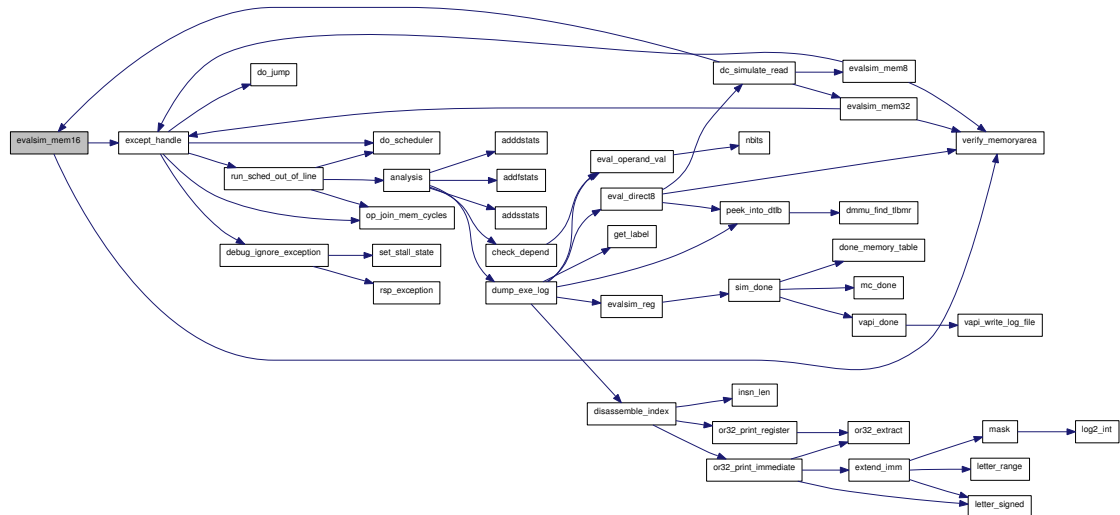
Here is the call graph for this function:



**6.9.1.18** `uint8_t eval_mem_8_inv_direct (oraddr_t memaddr, void * dat)` [static]

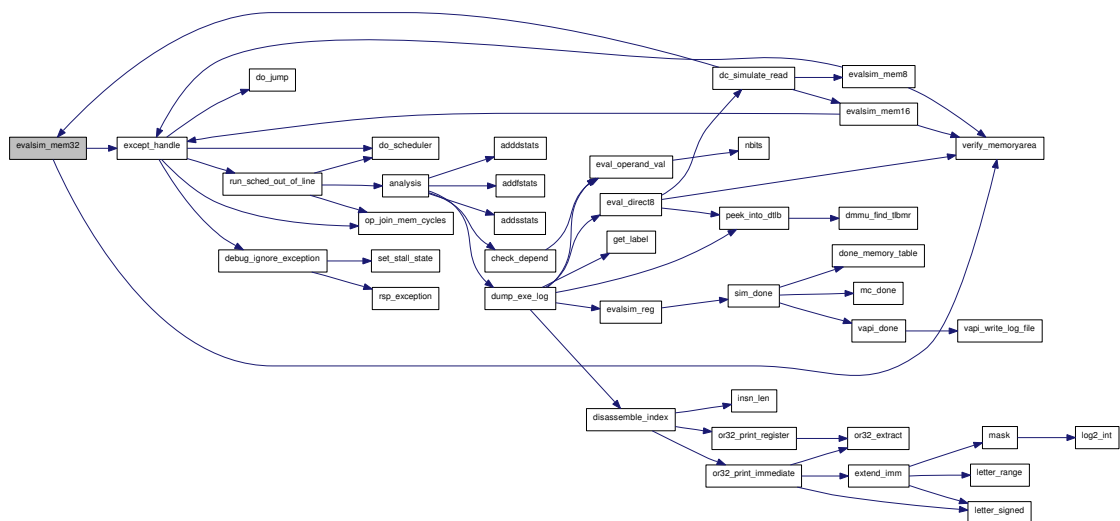
**6.9.1.19** `uint16_t evalsim_mem16 (oraddr_t memaddr, oraddr_t vaddr)`

Here is the call graph for this function:



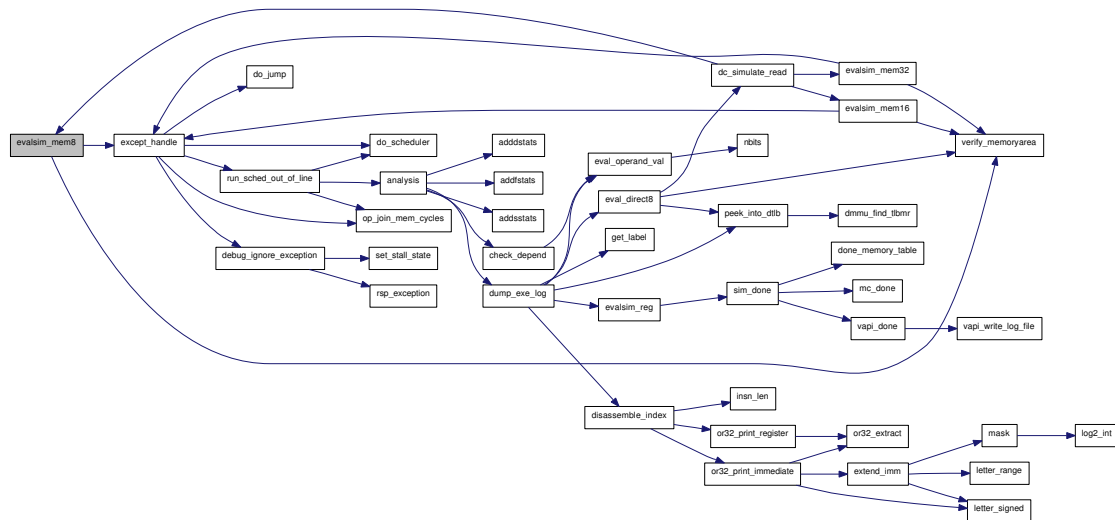
**6.9.1.20** `uint32_t evalsim_mem32 (oraddr_t memaddr, oraddr_t vaddr)`

Here is the call graph for this function:



### 6.9.1.21 uint8\_t evalsim\_mem8 (oraddr\_t memaddr, oraddr\_t vaddr)

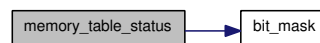
Here is the call graph for this function:



### 6.9.1.22 char\* generate\_time\_pretty (char \* dest, long time\_ps)

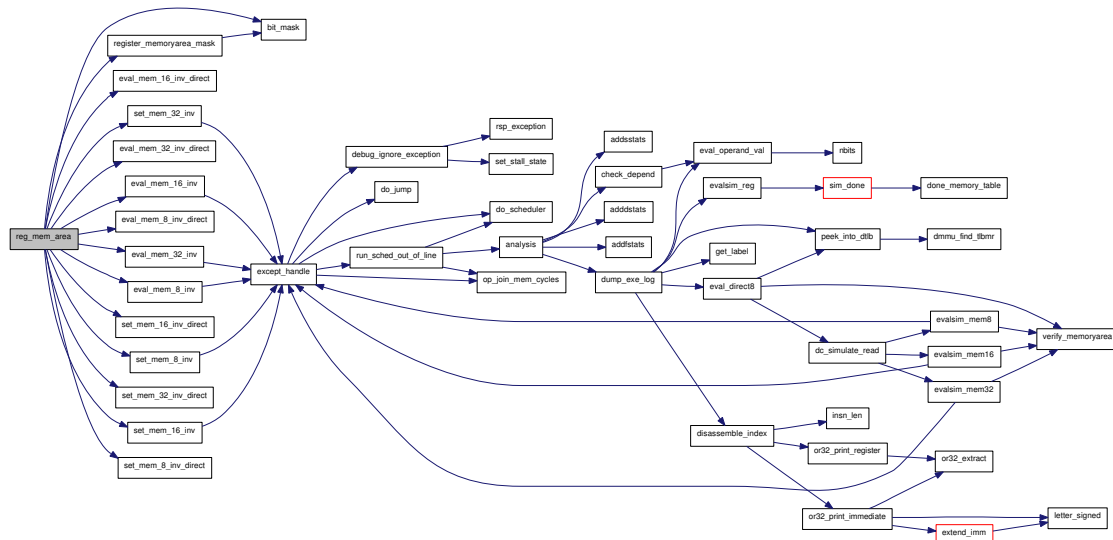
### 6.9.1.23 void memory\_table\_status (void)

Here is the call graph for this function:



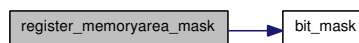
### 6.9.1.24 struct dev\_memarea\* reg\_mem\_area (oraddr\_t addr, uint32\_t size, unsigned mc\_dev, struct mem\_ops \* ops) [read]

Here is the call graph for this function:



### 6.9.1.25 static struct dev\_memarea\* register\_memoryarea\_mask (oraddr\_t addr\_mask, oraddr\_t addr\_compare, uint32\_t size, unsigned mc\_dev) [static, read]

Here is the call graph for this function:





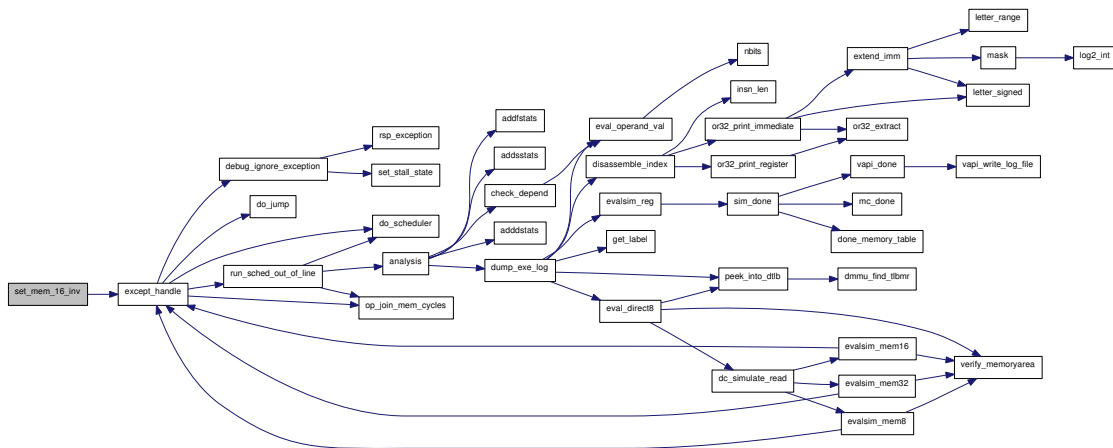






### 6.9.1.32 static void set\_mem\_16\_inv (oraddr\_t memaddr, uint16\_t val, void \* dat) [static]

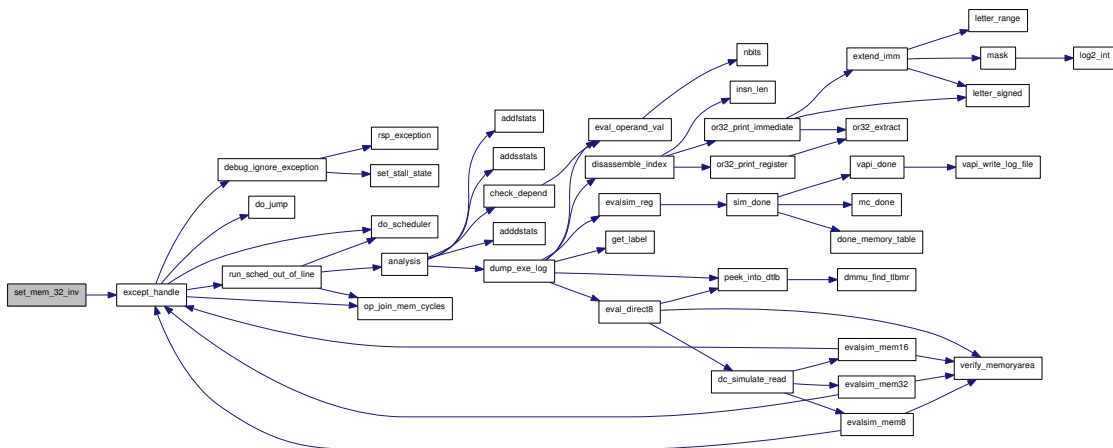
Here is the call graph for this function:



### 6.9.1.33 void set\_mem\_16\_inv\_direct (oraddr\_t memaddr, uint16\_t val, void \* dat) [static]

### 6.9.1.34 static void set\_mem\_32\_inv (oraddr\_t memaddr, uint32\_t val, void \* dat) [static]

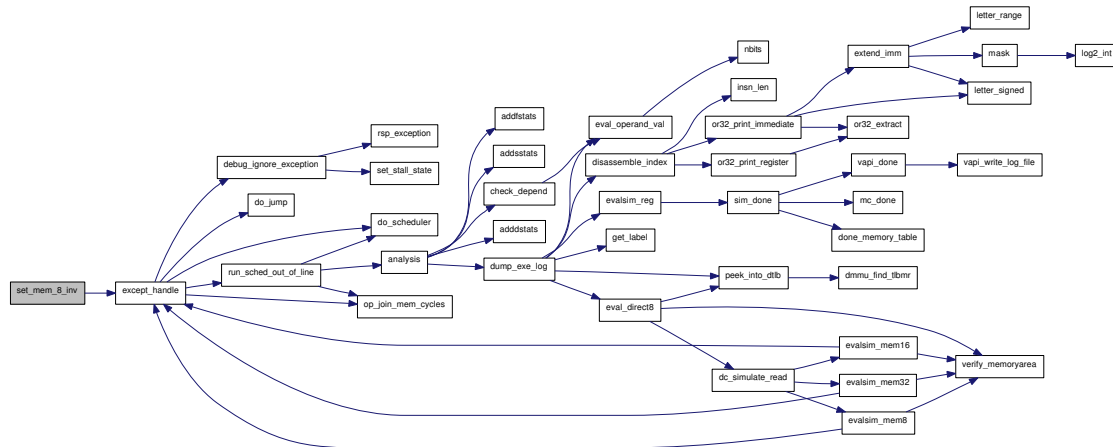
Here is the call graph for this function:



**6.9.1.35** void set\_mem\_32\_inv\_direct (oraddr\_t memaddr, uint32\_t val, void \* dat) [static]

**6.9.1.36** static void set\_mem\_8\_inv (oraddr\_t memaddr, uint8\_t val, void \* dat) [static]

Here is the call graph for this function:



**6.9.1.37** void set\_mem\_8\_inv\_direct (oraddr\_t memaddr, uint8\_t val, void \* dat) [static]

**6.9.1.38** void set\_mem\_valid (struct dev\_memarea \* mem, int valid)

**6.9.1.39** void set\_program32 (oraddr\_t memaddr, uint32\_t value)

Here is the call graph for this function:



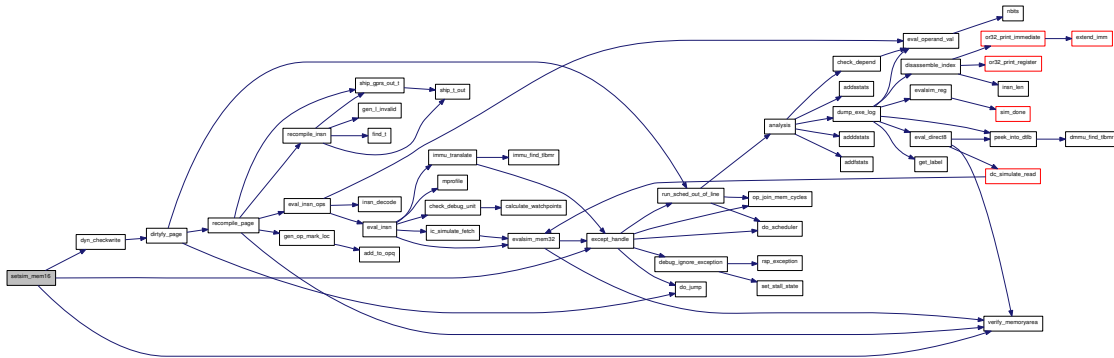
**6.9.1.40** void set\_program8 (oraddr\_t memaddr, uint8\_t value)

Here is the call graph for this function:



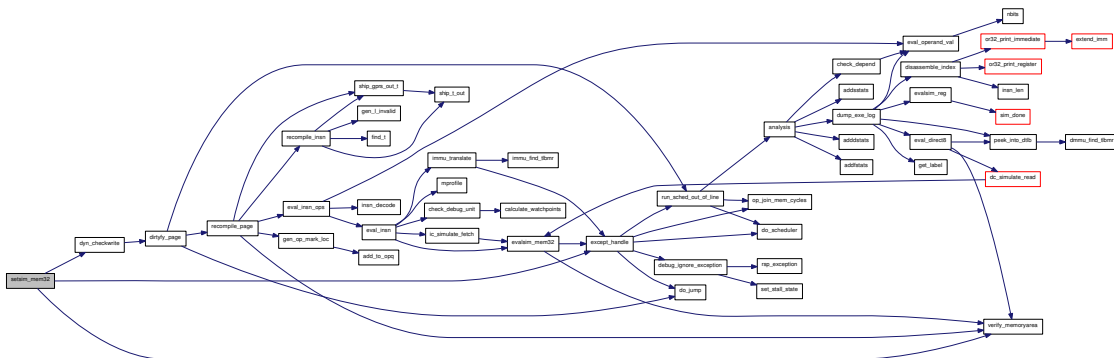
6.9.1.41 void setsim\_mem16 (oraddr\_t memaddr, oraddr\_t vaddr, uint16\_t value)

Here is the call graph for this function:



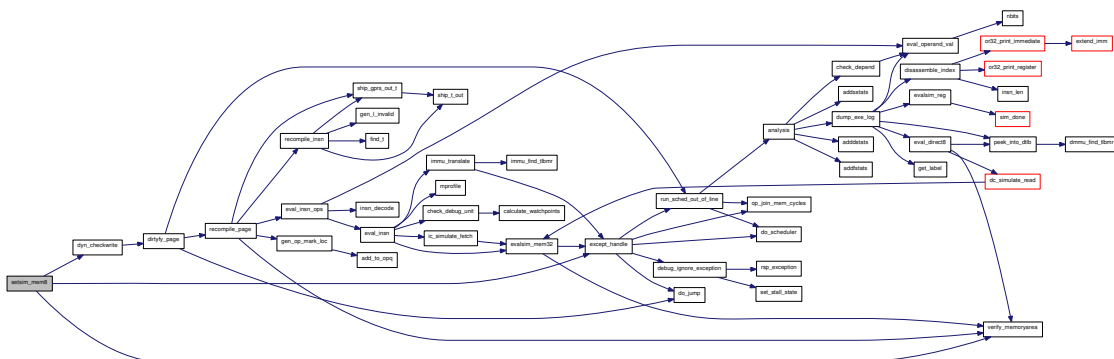
6.9.1.42 void setsim\_mem32 (oraddr\_t memaddr, oraddr\_t vaddr, uint32\_t value)

Here is the call graph for this function:



6.9.1.43 void setsim\_mem8 (oraddr\_t memaddr, oraddr\_t vaddr, uint8\_t value)

Here is the call graph for this function:



**6.9.1.44** `struct dev_memarea* verify_memoryarea (oraddr_t addr)` [read]

## 6.9.2 Variable Documentation

**6.9.2.1** `struct dev_memarea* cur_area`

Global temporary variable to increase speed.

**6.9.2.2** `oraddr_t cur_vadd` [static]

**6.9.2.3** `int data_ci`

Global var: data cache inhibit bit set

**6.9.2.4** `struct dev_memarea* dev_list` [static]

**6.9.2.5** `int insn_ci`

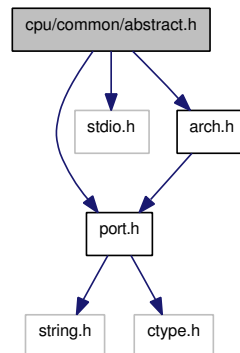
Global var: instr cache inhibit bit set

**6.9.2.6** `struct dev_memarea* mc_area = NULL` [static]

## 6.10 cpu/common/abstract.h File Reference

```
#include "port.h"
#include <stdio.h>
#include "arch.h"
```

Include dependency graph for abstract.h:



This graph shows which files directly or indirectly include this file:



### Data Structures

- struct [iqueue\\_entry](#)
- struct [mem\\_ops](#)
- struct [dev\\_memarea](#)

### Defines

- #define [DEFAULT\\_MEMORY\\_START](#) 0
- #define [DEFAULT\\_MEMORY\\_LEN](#) 0x800000
- #define [STACK\\_SIZE](#) 20
- #define [LABELNAME\\_LEN](#) 50
- #define [INSNAME\\_LEN](#) 15
- #define [OPERANDNAME\\_LEN](#) 50
- #define [MAX\\_OPERANDS](#) 5
- #define [OP\\_MEM\\_ACCESS](#) 0x80000000
- #define [CT\\_NONE](#) 0
- #define [CT\\_VIRTUAL](#) 1
- #define [CT\\_PHYSICAL](#) 2
- #define [HISTEXEC\\_LEN](#) 200
- #define [LONGEST](#) long long
- #define [ULONGEST](#) unsigned long long
- #define [LE16\(x\)](#) bswap\_16(x)

## Functions

- `uint32_t eval_mem32 (oraddr_t memaddr, int *)`
- `uint16_t eval_mem16 (oraddr_t memaddr, int *)`
- `uint8_t eval_mem8 (oraddr_t memaddr, int *)`
- `void set_mem32 (oraddr_t memaddr, uint32_t value, int *)`
- `void set_mem16 (oraddr_t memaddr, uint16_t value, int *)`
- `void set_mem8 (oraddr_t memaddr, uint8_t value, int *)`
- `void dump_memory (oraddr_t from, oraddr_t to)`
- `void disassemble_memory (oraddr_t from, oraddr_t to, int nl)`
- `uint32_t evalsim_mem32 (oraddr_t, oraddr_t)`
- `uint16_t evalsim_mem16 (oraddr_t, oraddr_t)`
- `uint8_t evalsim_mem8 (oraddr_t, oraddr_t)`
- `void setsim_mem32 (oraddr_t, oraddr_t, uint32_t)`
- `void setsim_mem16 (oraddr_t, oraddr_t, uint16_t)`
- `void setsim_mem8 (oraddr_t, oraddr_t, uint8_t)`
- `void done_memory_table ()`
- `void memory_table_status (void)`
- `struct dev_memarea * reg_mem_area (oraddr_t addr, uint32_t size, unsigned mc_dev, struct mem_ops *ops)`
- `void adjust_rw_delay (struct dev_memarea *mem, int delayr, int delayw)`
- `void set_mem_valid (struct dev_memarea *mem, int valid)`
- `struct dev_memarea * verify_memoryarea (oraddr_t addr)`
- `char * generate_time_pretty (char *dest, long time_ps)`
- `uint32_t eval_insn (oraddr_t, int *)`
- `uint32_t eval_direct32 (oraddr_t addr, int through_mmu, int through_dc)`
- `uint16_t eval_direct16 (oraddr_t memaddr, int through_mmu, int through_dc)`
- `uint8_t eval_direct8 (oraddr_t memaddr, int through_mmu, int through_dc)`
- `void set_direct8 (oraddr_t, uint8_t, int, int)`
- `void set_direct16 (oraddr_t, uint16_t, int, int)`
- `void set_direct32 (oraddr_t, uint32_t, int, int)`
- `void set_program32 (oraddr_t memaddr, uint32_t value)`
- `void set_program8 (oraddr_t memaddr, uint8_t value)`

## Variables

- `struct dev_memarea * cur_area`
- `int data_ci`
- `int insn_ci`
- `struct hist_exec * hist_exec_tail`

## 6.10.1 Define Documentation

- 6.10.1.1 `#define CT_NONE 0`
- 6.10.1.2 `#define CT_PHYSICAL 2`
- 6.10.1.3 `#define CT_VIRTUAL 1`
- 6.10.1.4 `#define DEFAULT_MEMORY_LEN 0x800000`
- 6.10.1.5 `#define DEFAULT_MEMORY_START 0`
- 6.10.1.6 `#define HISTEXEC_LEN 200`
- 6.10.1.7 `#define INSNAME_LEN 15`
- 6.10.1.8 `#define LABELNAME_LEN 50`
- 6.10.1.9 `#define LE16(x) bswap_16(x)`
- 6.10.1.10 `#define LONGEST long long`
- 6.10.1.11 `#define MAX_OPERANDS 5`
- 6.10.1.12 `#define OP_MEM_ACCESS 0x80000000`
- 6.10.1.13 `#define OPERANDNAME_LEN 50`
- 6.10.1.14 `#define STACK_SIZE 20`
- 6.10.1.15 `#define ULONGEST unsigned long long`

## 6.10.2 Function Documentation

- 6.10.2.1 `void adjust_rw_delay (struct dev_memarea * mem, int delayr, int delayw)`
- 6.10.2.2 `void disassemble_memory (oraddr_t from, oraddr_t to, int nl)`

Disassemble memory to the current output

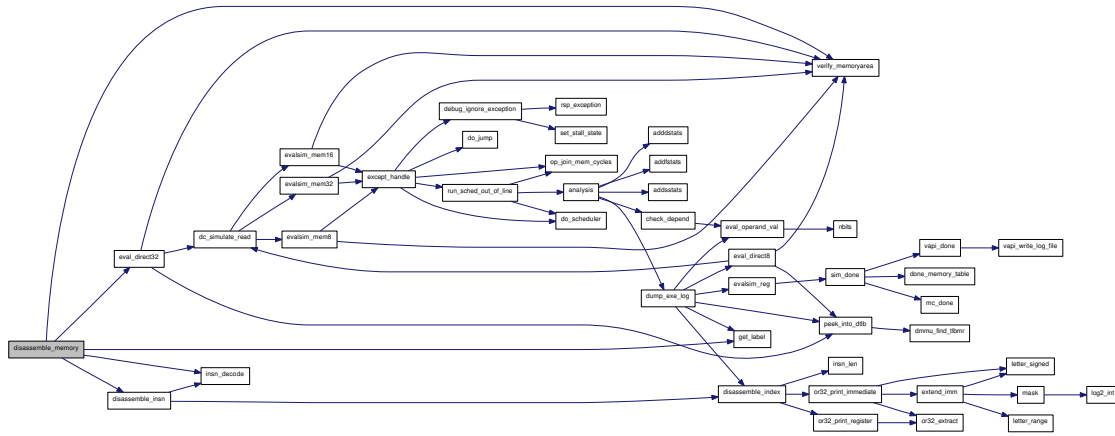
Output format is symbolic disassembly, one instruction per line. Start each line with its address and (optionally) its symbolic name.

There are all sorts of ways to trip this up, but they are unlikely. The validity of a memory area is taken from the address of the start of a line to be printed, so assumes the following 3 bytes are present. This could be fooled by ridiculous memory declarations.

### Parameters:

- ← *from* Start address of the area of memory
- ← *to* End address of the area of memory
- ← *nl* If non-zero (true) print a newline at the end of each line

Here is the call graph for this function:



### 6.10.2.3 void done\_memory\_table ()

### 6.10.2.4 void dump\_memory (oraddr\_t from, oraddr\_t to)

Dump memory to the current output

Output format is hex bytes, 16 bytes per line. Start each line with its address and (optionally) its symbolic name. Always end with a newline.

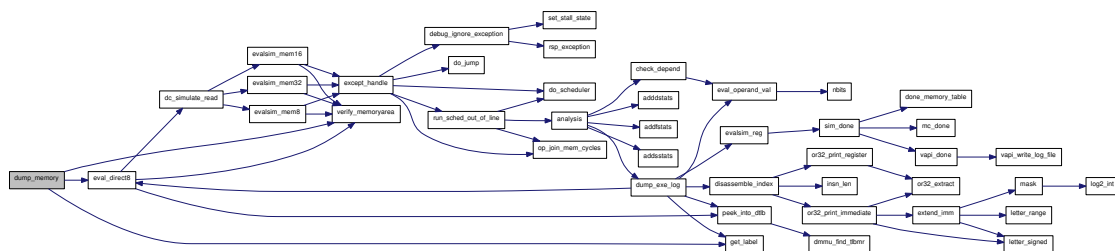
There are all sorts of ways to trip this up, but they are unlikely. The validity of a memory area is taken from the address of the start of a line to be printed, so assumes the following 15 bytes are present. This could be fooled by ridiculous memory declarations.

#### Parameters:

← *from* Start address of the area of memory

← *to* End address of the area of memory

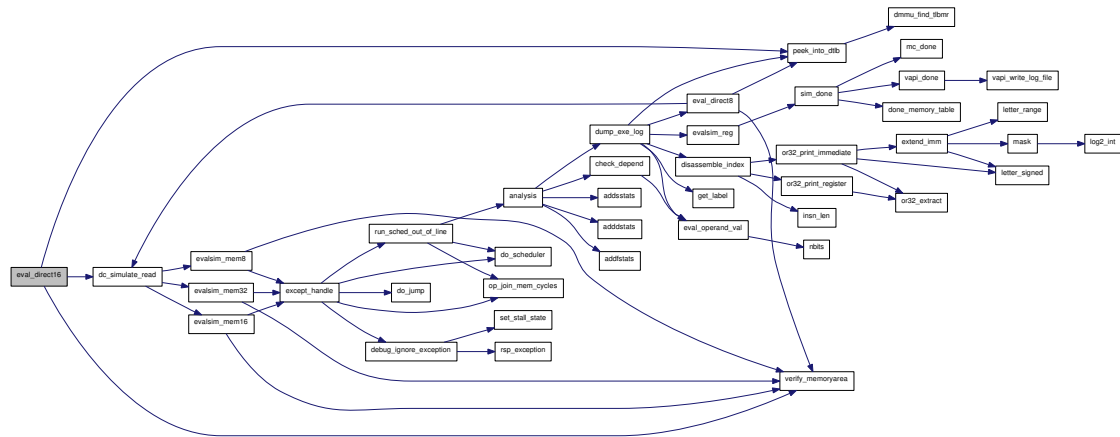
Here is the call graph for this function:





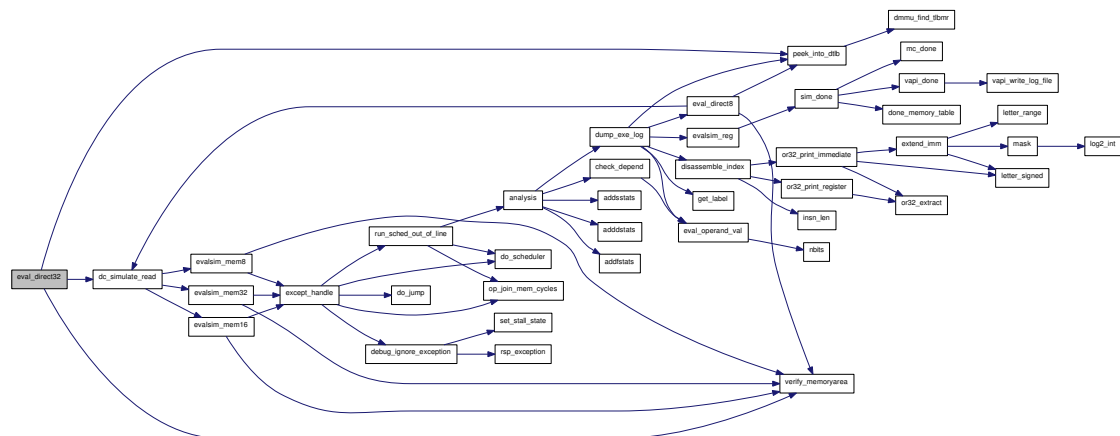
### 6.10.2.5 uint16\_t eval\_direct16 (oraddr\_t memaddr, int through\_mmu, int through\_dc)

Here is the call graph for this function:



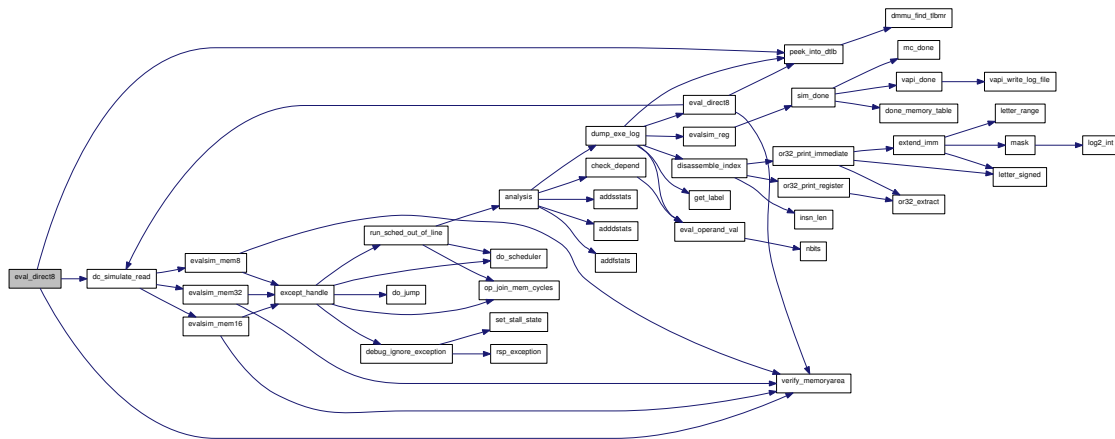
### 6.10.2.6 uint32\_t eval\_direct32 (oraddr\_t addr, int through\_mmu, int through\_dc)

Here is the call graph for this function:



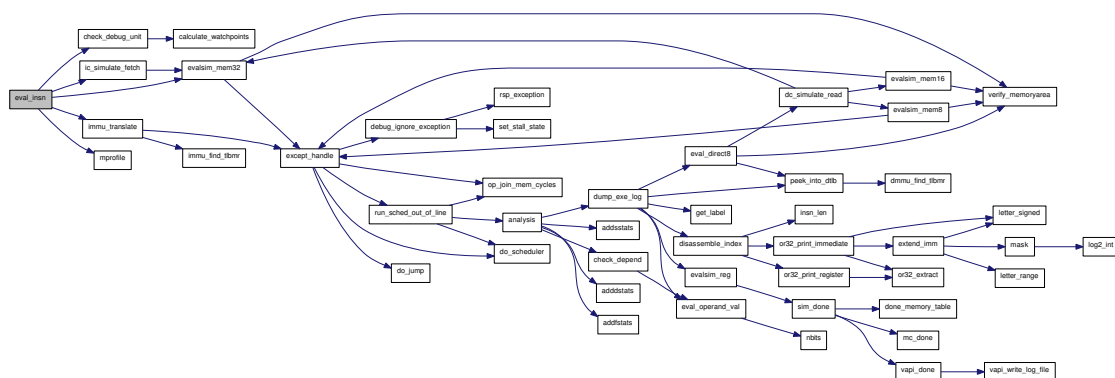
### 6.10.2.7 uint8\_t eval\_direct8 (oraddr\_t memaddr, int through\_mmu, int through\_dc)

Here is the call graph for this function:



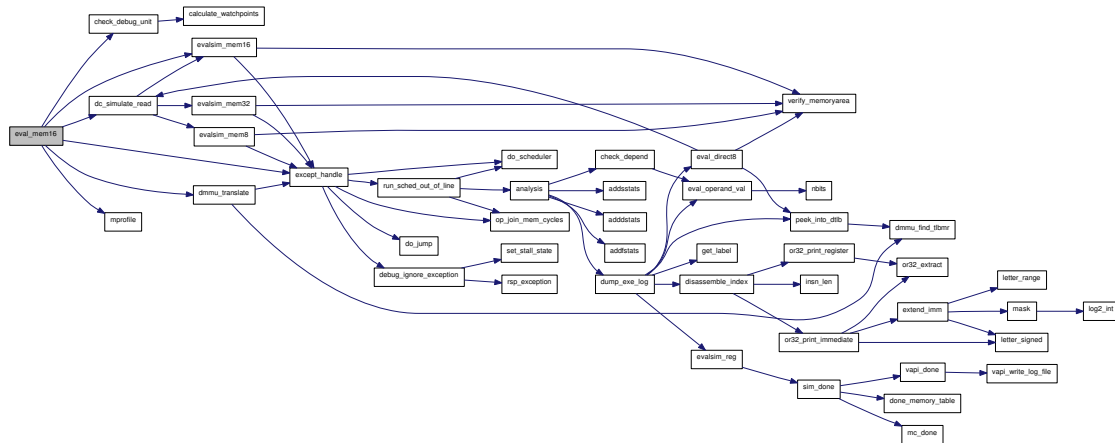
### 6.10.2.8 uint32\_t eval\_insn (oraddr\_t, int \*)

Here is the call graph for this function:



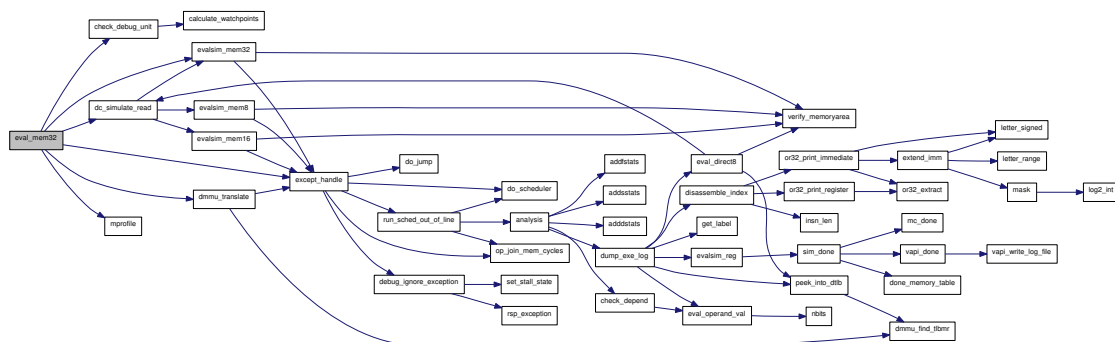
## 6.10.2.9 uint16\_t eval\_mem16 (oraddr\_t memaddr, int \*)

Here is the call graph for this function:



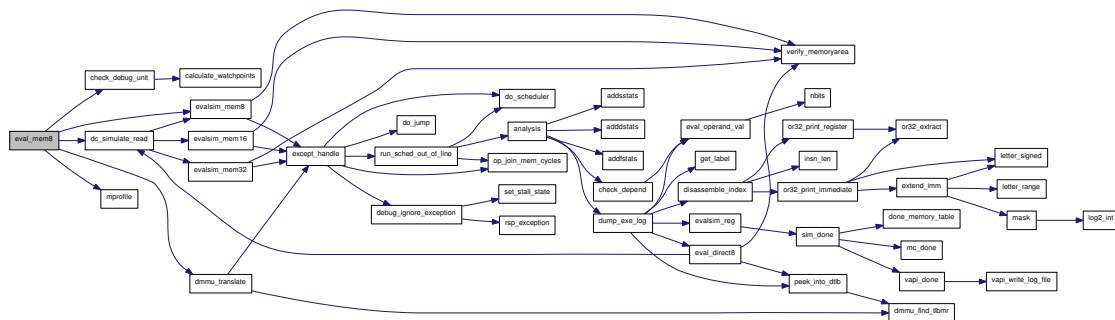
## 6.10.2.10 uint32\_t eval\_mem32 (oraddr\_t memaddr, int \*)

Here is the call graph for this function:



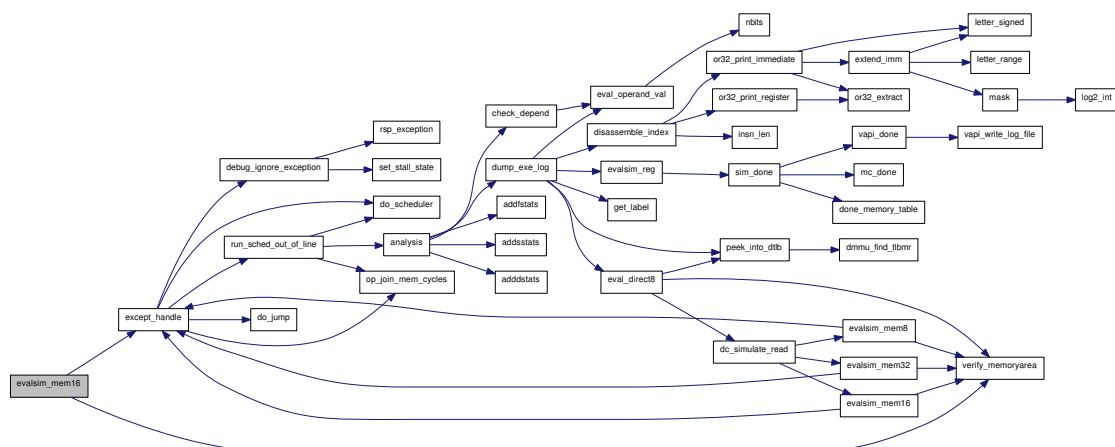
### 6.10.2.11 uint8\_t eval\_mem8 (oraddr\_t memaddr, int \*)

Here is the call graph for this function:



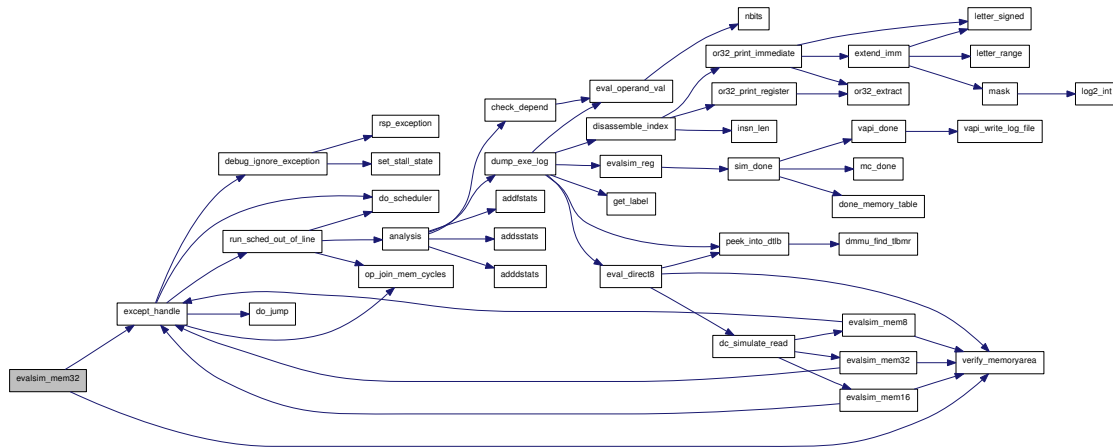
### 6.10.2.12 uint16\_t evalsim\_mem16 (oraddr\_t, oraddr\_t)

Here is the call graph for this function:



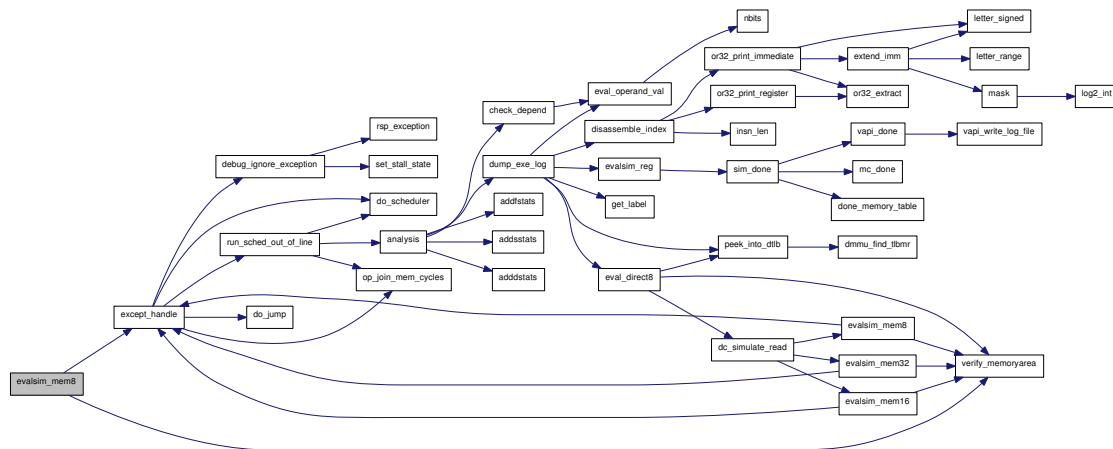
### 6.10.2.13 uint32\_t evalsim\_mem32 (oraddr\_t, oraddr\_t)

Here is the call graph for this function:



### 6.10.2.14 uint8\_t evalsim\_mem8 (oraddr\_t, oraddr\_t)

Here is the call graph for this function:



### 6.10.2.15 char\* generate\_time\_pretty (char \* dest, long time\_ps)

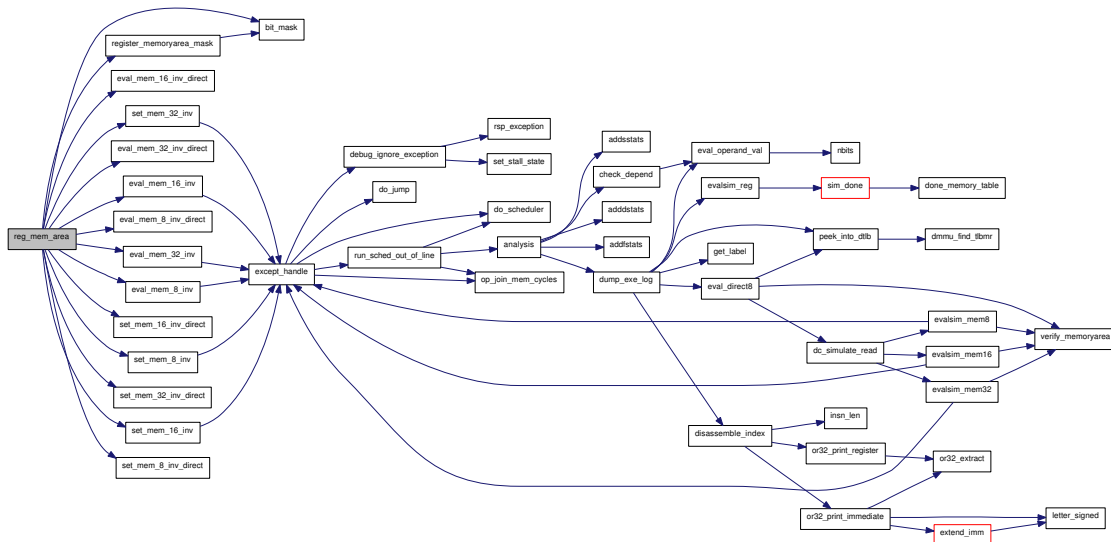
### 6.10.2.16 void memory\_table\_status (void)

Here is the call graph for this function:



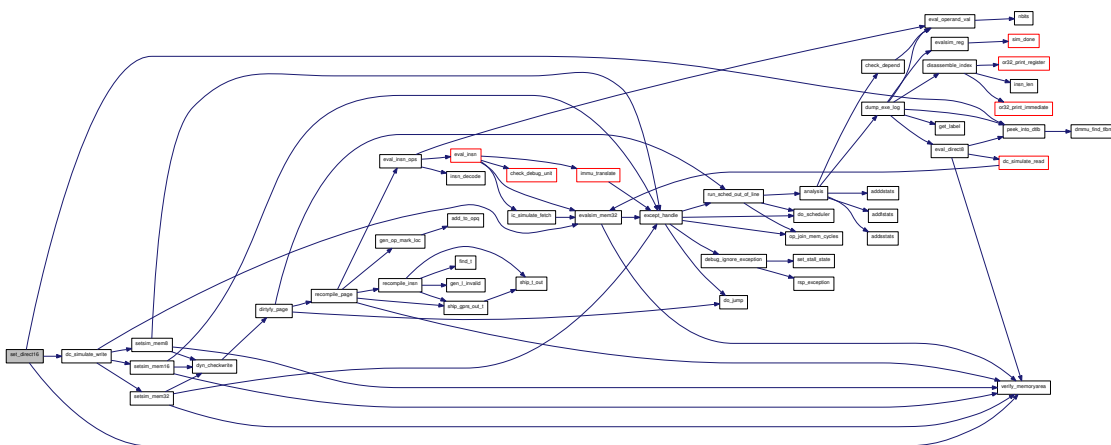
**6.10.2.17** `struct dev_memarea* reg_mem_area (oraddr_t addr, uint32_t size, unsigned mc_dev, struct mem_ops * ops) [read]`

Here is the call graph for this function:



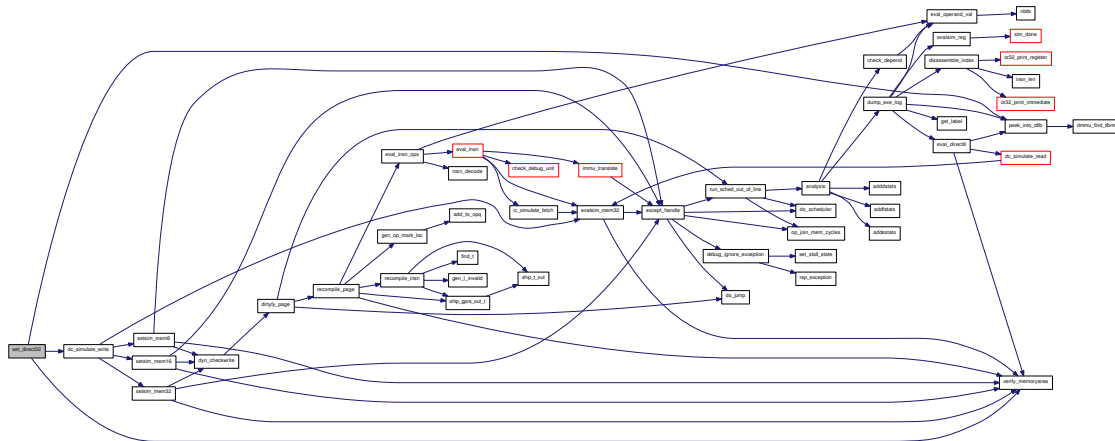
**6.10.2.18** `void set_direct16 (oraddr_t, uint16_t, int, int)`

Here is the call graph for this function:



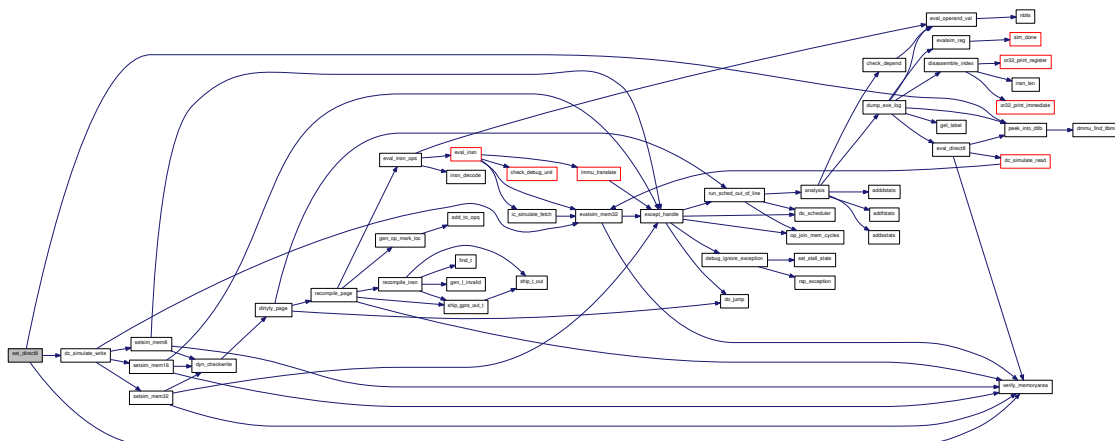
### 6.10.2.19 void set\_direct32 (oraddr\_t, uint32\_t, int, int)

Here is the call graph for this function:



### 6.10.2.20 void set\_direct8 (oraddr\_t, uint8\_t, int, int)

Here is the call graph for this function:

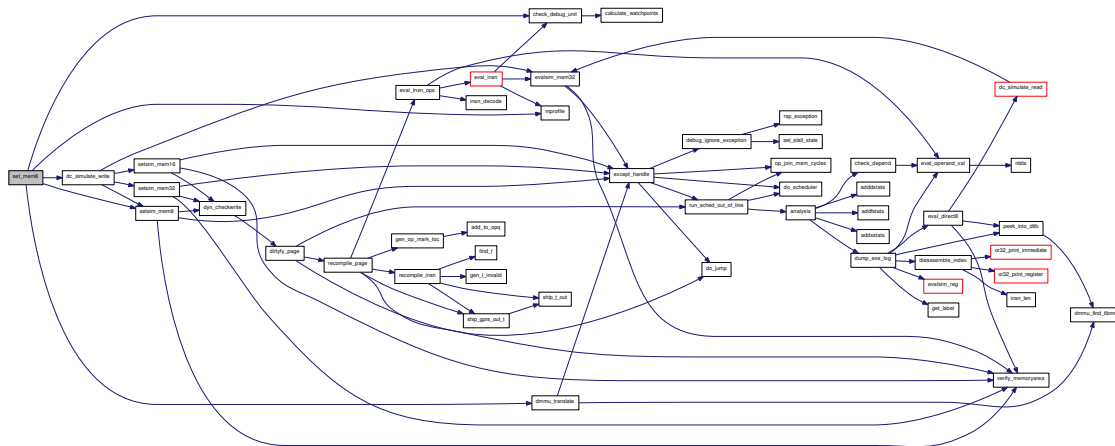






6.10.2.23 void set\_mem8 (oraddr\_t memaddr, uint8\_t value, int \*)

Here is the call graph for this function:



6.10.2.24 void set\_mem\_valid (struct dev\_memarea \* mem, int valid)

6.10.2.25 void set\_program32 (oraddr\_t memaddr, uint32\_t value)

Here is the call graph for this function:



6.10.2.26 void set\_program8 (oraddr\_t memaddr, uint8\_t value)

Here is the call graph for this function:





**6.10.2.30** `struct dev_memarea* verify_memoryarea (oraddr_t addr)` [read]

### 6.10.3 Variable Documentation

**6.10.3.1** `struct dev_memarea* cur_area`

Global temporary variable to increase speed.

**6.10.3.2** `int data_ci`

Global var: data cache inhibit bit set

**6.10.3.3** `struct hist_exec* hist_exec_tail`

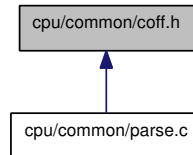
History of execution. Globally available

**6.10.3.4** `int insn_ci`

Global var: instr cache inhibit bit set

## 6.11 cpu/common/coff.h File Reference

This graph shows which files directly or indirectly include this file:



### Data Structures

- struct [COFF\\_filehdr](#)
- struct [COFF\\_AOUTHDR](#)
- struct [COFF\\_scnhdr](#)
- struct [COFF\\_slrib](#)
- struct [COFF\\_lineno](#)
- struct [COFF\\_symtab](#)
- union [COFF\\_auxent](#)
- struct [COFF\\_reloc](#)

### Defines

- #define [E\\_SYMNMLEN](#) 8
- #define [E\\_FILNMLEN](#) 14
- #define [E\\_DIMNUM](#) 4
- #define [COFF\\_SHORT\\_L](#) SWAP\_ENDIAN\_SHORT
- #define [COFF\\_LONG\\_L](#) SWAP\_ENDIAN\_LONG
- #define [COFF\\_SHORT\\_H](#) KEEP\_ENDIAN\_SHORT
- #define [COFF\\_LONG\\_H](#) KEEP\_ENDIAN\_LONG
- #define [SWAP\\_ENDIAN\\_SHORT](#)(ps)
- #define [SWAP\\_ENDIAN\\_LONG](#)(ps)
- #define [KEEP\\_ENDIAN\\_SHORT](#)(ps)
- #define [KEEP\\_ENDIAN\\_LONG](#)(ps)
- #define [COFF\\_LONG](#)(v) [COFF\\_LONG\\_L](#)(v)
- #define [COFF\\_SHORT](#)(v) [COFF\\_SHORT\\_L](#)(v)
- #define [COFF\\_F\\_RELFLG](#) 0000001
- #define [COFF\\_F\\_EXEC](#) 0000002
- #define [COFF\\_F\\_LNNO](#) 0000004
- #define [COFF\\_F\\_LSYMS](#) 0000010
- #define [COFF\\_F\\_MINMAL](#) 0000020
- #define [COFF\\_F\\_UPDATE](#) 0000040
- #define [COFF\\_F\\_SWABD](#) 0000100
- #define [COFF\\_F\\_AR16WR](#) 0000200
- #define [COFF\\_F\\_AR32WR](#) 0000400
- #define [COFF\\_F\\_AR32W](#) 0001000
- #define [COFF\\_F\\_PATCH](#) 0002000
- #define [COFF\\_F\\_NODF](#) 0002000

- #define `COFF_I386MAGIC` 0x14c
- #define `COFF_I386BADMAG(x)` (COFF\_SHORT((x).f\_magic) != COFF\_I386MAGIC)
- #define `COFF_FILHDR` struct `COFF_filehdr`
- #define `COFF_FILHSZ` sizeof(COFF\_FILHDR)
- #define `COFF_AOUTSZ` (sizeof(COFF\_AOUTHDR))
- #define `COFF_STMAGIC` 0401
- #define `COFF_OMAGIC` 0404
- #define `COFF_JMAGIC` 0407
- #define `COFF_DMAGIC` 0410
- #define `COFF_ZMAGIC` 0413
- #define `COFF_SHMAGIC` 0443
- #define `C_EFCN` 0xff
- #define `C_NULL` 0
- #define `C_AUTO` 1
- #define `C_EXT` 2
- #define `C_STAT` 3
- #define `C_REG` 4
- #define `C_EXTDEF` 5
- #define `C_LABEL` 6
- #define `C_ULABEL` 7
- #define `C_MOS` 8
- #define `C_ARG` 9
- #define `C_STRTAG` 10
- #define `C_MOU` 11
- #define `C_UNTAG` 12
- #define `C_TPDEF` 13
- #define `C_USTATIC` 14
- #define `C_ENTAG` 15
- #define `C_MOE` 16
- #define `C_REGPARAM` 17
- #define `C_FIELD` 18
- #define `C_AUTOARG` 19
- #define `C_LASTENT` 20
- #define `C_BLOCK` 100
- #define `C_FCN` 101
- #define `C_EOS` 102
- #define `C_FILE` 103
- #define `C_LINE` 104
- #define `C_ALIAS` 105
- #define `C_HIDDEN` 106
- #define `C_WEAKEXT` 127
- #define `C_UEXT` 19
- #define `C_STATLAB` 20
- #define `C_EXTLAB` 21
- #define `C_SYSTEM` 23
- #define `C_SECTION` 104
- #define `C_NT_WEAK` 105
- #define `C_LEAFPROC` 108
- #define `C_SCALL` 107
- #define `C_LEAFEXT` 108

- #define C\_LEAFSTAT 113
- #define C\_OPTVAR 109
- #define C\_DEFINE 110
- #define C\_PRAGMA 111
- #define C\_SEGMENT 112
- #define C\_SHADOW 107
- #define C\_VERSION 108
- #define C\_HIDEXT 107
- #define C\_BINCL 108
- #define C\_EINCL 109
- #define C\_GSYM (0x80)
- #define C\_LSYM (0x81)
- #define C\_PSYM (0x82)
- #define C\_RSYM (0x83)
- #define C\_RPSYM (0x84)
- #define C\_STSYM (0x85)
- #define C\_TCSYM (0x86)
- #define C\_BCOMM (0x87)
- #define C\_ECOML (0x88)
- #define C\_ECOMM (0x89)
- #define C\_DECL (0x8c)
- #define C\_ENTRY (0x8d)
- #define C\_FUN (0x8e)
- #define C\_BSTAT (0x8f)
- #define C\_ESTAT (0x90)
- #define C\_THUMBEXT (128 + C\_EXT)
- #define C\_THUMBSTAT (128 + C\_STAT)
- #define C\_THUMBLABEL (128 + C\_LABEL)
- #define C\_THUMBEXTFUNC (C\_THUMBEXT + 20)
- #define C\_THUMBSTATFUNC (C\_THUMBSTAT + 20)
- #define COFF\_SCNHDR struct COFF\_scnhdr
- #define COFF\_SCNHSZ sizeof(COFF\_SCNHDR)
- #define COFF\_TEXT ".text"
- #define COFF\_DATA ".data"
- #define COFF\_BSS ".bss"
- #define COFF\_COMMENT ".comment"
- #define COFF\_LIB ".lib"
- #define COFF\_SECT\_TEXT 0
- #define COFF\_SECT\_DATA 1
- #define COFF\_SECT\_BSS 2
- #define COFF\_SECT\_REQD 3
- #define COFF\_STYP\_REG 0x00
- #define COFF\_STYP\_DSECT 0x01
- #define COFF\_STYP\_NOLOAD 0x02
- #define COFF\_STYP\_GROUP 0x04
- #define COFF\_STYP\_PAD 0x08
- #define COFF\_STYP\_COPY 0x10
- #define COFF\_STYP\_TEXT 0x20
- #define COFF\_STYP\_DATA 0x40
- #define COFF\_STYP\_BSS 0x80

- #define `COFF_STYP_INFO` 0x200
- #define `COFF_STYP_OVER` 0x400
- #define `COFF_STYP_LIB` 0x800
- #define `COFF_SLIBHD` struct `COFF_slib`
- #define `COFF_SLIBSZ` sizeof(COFF\_SLIBHD)
- #define `COFF_LINENO` struct `COFF_lineno`
- #define `COFF_LINESZ` 6
- #define `COFF_E_SYMNMLEN` 8
- #define `COFF_E_FILNMLEN` 14
- #define `COFF_E_DIMNUM` 4
- #define `COFF_N_BTMASK` (0xf)
- #define `COFF_N_TMASK` (0x30)
- #define `COFF_N_BTSHFT` (4)
- #define `COFF_N_TSHIFT` (2)
- #define `COFF_SYMENT` struct `COFF_syment`
- #define `COFF_SYMESZ` 18
- #define `COFF_AUXENT` union `COFF_auxent`
- #define `COFF_AUXESZ` 18
- #define `COFF_ETEXT` "etext"
- #define `COFF_RELOC` struct `COFF_reloc`
- #define `COFF_RELSZ` 10
- #define `COFF_DEF_DATA_SECTION_ALIGNMENT` 4
- #define `COFF_DEF_BSS_SECTION_ALIGNMENT` 4
- #define `COFF_DEF_TEXT_SECTION_ALIGNMENT` 4
- #define `COFF_DEF_SECTION_ALIGNMENT` 4





## 6.11.1 Define Documentation

6.11.1.1 `#define C_ALIAS 105`

6.11.1.2 `#define C_ARG 9`

6.11.1.3 `#define C_AUTO 1`

6.11.1.4 `#define C_AUTOARG 19`

6.11.1.5 `#define C_BCOMM (0x87)`

6.11.1.6 `#define C_BINCL 108`

6.11.1.7 `#define C_BLOCK 100`

6.11.1.8 `#define C_BSTAT (0x8f)`

6.11.1.9 `#define C_DECL (0x8c)`

6.11.1.10 `#define C_DEFINE 110`

6.11.1.11 `#define C_ECOML (0x88)`

6.11.1.12 `#define C_ECOMM (0x89)`

6.11.1.13 `#define C_EFCN 0xff`

6.11.1.14 `#define C_EINCL 109`

6.11.1.15 `#define C_ENTAG 15`

6.11.1.16 `#define C_ENTRY (0x8d)`

6.11.1.17 `#define C_EOS 102`

6.11.1.18 `#define C_ESTAT (0x90)`

6.11.1.19 `#define C_EXT 2`

6.11.1.20 `#define C_EXTDEF 5`

6.11.1.21 `#define C_EXTLAB 21`

6.11.1.22 `#define C_FCN 101`

6.11.1.23 `#define C_FIELD 18`

6.11.1.24 `#define C_FILE 103`

6.11.1.25 `#define C_FUN (0x8e)`

6.11.1.26 `#define C_GSYM (0x80)`

6.11.1.27 `#define C_HIDDEN 106`

6.11.1.28 `#define C_HIDEXT 107`

6.11.1.29 `#define C_LABEL 6`

6.11.1.30 `#define C_LASTENT 20`

```
((long)((unsigned long)((unsigned char)ps[0])<<24) |\
      ((unsigned long)((unsigned char)ps[1])<<16) |\
      ((unsigned long)((unsigned char)ps[2])<<8)  |\
      ((unsigned long)((unsigned char)ps[3])))
```

#### 6.11.1.148 #define KEEP\_ENDIAN\_SHORT(ps)

**Value:**

```
((short)((unsigned short)((unsigned char)ps[0])<<8) |\
      ((unsigned short)((unsigned char)ps[1])))
```

#### 6.11.1.149 #define SWAP\_ENDIAN\_LONG(ps)

**Value:**

```
((long)((unsigned long)((unsigned char)ps[3])<<24) |\
      ((unsigned long)((unsigned char)ps[2])<<16) |\
      ((unsigned long)((unsigned char)ps[1])<<8)  |\
      ((unsigned long)((unsigned char)ps[0])))
```

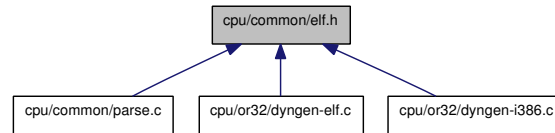
#### 6.11.1.150 #define SWAP\_ENDIAN\_SHORT(ps)

**Value:**

```
((short)((unsigned short)((unsigned char)ps[1])<<8) |\
      ((unsigned short)((unsigned char)ps[0])))
```

## 6.12 cpu/common/elf.h File Reference

This graph shows which files directly or indirectly include this file:



### Data Structures

- struct [dynamic](#)
- struct [Elf64\\_Dyn](#)
- struct [elf32\\_rel](#)
- struct [elf64\\_rel](#)
- struct [elf32\\_rela](#)
- struct [elf64\\_rela](#)
- struct [elf32\\_sym](#)
- struct [elf64\\_sym](#)
- struct [elf32\\_hdr](#)
- struct [elf64\\_hdr](#)
- struct [elf32\\_phdr](#)
- struct [elf64\\_phdr](#)
- struct [elf32\\_shdr](#)
- struct [elf64\\_shdr](#)
- struct [elf32\\_note](#)
- struct [elf64\\_note](#)

### Defines

- #define [ELF\\_SHORT\\_H](#)(ps)
- #define [ELF\\_LONG\\_H](#)(ps)
- #define [PT\\_NULL](#) 0
- #define [PT\\_LOAD](#) 1
- #define [PT\\_DYNAMIC](#) 2
- #define [PT\\_INTERP](#) 3
- #define [PT\\_NOTE](#) 4
- #define [PT\\_SHLIB](#) 5
- #define [PT\\_PHDR](#) 6
- #define [PT\\_LOPROC](#) 0x70000000
- #define [PT\\_HIPROC](#) 0x7fffffff
- #define [ET\\_NONE](#) 0
- #define [ET\\_REL](#) 1
- #define [ET\\_EXEC](#) 2
- #define [ET\\_DYN](#) 3
- #define [ET\\_CORE](#) 4
- #define [ET\\_LOPROC](#) 5
- #define [ET\\_HIPROC](#) 6

- #define EM\_NONE 0
- #define EM\_M32 1
- #define EM\_SPARC 2
- #define EM\_386 3
- #define EM\_68K 4
- #define EM\_88K 5
- #define EM\_486 6
- #define EM\_860 7
- #define EM\_MIPS 8
- #define EM\_MIPS\_RS4\_BE 10
- #define EM\_SPARC64 11
- #define EM\_PARISC 15
- #define EM\_SPARC32PLUS 18
- #define EM\_PPC 20
- #define EM\_ALPHA 0x9026
- #define DT\_NULL 0
- #define DT\_NEEDED 1
- #define DT\_PLTRELSZ 2
- #define DT\_PLTGOT 3
- #define DT\_HASH 4
- #define DT\_STRTAB 5
- #define DT\_SYMTAB 6
- #define DT\_RELA 7
- #define DT\_RELASZ 8
- #define DT\_RELAENT 9
- #define DT\_STRSZ 10
- #define DT\_SYMENT 11
- #define DT\_INIT 12
- #define DT\_FINI 13
- #define DT\_SONAME 14
- #define DT\_RPATH 15
- #define DT\_SYMBOLIC 16
- #define DT\_REL 17
- #define DT\_RELSZ 18
- #define DT\_RELENT 19
- #define DT\_PLTREL 20
- #define DT\_DEBUG 21
- #define DT\_TEXTREL 22
- #define DT\_JMPREL 23
- #define DT\_LOPROC 0x70000000
- #define DT\_HIPROC 0x7fffffff
- #define STB\_LOCAL 0
- #define STB\_GLOBAL 1
- #define STB\_WEAK 2
- #define STT\_NOTYPE 0
- #define STT\_OBJECT 1
- #define STT\_FUNC 2
- #define STT\_SECTION 3
- #define STT\_FILE 4
- #define ELF32\_ST\_BIND(x) ((x) >> 4)

- #define [ELF32\\_ST\\_TYPE\(x\)](#) (((unsigned int) x) & 0xf)
- #define [AT\\_NULL](#) 0
- #define [AT\\_IGNORE](#) 1
- #define [AT\\_EXECFD](#) 2
- #define [AT\\_PHDR](#) 3
- #define [AT\\_PHENT](#) 4
- #define [AT\\_PHNUM](#) 5
- #define [AT\\_PAGESZ](#) 6
- #define [AT\\_BASE](#) 7
- #define [AT\\_FLAGS](#) 8
- #define [AT\\_ENTRY](#) 9
- #define [AT\\_NOTELF](#) 10
- #define [AT\\_UID](#) 11
- #define [AT\\_EUID](#) 12
- #define [AT\\_GID](#) 13
- #define [AT\\_EGID](#) 14
- #define [ELF32\\_R\\_SYM\(x\)](#) ((x) >> 8)
- #define [ELF32\\_R\\_TYPE\(x\)](#) ((x) & 0xff)
- #define [R\\_386\\_NONE](#) 0
- #define [R\\_386\\_32](#) 1
- #define [R\\_386\\_PC32](#) 2
- #define [R\\_386\\_GOT32](#) 3
- #define [R\\_386\\_PLT32](#) 4
- #define [R\\_386\\_COPY](#) 5
- #define [R\\_386\\_GLOB\\_DAT](#) 6
- #define [R\\_386\\_JMP\\_SLOT](#) 7
- #define [R\\_386\\_RELATIVE](#) 8
- #define [R\\_386\\_GOTOFF](#) 9
- #define [R\\_386\\_GOTPC](#) 10
- #define [R\\_386\\_NUM](#) 11
- #define [R\\_68K\\_NONE](#) 0
- #define [R\\_68K\\_32](#) 1
- #define [R\\_68K\\_16](#) 2
- #define [R\\_68K\\_8](#) 3
- #define [R\\_68K\\_PC32](#) 4
- #define [R\\_68K\\_PC16](#) 5
- #define [R\\_68K\\_PC8](#) 6
- #define [R\\_68K\\_GOT32](#) 7
- #define [R\\_68K\\_GOT16](#) 8
- #define [R\\_68K\\_GOT8](#) 9
- #define [R\\_68K\\_GOT32O](#) 10
- #define [R\\_68K\\_GOT16O](#) 11
- #define [R\\_68K\\_GOT8O](#) 12
- #define [R\\_68K\\_PLT32](#) 13
- #define [R\\_68K\\_PLT16](#) 14
- #define [R\\_68K\\_PLT8](#) 15
- #define [R\\_68K\\_PLT32O](#) 16
- #define [R\\_68K\\_PLT16O](#) 17
- #define [R\\_68K\\_PLT8O](#) 18
- #define [R\\_68K\\_COPY](#) 19

- #define R\_68K\_GLOB\_DAT 20
- #define R\_68K\_JMP\_SLOT 21
- #define R\_68K\_RELATIVE 22
- #define EI\_NIDENT 16
- #define PF\_R 0x4
- #define PF\_W 0x2
- #define PF\_X 0x1
- #define SHT\_NULL 0
- #define SHT\_PROGBITS 1
- #define SHT\_SYMTAB 2
- #define SHT\_STRTAB 3
- #define SHT\_RELA 4
- #define SHT\_HASH 5
- #define SHT\_DYNAMIC 6
- #define SHT\_NOTE 7
- #define SHT\_NOBITS 8
- #define SHT\_REL 9
- #define SHT\_SHLIB 10
- #define SHT\_DYNSYM 11
- #define SHT\_NUM 12
- #define SHT\_LOPROC 0x70000000
- #define SHT\_HIPROC 0x7fffffff
- #define SHT\_LOUSER 0x80000000
- #define SHT\_HIUSER 0xffffffff
- #define SHF\_WRITE 0x1
- #define SHF\_ALLOC 0x2
- #define SHF\_EXECINSTR 0x4
- #define SHF\_MASKPROC 0xf0000000
- #define SHN\_UNDEF 0
- #define SHN\_LORESERVE 0xff00
- #define SHN\_LOPROC 0xff00
- #define SHN\_HIPROC 0xff1f
- #define SHN\_ABS 0xfff1
- #define SHN\_COMMON 0xfff2
- #define SHN\_HIRESERVE 0xffff
- #define EI\_MAG0 0
- #define EI\_MAG1 1
- #define EI\_MAG2 2
- #define EI\_MAG3 3
- #define EI\_CLASS 4
- #define EI\_DATA 5
- #define EI\_VERSION 6
- #define EI\_PAD 7
- #define ELFMAG0 0x7f
- #define ELFMAG1 'E'
- #define ELFMAG2 'L'
- #define ELFMAG3 'F'
- #define ELFMAG "\177ELF"
- #define SELFMAG 4
- #define ELFCLASSNONE 0

- #define [ELFCLASS32](#) 1
- #define [ELFCLASS64](#) 2
- #define [ELFCLASSNUM](#) 3
- #define [ELFDATANONE](#) 0
- #define [ELFDATA2LSB](#) 1
- #define [ELFDATA2MSB](#) 2
- #define [EV\\_NONE](#) 0
- #define [EV\\_CURRENT](#) 1
- #define [EV\\_NUM](#) 2
- #define [NT\\_PRSTATUS](#) 1
- #define [NT\\_PRFPREG](#) 2
- #define [NT\\_PRPSINFO](#) 3
- #define [NT\\_TASKSTRUCT](#) 4
- #define [elfhdr elf64\\_hdr](#)
- #define [elf\\_phdr elf64\\_phdr](#)
- #define [elf\\_note elf64\\_note](#)

## Typedefs

- typedef unsigned long [Elf32\\_Addr](#)
- typedef unsigned short [Elf32\\_Half](#)
- typedef unsigned long [Elf32\\_Off](#)
- typedef long [Elf32\\_Sword](#)
- typedef unsigned long [Elf32\\_Word](#)
- typedef struct [dynamic](#) [Elf32\\_Dyn](#)
- typedef struct [elf32\\_rel](#) [Elf32\\_Rel](#)
- typedef struct [elf64\\_rel](#) [Elf64\\_Rel](#)
- typedef struct [elf32\\_rela](#) [Elf32\\_Rela](#)
- typedef struct [elf64\\_rela](#) [Elf64\\_Rela](#)
- typedef struct [elf32\\_sym](#) [Elf32\\_Sym](#)
- typedef struct [elf64\\_sym](#) [Elf64\\_Sym](#)
- typedef struct [elf32\\_hdr](#) [Elf32\\_Ehdr](#)
- typedef struct [elf64\\_hdr](#) [Elf64\\_Ehdr](#)
- typedef struct [elf32\\_phdr](#) [Elf32\\_Phdr](#)
- typedef struct [elf64\\_phdr](#) [Elf64\\_Phdr](#)
- typedef struct [elf32\\_shdr](#) [Elf32\\_Shdr](#)
- typedef struct [elf64\\_shdr](#) [Elf64\\_Shdr](#)
- typedef struct [elf32\\_note](#) [Elf32\\_Nhdr](#)
- typedef struct [elf64\\_note](#) [Elf64\\_Nhdr](#)

## Variables

- [Elf64\\_Dyn \\_DYNAMIC](#) []





## 6.12.1 Define Documentation

- 6.12.1.1 `#define AT_BASE 7`
- 6.12.1.2 `#define AT_EGID 14`
- 6.12.1.3 `#define AT_ENTRY 9`
- 6.12.1.4 `#define AT_EUID 12`
- 6.12.1.5 `#define AT_EXECFD 2`
- 6.12.1.6 `#define AT_FLAGS 8`
- 6.12.1.7 `#define AT_GID 13`
- 6.12.1.8 `#define AT_IGNORE 1`
- 6.12.1.9 `#define AT_NOTELF 10`
- 6.12.1.10 `#define AT_NULL 0`
- 6.12.1.11 `#define AT_PAGESZ 6`
- 6.12.1.12 `#define AT_PHDR 3`
- 6.12.1.13 `#define AT_PHEMT 4`
- 6.12.1.14 `#define AT_PHNUM 5`
- 6.12.1.15 `#define AT_UID 11`
- 6.12.1.16 `#define DT_DEBUG 21`
- 6.12.1.17 `#define DT_FINI 13`
- 6.12.1.18 `#define DT_HASH 4`
- 6.12.1.19 `#define DT_HIPROC 0x7fffffff`
- 6.12.1.20 `#define DT_INIT 12`
- 6.12.1.21 `#define DT_JMPREL 23`
- 6.12.1.22 `#define DT_LOPROC 0x70000000`
- 6.12.1.23 `#define DT_NEEDED 1`
- 6.12.1.24 `#define DT_NULL 0`
- 6.12.1.25 `#define DT_PLTGOT 3`
- 6.12.1.26 `#define DT_PLTREL 20`
- 6.12.1.27 `#define DT_PLTRELSZ 2`
- 6.12.1.28 `#define DT_REL 17`
- 6.12.1.29 `#define DT_RELA 7`
- 6.12.1.30 `#define DT_RELAENT 9`

```
((((unsigned long) (ps) >> 24) & 0xff) |\
  ((unsigned long) (ps) >> 8) & 0xff00) |\
  ((unsigned long) (ps) << 8) & 0xff0000) |\
  ((unsigned long) (ps) << 24) & 0xff000000))
```

**6.12.1.56 #define elf\_note elf64\_note**

**6.12.1.57 #define elf\_phdr elf64\_phdr**

**6.12.1.58 #define ELF\_SHORT\_H(ps)**

**Value:**

```
((((unsigned short) (ps) >> 8) & 0xff) |\
  ((unsigned short) (ps) << 8) & 0xff00))
```



6.12.1.59 **#define** ELFCLASS32 1

6.12.1.60 **#define** ELFCLASS64 2

6.12.1.61 **#define** ELFCLASSNONE 0

6.12.1.62 **#define** ELFCLASSNUM 3

6.12.1.63 **#define** ELFDATA2LSB 1

6.12.1.64 **#define** ELFDATA2MSB 2

6.12.1.65 **#define** ELFDATANONE 0

6.12.1.66 **#define** elfhdr elf64\_hdr

6.12.1.67 **#define** ELFMAG "\177ELF"

6.12.1.68 **#define** ELFMAG0 0x7f

6.12.1.69 **#define** ELFMAG1 'E'

6.12.1.70 **#define** ELFMAG2 'L'

6.12.1.71 **#define** ELFMAG3 'F'

6.12.1.72 **#define** EM\_386 3

6.12.1.73 **#define** EM\_486 6

6.12.1.74 **#define** EM\_68K 4

6.12.1.75 **#define** EM\_860 7

6.12.1.76 **#define** EM\_88K 5

6.12.1.77 **#define** EM\_ALPHA 0x9026

6.12.1.78 **#define** EM\_M32 1

6.12.1.79 **#define** EM\_MIPS 8

6.12.1.80 **#define** EM\_MIPS\_RS4\_BE 10

6.12.1.81 **#define** EM\_NONE 0

6.12.1.82 **#define** EM\_PARISC 15

6.12.1.83 **#define** EM\_PPC 20

6.12.1.84 **#define** EM\_SPARC 2

6.12.1.85 **#define** EM\_SPARC32PLUS 18

6.12.1.86 **#define** EM\_SPARC64 41

6.12.1.87 **#define** ET\_CORE 4

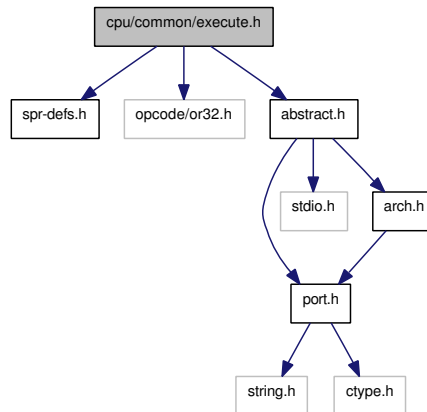
6.12.1.88 **#define** ET\_DYN 3

6.12.1.89 **#define** ET\_EXEC 2

## 6.13 cpu/common/execute.h File Reference

```
#include "spr-defs.h"
#include "opcode/or32.h"
#include "abstract.h"
```

Include dependency graph for execute.h:



This graph shows which files directly or indirectly include this file:



### Data Structures

- struct [cpu\\_state](#)
- struct [hist\\_exec](#)

### Defines

- #define [CURINSN](#)(INSN) (strcmp(cur → [insn](#), (INSN)) == 0)
- #define [SET\\_OV\\_FLAG\\_FN](#)(value)

### Functions

- void [dumpreg](#) ()
- void [dump\\_exe\\_log](#) ()
- int [cpu\\_clock](#) ()
- void [cpu\\_reset](#) ()
- [uorreg\\_t](#) [evalsim\\_reg](#) (unsigned int regno)
- void [setsim\\_reg](#) (unsigned int regno, [uorreg\\_t](#) value)
- [uorreg\\_t](#) [eval\\_operand\\_val](#) (uint32\_t [insn](#), struct [insn\\_op\\_struct](#) \*opd)
- void [analysis](#) (struct [iqueue\\_entry](#) \*current)
- void [exec\\_main](#) ()
- int [depend\\_operands](#) (struct [iqueue\\_entry](#) \*prev, struct [iqueue\\_entry](#) \*next)

## Variables

- struct `cpu_state` `cpu_state`
- oraddr\_t `pcnext`
- int `sbuf_wait_cyc`
- int `sbuf_total_cyc`
- int `do_stats`
- struct `hist_exec` \* `hist_exec_tail`

## 6.13.1 Define Documentation

**6.13.1.1** `#define CURINSN(INSN) (strcmp(cur → insn, (INSN)) == 0)`

**6.13.1.2** `#define SET_OV_FLAG_FN(value)`

Sets a new `SPR_SR_OV` value, based on next register value

## 6.13.2 Function Documentation

**6.13.2.1** `void analysis (struct iqueue_entry * current)`

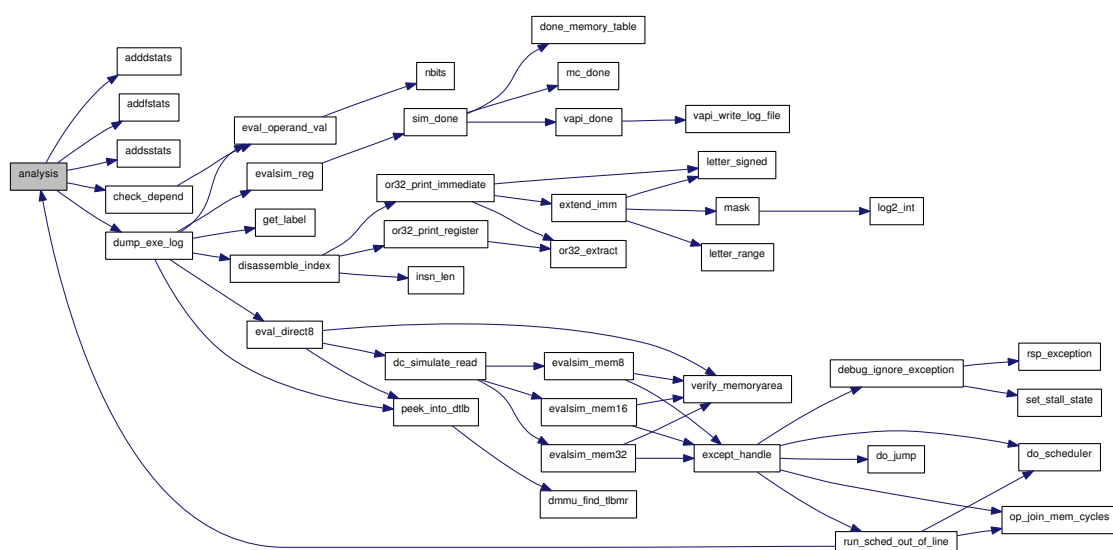
Perform analysis of the instruction being executed

This could be static for `SIMPLE_EXECUTION`, but made global for general use.

### Parameters:

← *current* The instruction being executed

Here is the call graph for this function:



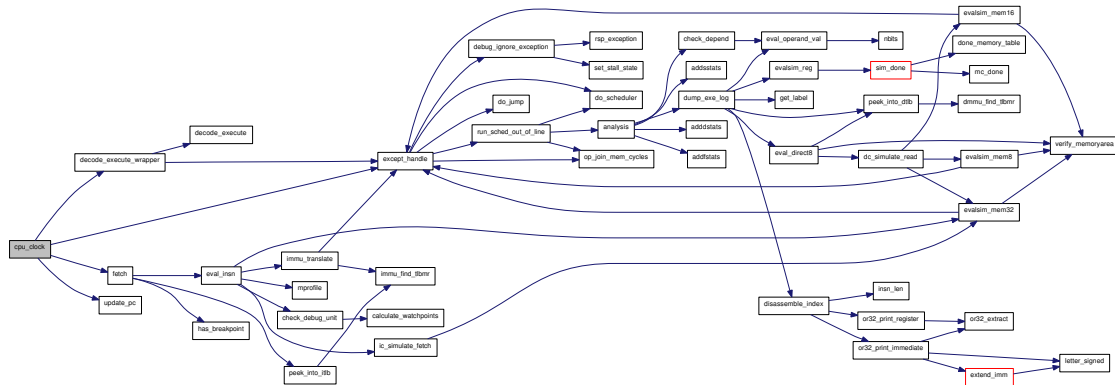
### 6.13.2.2 int cpu\_clock ()

Simulates one CPU clock cycle

**Returns:**

non-zero if a breakpoint is hit, zero otherwise.

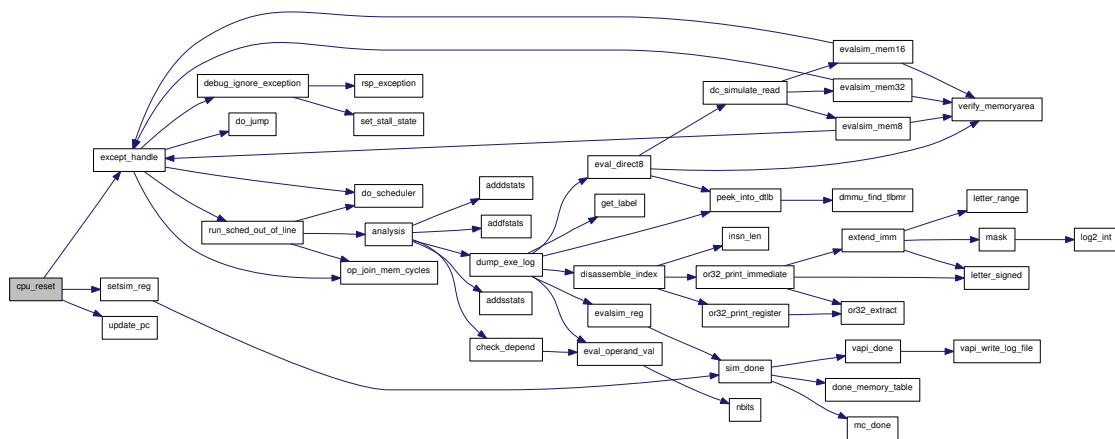
Here is the call graph for this function:



### 6.13.2.3 void cpu\_reset ()

Reset the CPU

Here is the call graph for this function:

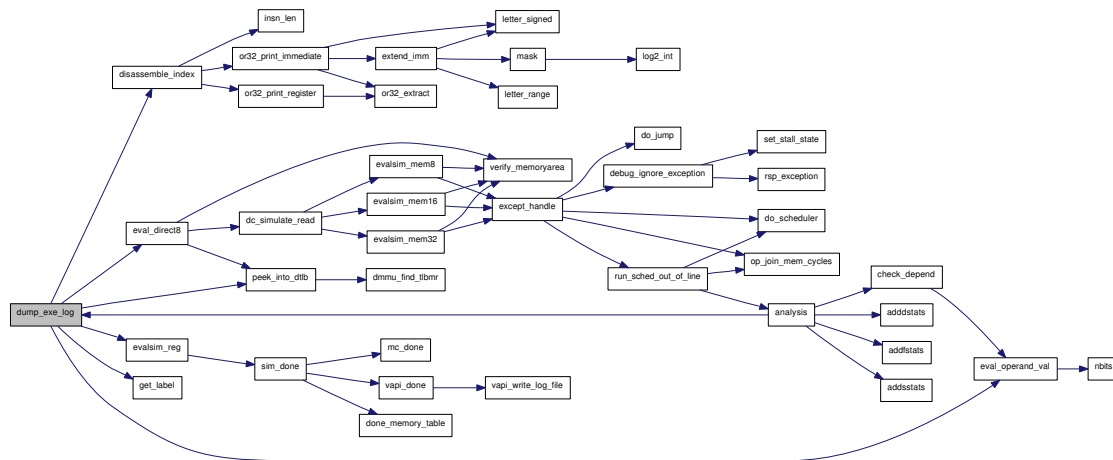


### 6.13.2.4 int depend\_operands (struct iqueue\_entry \* prev, struct iqueue\_entry \* next)

### 6.13.2.5 void dump\_exe\_log ()

Outputs disassembled instruction

Here is the call graph for this function:

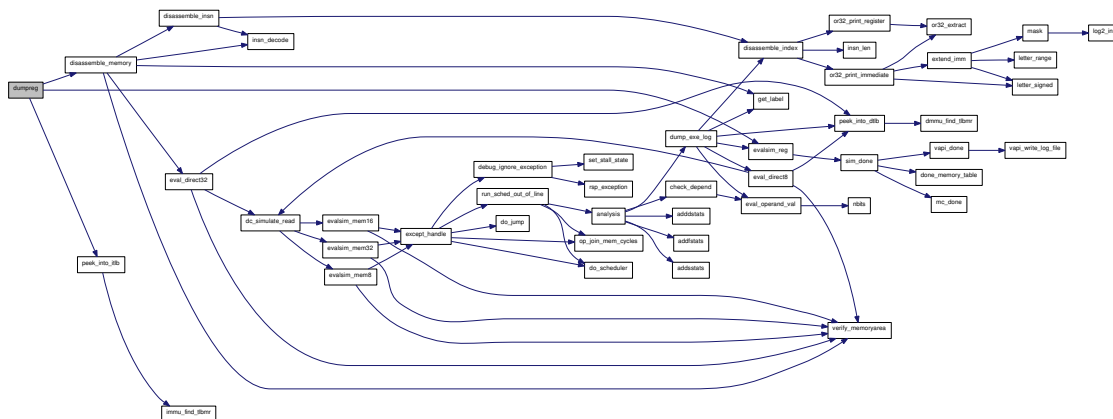


### 6.13.2.6 void dumpreg ()

Dump registers

Supports the CLI 'r' and 't' commands

Here is the call graph for this function:



### 6.13.2.7 uorreg\_t eval\_operand\_val (uint32\_t insn, struct insn\_op\_struct \* opd)

Evaluates source operand operand

Implementation specific. Declared global, although this is only actually required for DYNAMIC\_EXECUTION,

**Parameters:**

← *insn* The instruction

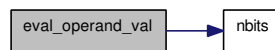
← *opd* The operand



**Returns:**

The value of the source operand

Here is the call graph for this function:

**6.13.2.8 uorreg\_t evalsim\_reg (unsigned int regno)**

Get an actual value of a specific register

Implementation specific. Abort if we are given a duff register. Only used externally to support [simprintf\(\)](#).

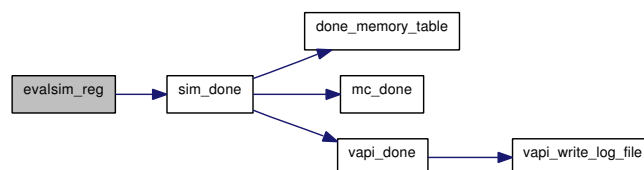
**Parameters:**

← *regno* The register of interest

**Returns:**

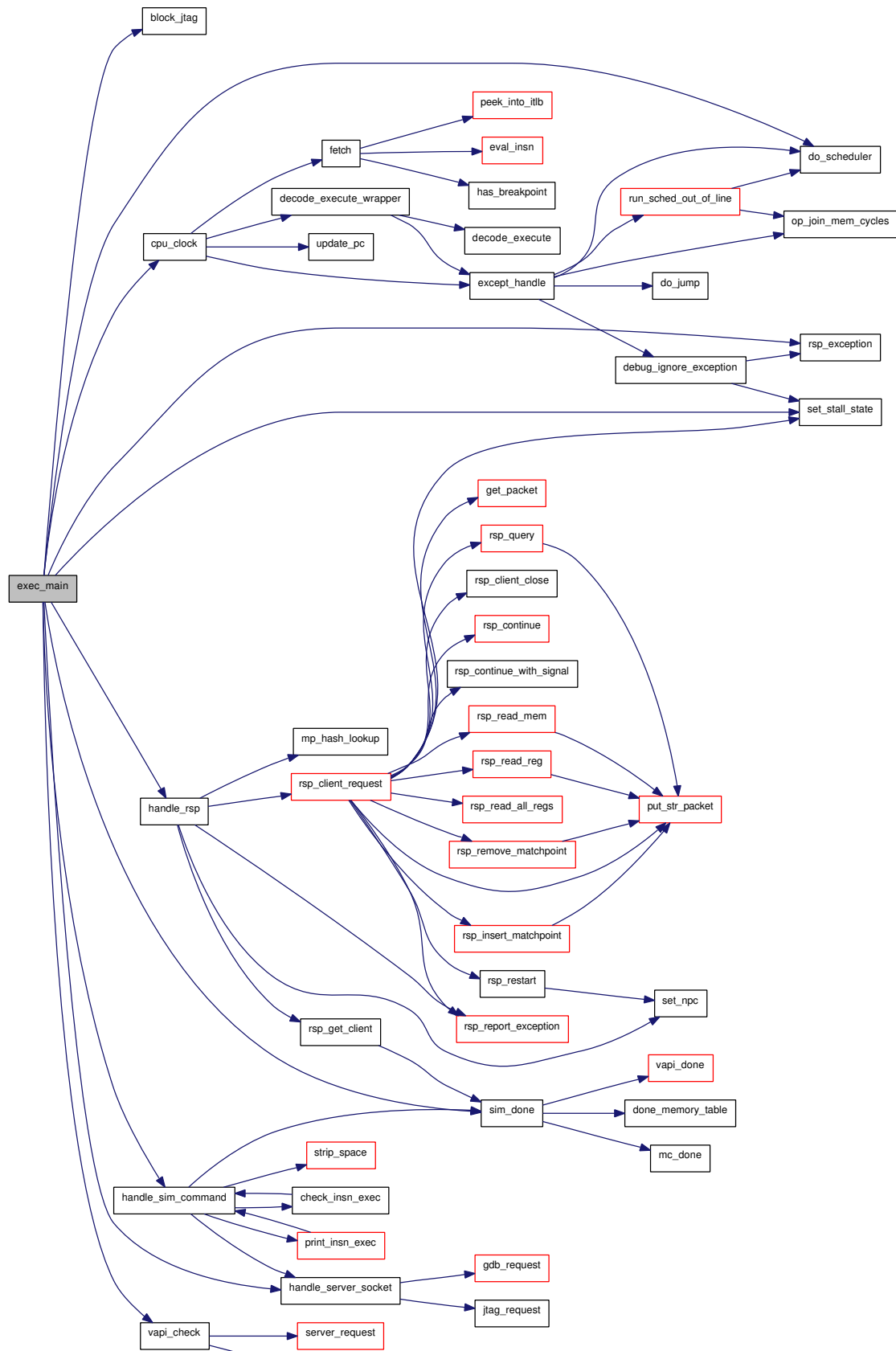
The value of the register

Here is the call graph for this function:

**6.13.2.9 void exec\_main ()**

The main execution loop

Here is the call graph for this function:



**6.13.2.10 void setsim\_reg (unsigned int regno, uorreg\_t value)**

Set a specific register with value

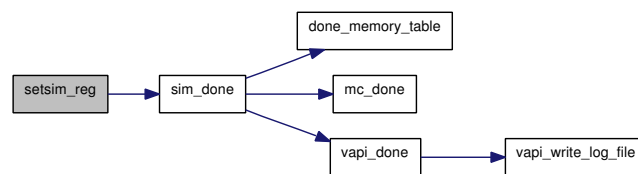
Implementation specific. Abort if we are given a duff register.

**Parameters:**

← *regno* The register of interest

← *value* The value to be set

Here is the call graph for this function:

**6.13.3 Variable Documentation****6.13.3.1 struct cpu\_state cpu\_state**

Current cpu state. Globally available.

**6.13.3.2 int do\_stats**

Whether we are doing statistical analysis. Globally available

**6.13.3.3 struct hist\_exec\* hist\_exec\_tail**

History of execution. Globally available

**6.13.3.4 oraddr\_t pcnext**

Temporary program counter. Globally available

**6.13.3.5 int sbuf\_total\_cyc**

Number of total store cycles. Globally available

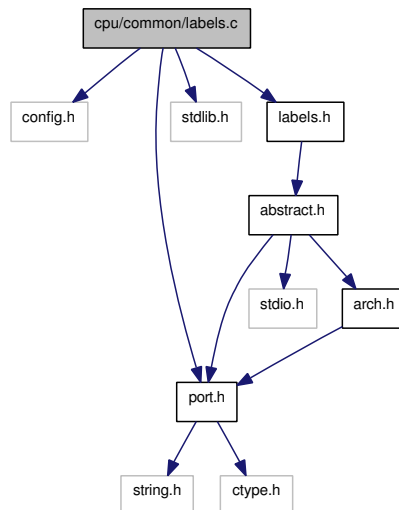
**6.13.3.6 int sbuf\_wait\_cyc**

Num cycles waiting for stores to complete. Globally available

## 6.14 cpu/common/labels.c File Reference

```
#include "config.h"
#include "port.h"
#include <stdlib.h>
#include "labels.h"
```

Include dependency graph for labels.c:



### Defines

- `#define LABELS_HASH_SIZE 119`

### Functions

- `void init_labels ()`
- `void add_label (oraddr_t addr, char *name)`
- `struct label_entry * get_label (oraddr_t addr)`
- `struct label_entry * find_label (char *name)`
- `oraddr_t eval_label (char *name)`
- `void init_breakpoints ()`
- `void add_breakpoint (oraddr_t addr)`
- `void remove_breakpoint (oraddr_t addr)`
- `void print_breakpoints ()`
- `int has_breakpoint (oraddr_t addr)`

### Variables

- `struct breakpoint_entry * breakpoints`
- `static struct label_entry * label_hash [LABELS_HASH_SIZE]`

## 6.14.1 Define Documentation

6.14.1.1 `#define LABELS_HASH_SIZE 119`

## 6.14.2 Function Documentation

6.14.2.1 `void add_breakpoint (oraddr_t addr)`

6.14.2.2 `void add_label (oraddr_t addr, char * name)`

6.14.2.3 `oraddr_t eval_label (char * name)`

Here is the call graph for this function:



6.14.2.4 `struct label_entry* find_label (char * name)` [read]

6.14.2.5 `struct label_entry* get_label (oraddr_t addr)` [read]

6.14.2.6 `int has_breakpoint (oraddr_t addr)`

6.14.2.7 `void init_breakpoints ()`

6.14.2.8 `void init_labels ()`

6.14.2.9 `void print_breakpoints ()`

6.14.2.10 `void remove_breakpoint (oraddr_t addr)`

## 6.14.3 Variable Documentation

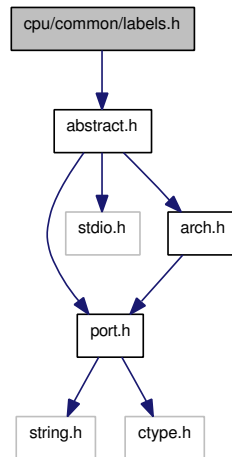
6.14.3.1 `struct breakpoint_entry* breakpoints`

6.14.3.2 `struct label_entry* label_hash[LABELS_HASH_SIZE]` [static]

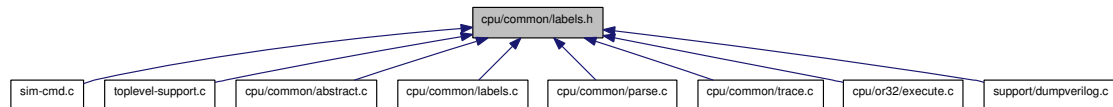
## 6.15 cpu/common/labels.h File Reference

```
#include "abstract.h"
```

Include dependency graph for labels.h:



This graph shows which files directly or indirectly include this file:



### Data Structures

- struct [label\\_entry](#)
- struct [breakpoint\\_entry](#)

### Functions

- void [init\\_labels](#) ()
- void [add\\_label](#) ([oraddr\\_t](#) addr, char \*name)
- struct [label\\_entry](#) \* [get\\_label](#) ([oraddr\\_t](#) addr)
- struct [label\\_entry](#) \* [find\\_label](#) (char \*name)
- [oraddr\\_t](#) [eval\\_label](#) (char \*name)
- void [add\\_breakpoint](#) ([oraddr\\_t](#) addr)
- void [remove\\_breakpoint](#) ([oraddr\\_t](#) addr)
- void [print\\_breakpoints](#) ()
- int [has\\_breakpoint](#) ([oraddr\\_t](#) addr)
- void [init\\_breakpoints](#) ()

### Variables

- struct [breakpoint\\_entry](#) \* [breakpoints](#)

## 6.15.1 Function Documentation

**6.15.1.1** void `add_breakpoint` (`oraddr_t addr`)

**6.15.1.2** void `add_label` (`oraddr_t addr`, `char * name`)

**6.15.1.3** `oraddr_t eval_label` (`char * name`)

Here is the call graph for this function:



**6.15.1.4** `struct label_entry*` `find_label` (`char * name`) [read]

**6.15.1.5** `struct label_entry*` `get_label` (`oraddr_t addr`) [read]

**6.15.1.6** int `has_breakpoint` (`oraddr_t addr`)

**6.15.1.7** void `init_breakpoints` ()

**6.15.1.8** void `init_labels` ()

**6.15.1.9** void `print_breakpoints` ()

**6.15.1.10** void `remove_breakpoint` (`oraddr_t addr`)

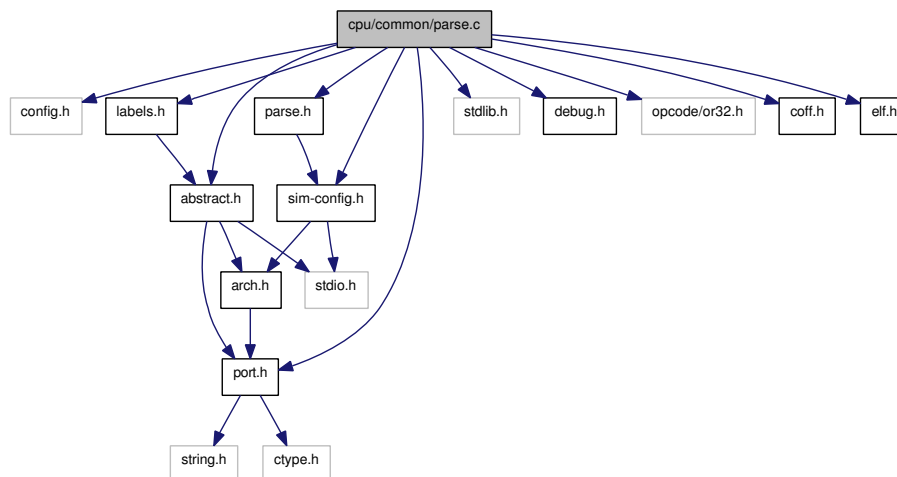
## 6.15.2 Variable Documentation

**6.15.2.1** `struct breakpoint_entry*` `breakpoints`

## 6.16 cpu/common/parse.c File Reference

```
#include "config.h"
#include "port.h"
#include <stdlib.h>
#include "parse.h"
#include "sim-config.h"
#include "debug.h"
#include "abstract.h"
#include "opcode/or32.h"
#include "coff.h"
#include "elf.h"
#include "labels.h"
```

Include dependency graph for parse.c:



### Defines

- #define [MEMORY\\_LEN](#) 0x100000000ULL
- #define [IMM\\_STATS](#) 0

### Functions

- char \* [rstrip](#) (char \*dst, const char \*src, int n)
- static [oraddr\\_t](#) [translate](#) ([oraddr\\_t](#) laddr, int \*breakpoint)
- static void [addprogram](#) ([oraddr\\_t](#) address, [uint32\\_t](#) insn, int \*breakpoint)
- static void [readfile\\_coff](#) (char \*filename, short sections)
- static void [readsyms\\_coff](#) (char \*filename, [uint32\\_t](#) symptr, [uint32\\_t](#) syms)
- static void [readfile\\_elf](#) (char \*filename)
- static void [identifyfile](#) (char \*filename)
- [uint32\\_t](#) [loadcode](#) (char \*filename, [oraddr\\_t](#) startaddr, [oraddr\\_t](#) virtphy\_transl)



## Variables

- static unsigned int [freemem](#)
- static [oraddr\\_t](#) [transl\\_table](#)
- static [uint32\\_t](#) [transl\\_error](#)

## 6.16.1 Define Documentation

### 6.16.1.1 #define IMM\_STATS 0

Whether to do immediate statistics. This seems to be for local debugging of [parse.c](#)

### 6.16.1.2 #define MEMORY\_LEN 0x10000000ULL

## 6.16.2 Function Documentation

### 6.16.2.1 static void [addprogram](#) ([oraddr\\_t](#) *address*, [uint32\\_t](#) *insn*, [int](#) \**breakpoint*) [static]

Add an instruction to the program

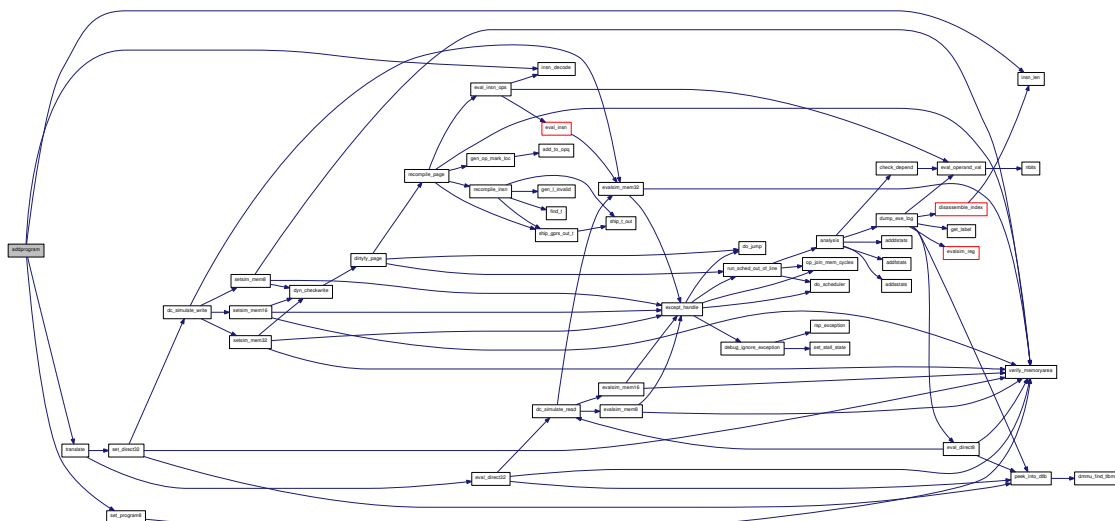
#### Note:

*insn* must be in big endian format

#### Parameters:

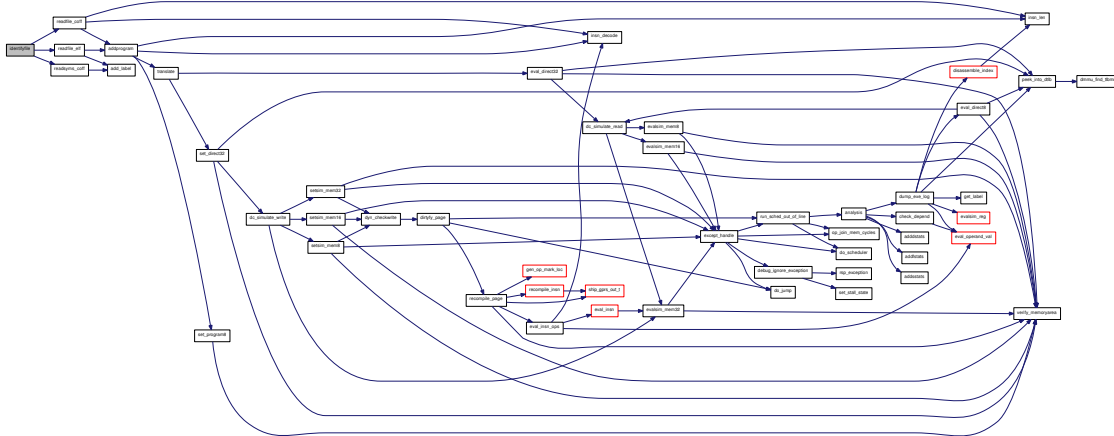
- ← *address* The address to use
- ← *insn* The instruction to add
- ← *breakpoint* Not used (it is passed to the [translate\(\)](#) function, which also does not use it.

Here is the call graph for this function:



### 6.16.2.2 static void identifyfile (char \*filename) [static]

Here is the call graph for this function:



### 6.16.2.3 uint32\_t loadcode (char \*filename, oraddr\_t startaddr, oraddr\_t virtphy\_transl)

Load file to memory

Loads file to memory starting at address startaddr and returns freemem.

#### Parameters:

← *filename* File to load

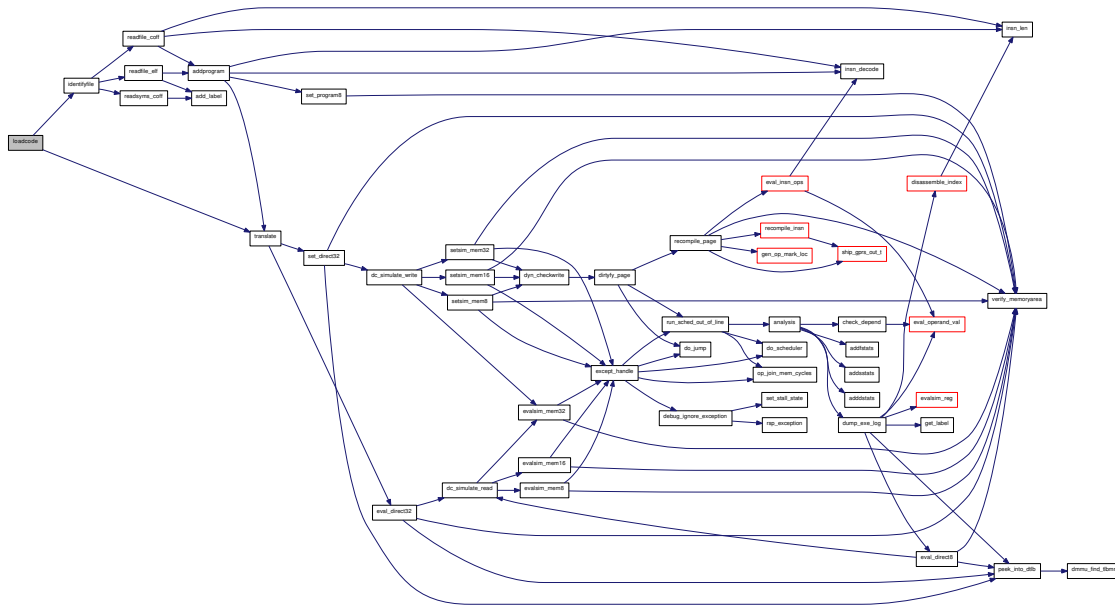
← *startaddr* Start address at which to load

← *virtphy\_transl* Virtual to physical translation table if required. Only used for microkernel simulation, and not used in Ork1sim at present (set to NULL)

#### Returns:

zero on success, negative on failure.

Here is the call graph for this function:



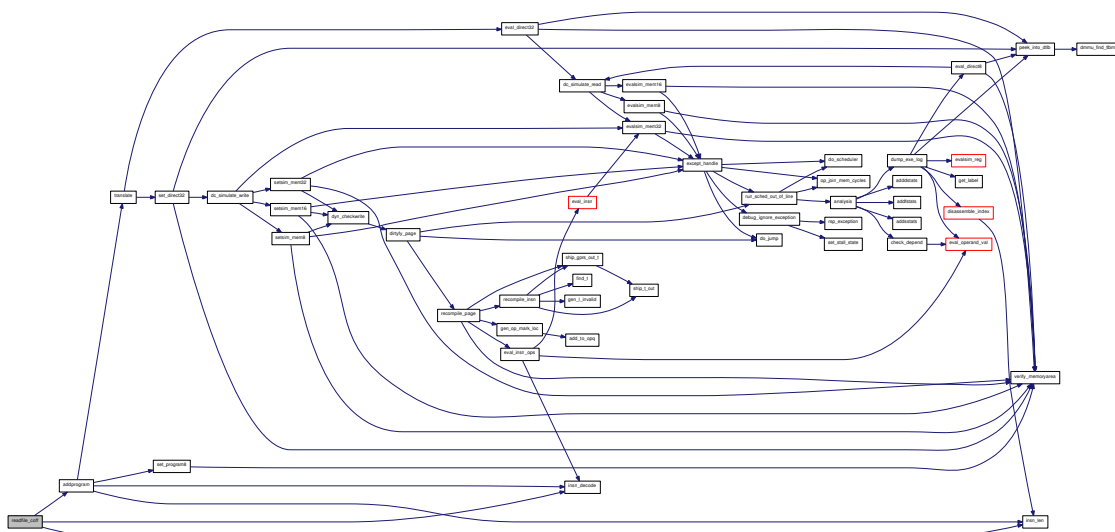
**6.16.2.4 static void readfile\_coff (char \*filename, short sections) [static]**

Load big-endian COFF file

**Parameters:**

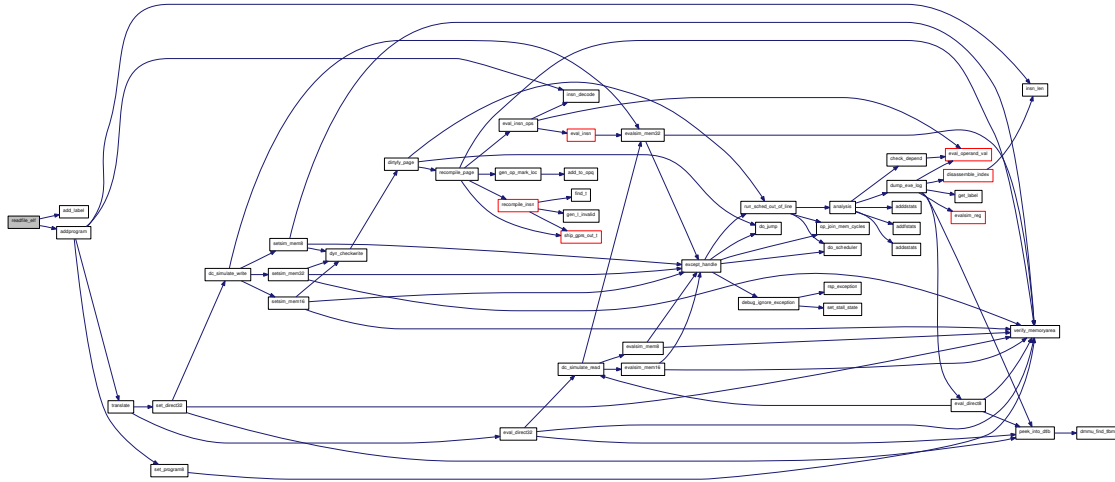
- ← *filename* File to load
- ← *sections* Number of sections in file

Here is the call graph for this function:



### 6.16.2.5 static void readfile\_elf (char \*filename) [static]

Here is the call graph for this function:



### 6.16.2.6 static void readsyms\_coff (char \*filename, uint32\_t symptr, uint32\_t syms) [static]

Here is the call graph for this function:



### 6.16.2.7 char\* strstrip (char \*dst, const char \*src, int n)

Copy a string with null termination

This function is very similar to strncpy, except it null terminates the string. A global function also used by the CUC.

#### Parameters:

- ← *dst* The destination string
- ← *src* The source string
- ← *n* Number of chars to copy EXCLUDING the null terminator (i.e. dst had better have room for n+1 chars)

#### Returns:

A pointer to dst

### 6.16.2.8 static oraddr\_t translate (oraddr\_t laddr, int \*breakpoint) [static]

Translate logical to physical addresses for the loader

Used only by the simulator loader to translate logical addresses into physical. If `loadcode()` is called with valid `virtphy_transl` pointer to a table of translations then `translate()` performs translation otherwise physical address is equal to logical.

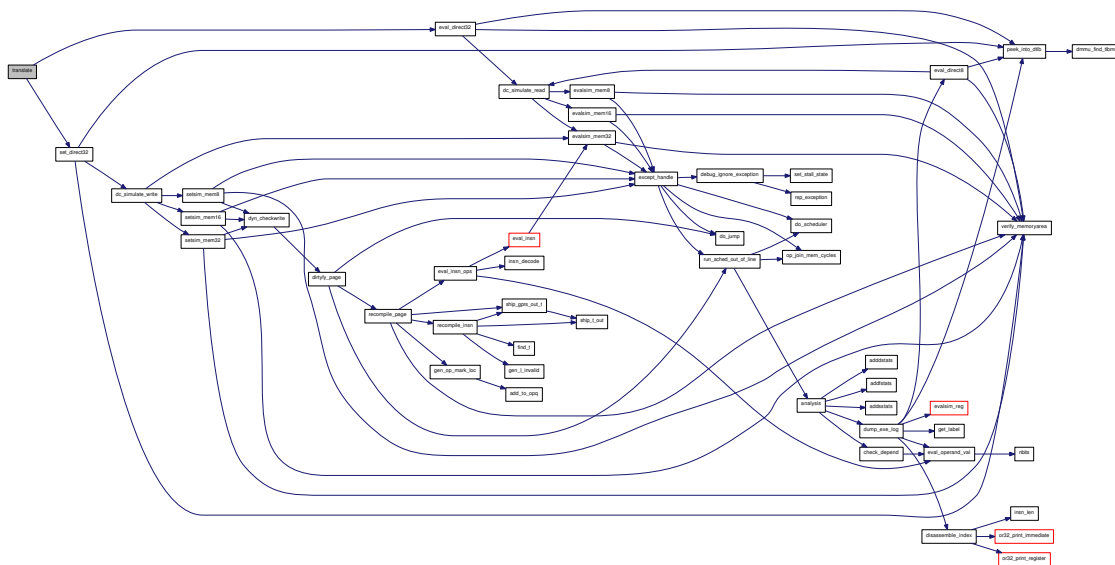
#### Parameters:

- ← *laddr* Logical address
- ← *breakpoint* Unused

#### Returns:

The physical address

Here is the call graph for this function:



## 6.16.3 Variable Documentation

### 6.16.3.1 unsigned int freemem [static]

Unused mem memory marker. It is used when allocating program and data memory during parsing

### 6.16.3.2 uint32\_t transl\_error [static]

Used to signal whether during loading of programs a translation fault occurred.

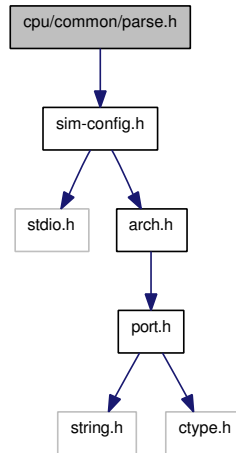
### 6.16.3.3 oraddr\_t transl\_table [static]

Translation table provided by microkernel. Only used if simulating microkernel.

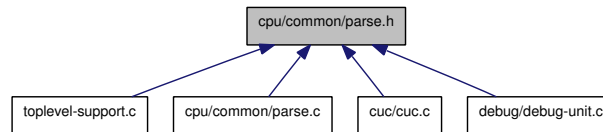
## 6.17 cpu/common/parse.h File Reference

```
#include "sim-config.h"
```

Include dependency graph for parse.h:



This graph shows which files directly or indirectly include this file:



### Functions

- char \* [rstrip](#) (char \*dst, const char \*src, int n)
- uint32\_t [loadcode](#) (char \*filename, [oraddr\\_t](#) startaddr, [oraddr\\_t](#) virtphy\_transl)

### 6.17.1 Function Documentation

#### 6.17.1.1 uint32\_t loadcode (char \*filename, oraddr\_t startaddr, oraddr\_t virtphy\_transl)

Load file to memory

Loads file to memory starting at address startaddr and returns freemem.

#### Parameters:

- ← *filename* File to load
- ← *startaddr* Start address at which to load
- ← *virtphy\_transl* Virtual to physical transation table if required. Only used for microkernel simulation, and not used in Ork1sim at present (set to NULL)

#### Returns:

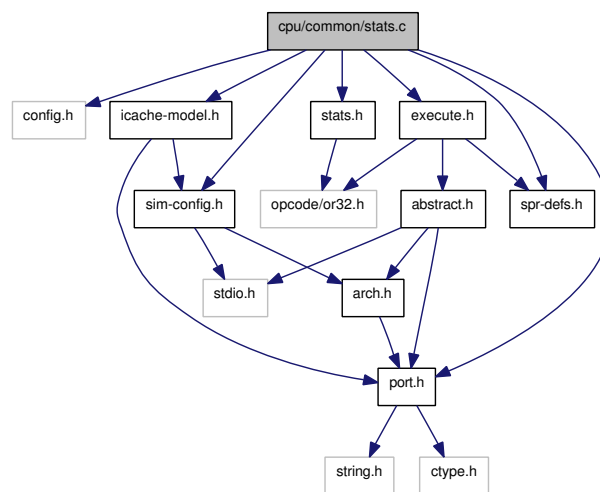
zero on success, negative on failure.



## 6.18 cpu/common/stats.c File Reference

```
#include "config.h"
#include "port.h"
#include "stats.h"
#include "sim-config.h"
#include "icache-model.h"
#include "spr-defs.h"
#include "execute.h"
```

Include dependency graph for stats.c:



### Data Structures

- struct [branchstat](#)
- struct [dstats\\_entry](#)
- struct [sstats\\_entry](#)
- struct [fstats\\_entry](#)

### Defines

- #define [DSTATS\\_LEN](#) 3000
- #define [SSTATS\\_LEN](#) 300
- #define [FSTATS\\_LEN](#) 200
- #define [SD\(X\)](#) (X != 0 ? X : 1)

### Functions

- void [addsstats](#) (int item, int cnt\_dynamic)
- void [adddstats](#) (int item1, int item2, int cnt\_dynamic, int depend)
- void [addfstats](#) (enum insn\_type item1, enum insn\_type item2, int cnt\_dynamic, int depend)



- void `initstats` ()
- static void `printotherstats` (int *which*)
- void `printstats` (int *which*)

## Variables

- static const char `func_unit_str` [30][30]
- struct `mstats_entry` or `lk_mstats` = { 0 }
- struct `cachestats_entry` `ic_stats` = { 0 }
- struct `cachestats_entry` `dc_stats` = { 0 }
- struct `immustats_entry` `immu_stats` = { 0 }
- struct `dmmustats_entry` `dmmu_stats` = { 0 }
- struct `raw_stats` `raw_stats`
- static struct `dstats_entry` `dstats` [DSTATS\_LEN]
- static struct `sstats_entry` `sstats` [SSTATS\_LEN]
- static struct `fstats_entry` `fstats` [FSTATS\_LEN]

### 6.18.1 Define Documentation

6.18.1.1 `#define DSTATS_LEN 3000`

6.18.1.2 `#define FSTATS_LEN 200`

6.18.1.3 `#define SD(X) (X != 0 ? X : 1)`

6.18.1.4 `#define SSTATS_LEN 300`

### 6.18.2 Function Documentation

6.18.2.1 void `adddstats` (int *item1*, int *item2*, int *cnt\_dynamic*, int *depend*)

6.18.2.2 void `addfstats` (enum *insn\_type item1*, enum *insn\_type item2*, int *cnt\_dynamic*, int *depend*)

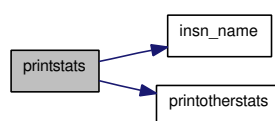
6.18.2.3 void `addsstats` (int *item*, int *cnt\_dynamic*)

6.18.2.4 void `initstats` ()

6.18.2.5 static void `printotherstats` (int *which*) [static]

6.18.2.6 void `printstats` (int *which*)

Here is the call graph for this function:



### 6.18.3 Variable Documentation

#### 6.18.3.1 struct cachestats\_entry dc\_stats = { 0 }

data cache stats

#### 6.18.3.2 struct dmmustats\_entry dmmu\_stats = { 0 }

data MMU stats

#### 6.18.3.3 struct dstats\_entry dstats[DSTATS\_LEN] [static]

dependency stats

#### 6.18.3.4 struct fstats\_entry fstats[FSTATS\_LEN] [static]

func units stats

#### 6.18.3.5 const char func\_unit\_str[30][30] [static]

##### Initial value:

```
{
  "unknown",
  "exception",
  "arith",
  "shift",
  "compare",
  "branch",
  "jump",
  "load",
  "store",
  "movimm",
  "move",
  "extend",
  "nop",
  "mac"
}
```

##### See also:

also enum `insn_type` in [abstract.h](#)

#### 6.18.3.6 struct cachestats\_entry ic\_stats = { 0 }

instruction cache stats

#### 6.18.3.7 struct immustats\_entry immu\_stats = { 0 }

insn MMU stats

**6.18.3.8 struct mstats\_entry or1k\_mstats = { 0 }**

misc units stats

**6.18.3.9 struct raw\_stats raw\_stats**

RAW hazard stats

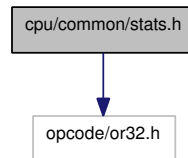
**6.18.3.10 struct sstats\_entry sstats[SSTATS\_LEN] [static]**

single stats

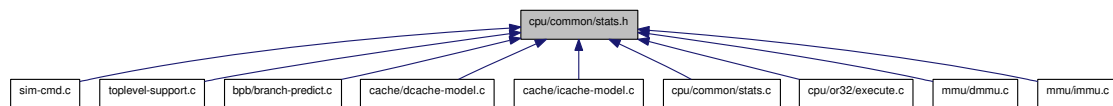
## 6.19 cpu/common/stats.h File Reference

```
#include "opcode/or32.h"
```

Include dependency graph for stats.h:



This graph shows which files directly or indirectly include this file:



### Data Structures

- struct [bpbstat](#)
- struct [bticstat](#)
- struct [mstats\\_entry](#)
- struct [cachestats\\_entry](#)
- struct [immustats\\_entry](#)
- struct [dmmustats\\_entry](#)
- struct [raw\\_stats](#)

### Defines

- #define [RAW\\_RANGE](#) 1000

### Functions

- void [addsstats](#) (int item, int cnt\_dynamic)
- void [adddstats](#) (int item1, int item2, int cnt\_dynamic, int depend)
- void [addfstats](#) (enum insn\_type item1, enum insn\_type item2, int cnt\_dynamic, int depend)
- void [initstats](#) ()
- void [printstats](#) ()

### Variables

- struct [mstats\\_entry](#) [or1k\\_mstats](#)
- struct [cachestats\\_entry](#) [ic\\_stats](#)
- struct [cachestats\\_entry](#) [dc\\_stats](#)
- struct [immustats\\_entry](#) [immu\\_stats](#)
- struct [dmmustats\\_entry](#) [dmmu\\_stats](#)
- struct [raw\\_stats](#) [raw\\_stats](#)

## 6.19.1 Define Documentation

**6.19.1.1** `#define RAW_RANGE 1000`

## 6.19.2 Function Documentation

**6.19.2.1** `void adddstats (int item1, int item2, int cnt_dynamic, int depend)`

**6.19.2.2** `void addfstats (enum insn_type item1, enum insn_type item2, int cnt_dynamic, int depend)`

**6.19.2.3** `void addsstats (int item, int cnt_dynamic)`

**6.19.2.4** `void initstats ()`

**6.19.2.5** `void printstats ()`

## 6.19.3 Variable Documentation

**6.19.3.1** `struct cachestats_entry dc_stats`

data cache stats

**6.19.3.2** `struct dmmustats_entry dmmu_stats`

data MMU stats

**6.19.3.3** `struct cachestats_entry ic_stats`

instruction cache stats

**6.19.3.4** `struct immustats_entry immu_stats`

insn MMU stats

**6.19.3.5** `struct mstats_entry or1k_mstats`

misc units stats

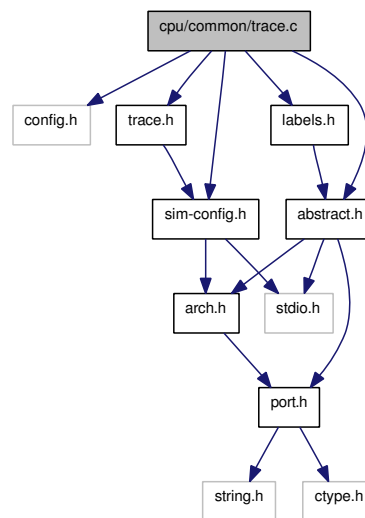
**6.19.3.6** `struct raw_stats raw_stats`

RAW hazard stats

## 6.20 cpu/common/trace.c File Reference

```
#include "config.h"  
#include "trace.h"  
#include "sim-config.h"  
#include "abstract.h"  
#include "labels.h"
```

Include dependency graph for trace.c:



### Functions

- void `set_insnbrkpoint` (`oraddr_t addr`)

#### 6.20.1 Function Documentation

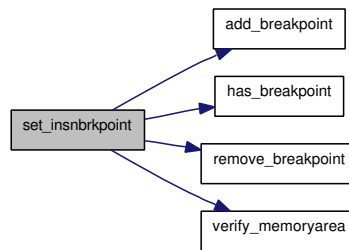
##### 6.20.1.1 void `set_insnbrkpoint` (`oraddr_t addr`)

Set instruction execution breakpoint

##### Parameters:

← *addr* The address for the breakpoint

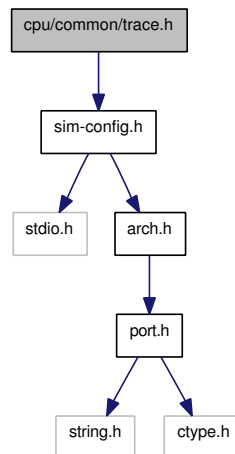
Here is the call graph for this function:



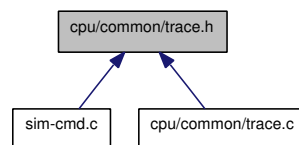
## 6.21 cpu/common/trace.h File Reference

```
#include "sim-config.h"
```

Include dependency graph for trace.h:



This graph shows which files directly or indirectly include this file:



### Functions

- void [set\\_insnbrkpoint](#) (`oraddr_t` *addr*)

#### 6.21.1 Function Documentation

##### 6.21.1.1 void set\_insnbrkpoint (oraddr\_t *addr*)

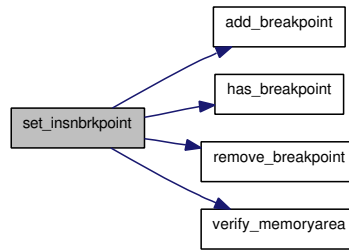
Set instruction execution breakpoint

##### Parameters:

← *addr* The address for the breakpoint



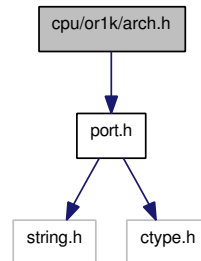
Here is the call graph for this function:



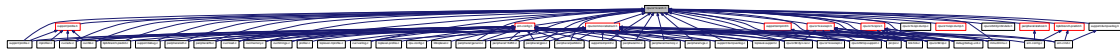
## 6.22 cpu/or1k/arch.h File Reference

```
#include "port.h"
```

Include dependency graph for arch.h:



This graph shows which files directly or indirectly include this file:



### Defines

- #define [LINK\\_REGNO](#) 9
- #define [ADDR\\_C\(c\)](#) `UINT32_C(c)`
- #define [REG\\_C\(c\)](#) `UINT32_C(c)`
- #define [PRIxADDR](#) "08" `PRIx32`
- #define [PRIxREG](#) "08" `PRIx32`
- #define [PRIdREG](#) `PRId32`

### Typedefs

- typedef `uint32_t` [oraddr\\_t](#)
- typedef `uint32_t` [uorreg\\_t](#)
- typedef `int32_t` [orreg\\_t](#)

#### 6.22.1 Define Documentation

##### 6.22.1.1 #define ADDR\_C(c) UINT32\_C(c)

##### 6.22.1.2 #define LINK\_REGNO 9

Index of the link register

##### 6.22.1.3 #define PRIdREG PRId32

print an openrisc register in decimals

**6.22.1.4 #define PRIxADDR "08" PRIx32**

print an openrisc address in hex

**6.22.1.5 #define PRIxREG "08" PRIx32**

print an openrisc register in hex

**6.22.1.6 #define REG\_C(c) UINT32\_C(c)****6.22.2 Typedef Documentation****6.22.2.1 typedef uint32\_t oraddr\_t**

Address as addressed by openrisc

**6.22.2.2 typedef int32\_t orreg\_t**

A signed register of openrisc

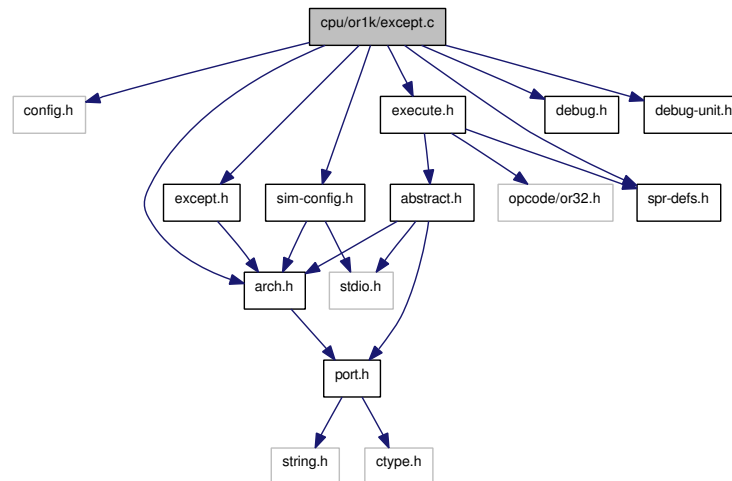
**6.22.2.3 typedef uint32\_t uorreg\_t**

An unsigned register of openrisc

## 6.23 cpu/or1k/except.c File Reference

```
#include "config.h"
#include "except.h"
#include "sim-config.h"
#include "arch.h"
#include "debug.h"
#include "spr-defs.h"
#include "execute.h"
#include "debug-unit.h"
```

Include dependency graph for except.c:



### Functions

- void `op_join_mem_cycles` (void)
- void `except_handle` (`oraddr_t` except, `oraddr_t` ea)

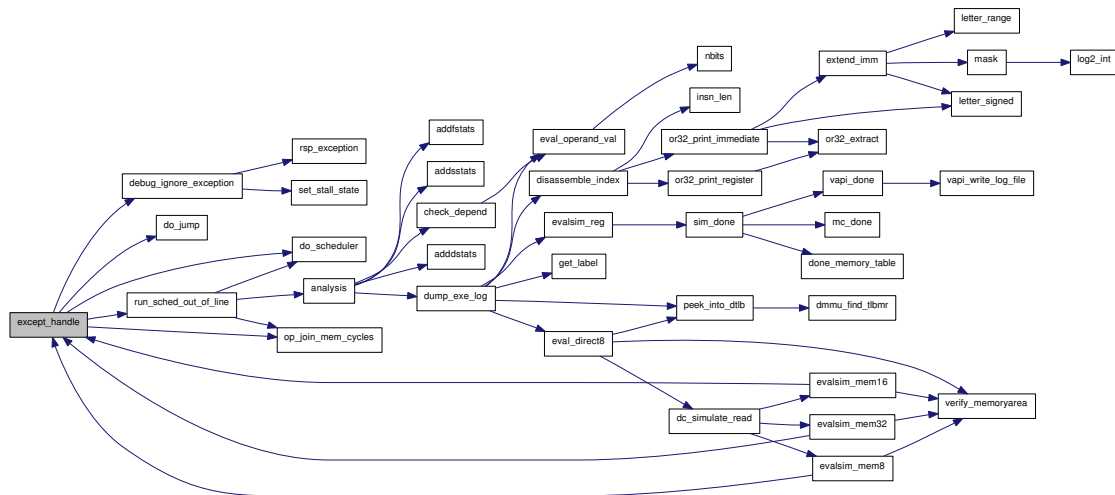
### Variables

- int `except_pending` = 0

## 6.23.1 Function Documentation

### 6.23.1.1 void except\_handle (oraddr\_t except, oraddr\_t ea)

Here is the call graph for this function:



### 6.23.1.2 void op\_join\_mem\_cycles (void)

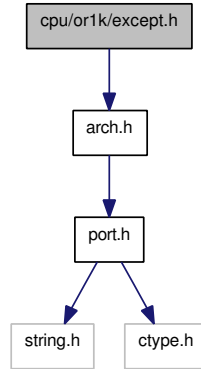
## 6.23.2 Variable Documentation

### 6.23.2.1 int except\_pending = 0

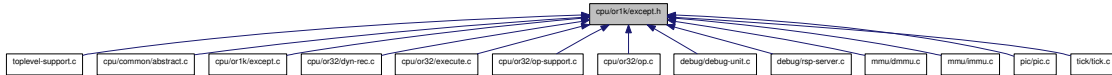
## 6.24 cpu/or1k/except.h File Reference

```
#include "arch.h"
```

Include dependency graph for except.h:



This graph shows which files directly or indirectly include this file:



### Defines

- #define [EXCEPT\\_NONE](#) 0x0000
- #define [EXCEPT\\_RESET](#) 0x0100
- #define [EXCEPT\\_BUSERR](#) 0x0200
- #define [EXCEPT\\_DPF](#) 0x0300
- #define [EXCEPT\\_IPF](#) 0x0400
- #define [EXCEPT\\_TICK](#) 0x0500
- #define [EXCEPT\\_ALIGN](#) 0x0600
- #define [EXCEPT\\_ILLEGAL](#) 0x0700
- #define [EXCEPT\\_INT](#) 0x0800
- #define [EXCEPT\\_DTLBMISS](#) 0x0900
- #define [EXCEPT\\_ITLBMIS](#) 0x0a00
- #define [EXCEPT\\_RANGE](#) 0x0b00
- #define [EXCEPT\\_SYSCALL](#) 0x0c00
- #define [EXCEPT\\_FPE](#) 0x0d00
- #define [EXCEPT\\_TRAP](#) 0x0e00

### Functions

- void [except\\_handle](#) ([oraddr\\_t](#) except, [oraddr\\_t](#) ea)

### Variables

- int [except\\_pending](#)



## 6.24.1 Define Documentation

6.24.1.1 #define EXCEPT\_ALIGN 0x0600

6.24.1.2 #define EXCEPT\_BUSERR 0x0200

6.24.1.3 #define EXCEPT\_DPF 0x0300

6.24.1.4 #define EXCEPT\_DTLBMISS 0x0900

6.24.1.5 #define EXCEPT\_FPE 0x0d00

6.24.1.6 #define EXCEPT\_ILLEGAL 0x0700

6.24.1.7 #define EXCEPT\_INT 0x0800

6.24.1.8 #define EXCEPT\_IPF 0x0400

6.24.1.9 #define EXCEPT\_ITLBMIS 0x0a00

6.24.1.10 #define EXCEPT\_NONE 0x0000

6.24.1.11 #define EXCEPT\_RANGE 0x0b00

6.24.1.12 #define EXCEPT\_RESET 0x0100

6.24.1.13 #define EXCEPT\_SYSCALL 0x0c00

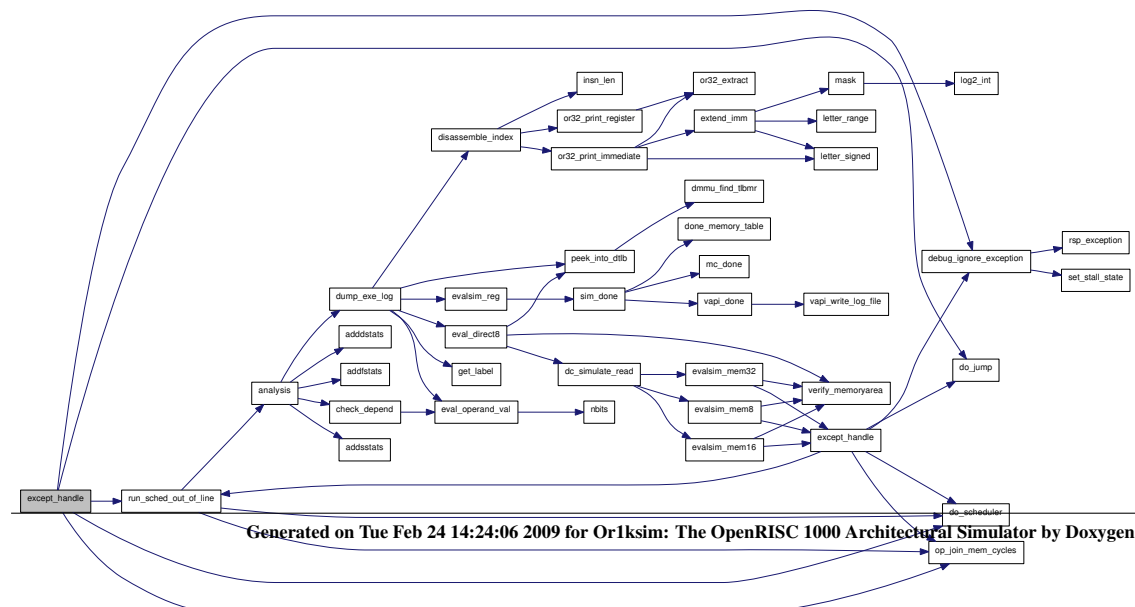
6.24.1.14 #define EXCEPT\_TICK 0x0500

6.24.1.15 #define EXCEPT\_TRAP 0x0e00

## 6.24.2 Function Documentation

6.24.2.1 void except\_handle (oraddr\_t except, oraddr\_t ea)

Here is the call graph for this function:



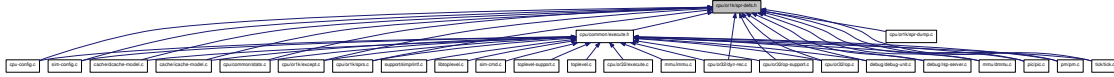


### 6.24.3 Variable Documentation

#### 6.24.3.1 int except\_pending

## 6.25 cpu/or1k/spr-defs.h File Reference

This graph shows which files directly or indirectly include this file:



### Defines

- #define [MAX\\_GRP](#)s (32)
- #define [MAX\\_SPRS\\_PER\\_GRP\\_BITS](#) (11)
- #define [MAX\\_SPRS\\_PER\\_GRP](#) (1 << MAX\_SPRS\_PER\_GRP\_BITS)
- #define [MAX\\_SPRS](#) (0x10000)
- #define [SPRGROUP\\_SYS](#) (0 << MAX\_SPRS\_PER\_GRP\_BITS)
- #define [SPRGROUP\\_DMMU](#) (1 << MAX\_SPRS\_PER\_GRP\_BITS)
- #define [SPRGROUP\\_IMMU](#) (2 << MAX\_SPRS\_PER\_GRP\_BITS)
- #define [SPRGROUP\\_DC](#) (3 << MAX\_SPRS\_PER\_GRP\_BITS)
- #define [SPRGROUP\\_IC](#) (4 << MAX\_SPRS\_PER\_GRP\_BITS)
- #define [SPRGROUP\\_MAC](#) (5 << MAX\_SPRS\_PER\_GRP\_BITS)
- #define [SPRGROUP\\_D](#) (6 << MAX\_SPRS\_PER\_GRP\_BITS)
- #define [SPRGROUP\\_PC](#) (7 << MAX\_SPRS\_PER\_GRP\_BITS)
- #define [SPRGROUP\\_PM](#) (8 << MAX\_SPRS\_PER\_GRP\_BITS)
- #define [SPRGROUP\\_PIC](#) (9 << MAX\_SPRS\_PER\_GRP\_BITS)
- #define [SPRGROUP\\_TT](#) (10 << MAX\_SPRS\_PER\_GRP\_BITS)
- #define [SPR\\_VR](#) (SPRGROUP\_SYS + 0)
- #define [SPR\\_UPR](#) (SPRGROUP\_SYS + 1)
- #define [SPR\\_CPUCFGR](#) (SPRGROUP\_SYS + 2)
- #define [SPR\\_DMMUCFGR](#) (SPRGROUP\_SYS + 3)
- #define [SPR\\_IMMUCFGR](#) (SPRGROUP\_SYS + 4)
- #define [SPR\\_DCCFGR](#) (SPRGROUP\_SYS + 5)
- #define [SPR\\_ICCFGR](#) (SPRGROUP\_SYS + 6)
- #define [SPR\\_DCFGR](#) (SPRGROUP\_SYS + 7)
- #define [SPR\\_PCCFGR](#) (SPRGROUP\_SYS + 8)
- #define [SPR\\_NPC](#) (SPRGROUP\_SYS + 16)
- #define [SPR\\_SR](#) (SPRGROUP\_SYS + 17)
- #define [SPR\\_PPC](#) (SPRGROUP\_SYS + 18)
- #define [SPR\\_EPCR\\_BASE](#) (SPRGROUP\_SYS + 32)
- #define [SPR\\_EPCR\\_LAST](#) (SPRGROUP\_SYS + 47)
- #define [SPR\\_EEAR\\_BASE](#) (SPRGROUP\_SYS + 48)
- #define [SPR\\_EEAR\\_LAST](#) (SPRGROUP\_SYS + 63)
- #define [SPR\\_ESR\\_BASE](#) (SPRGROUP\_SYS + 64)
- #define [SPR\\_ESR\\_LAST](#) (SPRGROUP\_SYS + 79)
- #define [SPR\\_DMMUCR](#) (SPRGROUP\_DMMU + 0)
- #define [SPR\\_DTLBMR\\_BASE](#)(WAY) (SPRGROUP\_DMMU + 0x200 + (WAY) \* 0x100)
- #define [SPR\\_DTLBMR\\_LAST](#)(WAY) (SPRGROUP\_DMMU + 0x27f + (WAY) \* 0x100)
- #define [SPR\\_DTLBTR\\_BASE](#)(WAY) (SPRGROUP\_DMMU + 0x280 + (WAY) \* 0x100)
- #define [SPR\\_DTLBTR\\_LAST](#)(WAY) (SPRGROUP\_DMMU + 0x2ff + (WAY) \* 0x100)
- #define [SPR\\_IMMUCR](#) (SPRGROUP\_IMMU + 0)

- #define `SPR_ITLBMR_BASE(WAY)` (SPRGROUP\_IMMU + 0x200 + (WAY) \* 0x100)
- #define `SPR_ITLBMR_LAST(WAY)` (SPRGROUP\_IMMU + 0x27f + (WAY) \* 0x100)
- #define `SPR_ITLBTR_BASE(WAY)` (SPRGROUP\_IMMU + 0x280 + (WAY) \* 0x100)
- #define `SPR_ITLBTR_LAST(WAY)` (SPRGROUP\_IMMU + 0x2ff + (WAY) \* 0x100)
- #define `SPR_DCCR` (SPRGROUP\_DC + 0)
- #define `SPR_DCBPR` (SPRGROUP\_DC + 1)
- #define `SPR_DCBFR` (SPRGROUP\_DC + 2)
- #define `SPR_DCBIR` (SPRGROUP\_DC + 3)
- #define `SPR_DCBWR` (SPRGROUP\_DC + 4)
- #define `SPR_DCBLR` (SPRGROUP\_DC + 5)
- #define `SPR_DCR_BASE(WAY)` (SPRGROUP\_DC + 0x200 + (WAY) \* 0x200)
- #define `SPR_DCR_LAST(WAY)` (SPRGROUP\_DC + 0x3ff + (WAY) \* 0x200)
- #define `SPR_ICCR` (SPRGROUP\_IC + 0)
- #define `SPR_ICBPR` (SPRGROUP\_IC + 1)
- #define `SPR_ICBIR` (SPRGROUP\_IC + 2)
- #define `SPR_ICBLR` (SPRGROUP\_IC + 3)
- #define `SPR_ICR_BASE(WAY)` (SPRGROUP\_IC + 0x200 + (WAY) \* 0x200)
- #define `SPR_ICR_LAST(WAY)` (SPRGROUP\_IC + 0x3ff + (WAY) \* 0x200)
- #define `SPR_MACLO` (SPRGROUP\_MAC + 1)
- #define `SPR_MACHI` (SPRGROUP\_MAC + 2)
- #define `SPR_DVR(N)` (SPRGROUP\_D + (N))
- #define `SPR_DCR(N)` (SPRGROUP\_D + 8 + (N))
- #define `SPR_DMR1` (SPRGROUP\_D + 16)
- #define `SPR_DMR2` (SPRGROUP\_D + 17)
- #define `SPR_DWCR0` (SPRGROUP\_D + 18)
- #define `SPR_DWCR1` (SPRGROUP\_D + 19)
- #define `SPR_DSR` (SPRGROUP\_D + 20)
- #define `SPR_DRR` (SPRGROUP\_D + 21)
- #define `SPR_PCCR(N)` (SPRGROUP\_PC + (N))
- #define `SPR_PCMR(N)` (SPRGROUP\_PC + 8 + (N))
- #define `SPR_PMR` (SPRGROUP\_PM + 0)
- #define `SPR_PICMR` (SPRGROUP\_PIC + 0)
- #define `SPR_PICPR` (SPRGROUP\_PIC + 1)
- #define `SPR_PICSR` (SPRGROUP\_PIC + 2)
- #define `SPR_TTMR` (SPRGROUP\_TT + 0)
- #define `SPR_TTCR` (SPRGROUP\_TT + 1)
- #define `SPR_VR_VER` 0xff000000
- #define `SPR_VR_CFG` 0x00ff0000
- #define `SPR_VR_RES` 0x00ff0000
- #define `SPR_VR_REV` 0x0000003f
- #define `SPR_VR_VER_OFF` 24
- #define `SPR_VR_CFG_OFF` 16
- #define `SPR_VR_REV_OFF` 0
- #define `SPR_UPR_UP` 0x00000001
- #define `SPR_UPR_DCP` 0x00000002
- #define `SPR_UPR_ICP` 0x00000004
- #define `SPR_UPR_DMP` 0x00000008
- #define `SPR_UPR_IMP` 0x00000010
- #define `SPR_UPR_MP` 0x00000020
- #define `SPR_UPR_DUP` 0x00000040

- #define `SPR_UPR_PCUP` 0x00000080
- #define `SPR_UPR_PMP` 0x00000100
- #define `SPR_UPR_PICP` 0x00000200
- #define `SPR_UPR_TTP` 0x00000400
- #define `SPR_UPR_RES` 0x00fe0000
- #define `SPR_UPR_CUP` 0xff000000
- #define `SPR_CPUCFGR_NSGF` 0x0000000f
- #define `SPR_CPUCFGR_CGF` 0x00000010
- #define `SPR_CPUCFGR_OB32S` 0x00000020
- #define `SPR_CPUCFGR_OB64S` 0x00000040
- #define `SPR_CPUCFGR_OF32S` 0x00000080
- #define `SPR_CPUCFGR_OF64S` 0x00000100
- #define `SPR_CPUCFGR_OV64S` 0x00000200
- #define `SPR_CPUCFGR_RES` 0xffffc00
- #define `SPR_DCFGR_NDP` 0x00000007
- #define `SPR_DCFGR_NDP1` 0x00000000
- #define `SPR_DCFGR_NDP2` 0x00000001
- #define `SPR_DCFGR_NDP3` 0x00000002
- #define `SPR_DCFGR_NDP4` 0x00000003
- #define `SPR_DCFGR_NDP5` 0x00000004
- #define `SPR_DCFGR_NDP6` 0x00000005
- #define `SPR_DCFGR_NDP7` 0x00000006
- #define `SPR_DCFGR_NDP8` 0x00000007
- #define `SPR_DCFGR_WPCI` 0x00000008
- #define `MATCHPOINTS_TO_NDP`(n)
- #define `MAX_MATCHPOINTS` 8
- #define `MAX_WATCHPOINTS` (MAX\_MATCHPOINTS + 2)
- #define `SPR_SR_SM` 0x00000001
- #define `SPR_SR_TEE` 0x00000002
- #define `SPR_SR_IEE` 0x00000004
- #define `SPR_SR_DCE` 0x00000008
- #define `SPR_SR_ICE` 0x00000010
- #define `SPR_SR_DME` 0x00000020
- #define `SPR_SR_IME` 0x00000040
- #define `SPR_SR_LEE` 0x00000080
- #define `SPR_SR_CE` 0x00000100
- #define `SPR_SR_F` 0x00000200
- #define `SPR_SR_CY` 0x00000400
- #define `SPR_SR_OV` 0x00000800
- #define `SPR_SR_OVE` 0x00001000
- #define `SPR_SR_DSX` 0x00002000
- #define `SPR_SR_EPH` 0x00004000
- #define `SPR_SR_FO` 0x00008000
- #define `SPR_SR_SUMRA` 0x00010000
- #define `SPR_SR_RES` 0x0ffe0000
- #define `SPR_SR_CID` 0xf0000000
- #define `SPR_DMMUCR_P2S` 0x0000003e
- #define `SPR_DMMUCR_P1S` 0x000007c0
- #define `SPR_DMMUCR_VADDR_WIDTH` 0x0000f800
- #define `SPR_DMMUCR_PADDR_WIDTH` 0x000f0000

- #define `SPR_IMMUCR_P2S` 0x0000003e
- #define `SPR_IMMUCR_P1S` 0x000007c0
- #define `SPR_IMMUCR_VADDR_WIDTH` 0x0000f800
- #define `SPR_IMMUCR_PADDR_WIDTH` 0x000f0000
- #define `SPR_DTLBMR_V` 0x00000001
- #define `SPR_DTLBMR_PL1` 0x00000002
- #define `SPR_DTLBMR_CID` 0x0000003c
- #define `SPR_DTLBMR_LRU` 0x000000c0
- #define `SPR_DTLBMR_VPN` 0xffff000
- #define `SPR_DTLBTR_CC` 0x00000001
- #define `SPR_DTLBTR_CI` 0x00000002
- #define `SPR_DTLBTR_WBC` 0x00000004
- #define `SPR_DTLBTR_WOM` 0x00000008
- #define `SPR_DTLBTR_A` 0x00000010
- #define `SPR_DTLBTR_D` 0x00000020
- #define `SPR_DTLBTR_URE` 0x00000040
- #define `SPR_DTLBTR_UWE` 0x00000080
- #define `SPR_DTLBTR_SRE` 0x00000100
- #define `SPR_DTLBTR_SWE` 0x00000200
- #define `SPR_DTLBTR_PPN` 0xffff000
- #define `SPR_ITLBMR_V` 0x00000001
- #define `SPR_ITLBMR_PL1` 0x00000002
- #define `SPR_ITLBMR_CID` 0x0000003c
- #define `SPR_ITLBMR_LRU` 0x000000c0
- #define `SPR_ITLBMR_VPN` 0xffff000
- #define `SPR_ITLBTR_CC` 0x00000001
- #define `SPR_ITLBTR_CI` 0x00000002
- #define `SPR_ITLBTR_WBC` 0x00000004
- #define `SPR_ITLBTR_WOM` 0x00000008
- #define `SPR_ITLBTR_A` 0x00000010
- #define `SPR_ITLBTR_D` 0x00000020
- #define `SPR_ITLBTR_SXE` 0x00000040
- #define `SPR_ITLBTR_UXE` 0x00000080
- #define `SPR_ITLBTR_PPN` 0xffff000
- #define `SPR_DCCR_EW` 0x000000ff
- #define `SPR_ICCR_EW` 0x000000ff
- #define `SPR_DCCFGR_NCW` 0x00000007
- #define `SPR_DCCFGR_NCS` 0x00000078
- #define `SPR_DCCFGR_CBS` 0x00000080
- #define `SPR_DCCFGR_CWS` 0x00000100
- #define `SPR_DCCFGR_CCRI` 0x00000200
- #define `SPR_DCCFGR_CBIRI` 0x00000400
- #define `SPR_DCCFGR_CBPRI` 0x00000800
- #define `SPR_DCCFGR_CBLRI` 0x00001000
- #define `SPR_DCCFGR_CBFRI` 0x00002000
- #define `SPR_DCCFGR_CBWBRI` 0x00004000
- #define `SPR_DCCFGR_NCW_OFF` 0
- #define `SPR_DCCFGR_NCS_OFF` 3
- #define `SPR_DCCFGR_CBS_OFF` 7
- #define `SPR_ICCFGR_NCW` 0x00000007

- #define `SPR_ICCFGR_NCS` 0x00000078
- #define `SPR_ICCFGR_CBS` 0x00000080
- #define `SPR_ICCFGR_CCRI` 0x00000200
- #define `SPR_ICCFGR_CBIRI` 0x00000400
- #define `SPR_ICCFGR_CBPRI` 0x00000800
- #define `SPR_ICCFGR_CBLRI` 0x00001000
- #define `SPR_ICCFGR_NCW_OFF` 0
- #define `SPR_ICCFGR_NCS_OFF` 3
- #define `SPR_ICCFGR_CBS_OFF` 7
- #define `SPR_DMMUCFGR_NTW` 0x00000003
- #define `SPR_DMMUCFGR_NTS` 0x0000001C
- #define `SPR_DMMUCFGR_NAE` 0x000000E0
- #define `SPR_DMMUCFGR_CRI` 0x00000100
- #define `SPR_DMMUCFGR_PRI` 0x00000200
- #define `SPR_DMMUCFGR_TEIRI` 0x00000400
- #define `SPR_DMMUCFGR_HTR` 0x00000800
- #define `SPR_DMMUCFGR_NTW_OFF` 0
- #define `SPR_DMMUCFGR_NTS_OFF` 2
- #define `SPR_IMMUCFGR_NTW` 0x00000003
- #define `SPR_IMMUCFGR_NTS` 0x0000001C
- #define `SPR_IMMUCFGR_NAE` 0x000000E0
- #define `SPR_IMMUCFGR_CRI` 0x00000100
- #define `SPR_IMMUCFGR_PRI` 0x00000200
- #define `SPR_IMMUCFGR_TEIRI` 0x00000400
- #define `SPR_IMMUCFGR_HTR` 0x00000800
- #define `SPR_IMMUCFGR_NTW_OFF` 0
- #define `SPR_IMMUCFGR_NTS_OFF` 2
- #define `SPR_DCR_DP` 0x00000001
- #define `SPR_DCR_CC` 0x0000000e
- #define `SPR_DCR_SC` 0x00000010
- #define `SPR_DCR_CT` 0x000000e0
- #define `SPR_DCR_CC_MASKED` 0x00000000
- #define `SPR_DCR_CC_EQUAL` 0x00000002
- #define `SPR_DCR_CC_LESS` 0x00000004
- #define `SPR_DCR_CC_LESSE` 0x00000006
- #define `SPR_DCR_CC_GREAT` 0x00000008
- #define `SPR_DCR_CC_GREATE` 0x0000000a
- #define `SPR_DCR_CC_NEQUAL` 0x0000000c
- #define `SPR_DCR_CT_DISABLED` 0x00000000
- #define `SPR_DCR_CT_IFEA` 0x00000020
- #define `SPR_DCR_CT_LEA` 0x00000040
- #define `SPR_DCR_CT_SEA` 0x00000060
- #define `SPR_DCR_CT_LD` 0x00000080
- #define `SPR_DCR_CT_SD` 0x000000a0
- #define `SPR_DCR_CT_LSEA` 0x000000c0
- #define `SPR_DCR_CT_LSD` 0x000000e0
- #define `SPR_DMR1_CW` 0x000fffff
- #define `SPR_DMR1_CW0_AND` 0x00000001
- #define `SPR_DMR1_CW0_OR` 0x00000002
- #define `SPR_DMR1_CW0` (`SPR_DMR1_CW0_AND` | `SPR_DMR1_CW0_OR`)

- #define `SPR_DMR1_CW1_AND` 0x00000004
- #define `SPR_DMR1_CW1_OR` 0x00000008
- #define `SPR_DMR1_CW1` (SPR\_DMR1\_CW1\_AND | SPR\_DMR1\_CW1\_OR)
- #define `SPR_DMR1_CW2_AND` 0x00000010
- #define `SPR_DMR1_CW2_OR` 0x00000020
- #define `SPR_DMR1_CW2` (SPR\_DMR1\_CW2\_AND | SPR\_DMR1\_CW2\_OR)
- #define `SPR_DMR1_CW3_AND` 0x00000040
- #define `SPR_DMR1_CW3_OR` 0x00000080
- #define `SPR_DMR1_CW3` (SPR\_DMR1\_CW3\_AND | SPR\_DMR1\_CW3\_OR)
- #define `SPR_DMR1_CW4_AND` 0x00000100
- #define `SPR_DMR1_CW4_OR` 0x00000200
- #define `SPR_DMR1_CW4` (SPR\_DMR1\_CW4\_AND | SPR\_DMR1\_CW4\_OR)
- #define `SPR_DMR1_CW5_AND` 0x00000400
- #define `SPR_DMR1_CW5_OR` 0x00000800
- #define `SPR_DMR1_CW5` (SPR\_DMR1\_CW5\_AND | SPR\_DMR1\_CW5\_OR)
- #define `SPR_DMR1_CW6_AND` 0x00001000
- #define `SPR_DMR1_CW6_OR` 0x00002000
- #define `SPR_DMR1_CW6` (SPR\_DMR1\_CW6\_AND | SPR\_DMR1\_CW6\_OR)
- #define `SPR_DMR1_CW7_AND` 0x00004000
- #define `SPR_DMR1_CW7_OR` 0x00008000
- #define `SPR_DMR1_CW7` (SPR\_DMR1\_CW7\_AND | SPR\_DMR1\_CW7\_OR)
- #define `SPR_DMR1_CW8_AND` 0x00010000
- #define `SPR_DMR1_CW8_OR` 0x00020000
- #define `SPR_DMR1_CW8` (SPR\_DMR1\_CW8\_AND | SPR\_DMR1\_CW8\_OR)
- #define `SPR_DMR1_CW9_AND` 0x00040000
- #define `SPR_DMR1_CW9_OR` 0x00080000
- #define `SPR_DMR1_CW9` (SPR\_DMR1\_CW9\_AND | SPR\_DMR1\_CW9\_OR)
- #define `SPR_DMR1_RES1` 0x00300000
- #define `SPR_DMR1_ST` 0x00400000
- #define `SPR_DMR1_BT` 0x00800000
- #define `SPR_DMR1_RES2` 0xff000000
- #define `SPR_DMR2_WCE0` 0x00000001
- #define `SPR_DMR2_WCE1` 0x00000002
- #define `SPR_DMR2_AWTC` 0x0000ffc
- #define `SPR_DMR2_AWTC_OFF` 2
- #define `SPR_DMR2_WGB` 0x003ff000
- #define `SPR_DMR2_WGB_OFF` 12
- #define `SPR_DMR2_WBS` 0xffc00000
- #define `SPR_DMR2_WBS_OFF` 22
- #define `SPR_DWCR_COUNT` 0x0000ffff
- #define `SPR_DWCR_MATCH` 0xffff0000
- #define `SPR_DWCR_MATCH_OFF` 16
- #define `SPR_DSR_RSTE` 0x00000001
- #define `SPR_DSR_BUSEE` 0x00000002
- #define `SPR_DSR_DPFE` 0x00000004
- #define `SPR_DSR_IPFE` 0x00000008
- #define `SPR_DSR_TTE` 0x00000010
- #define `SPR_DSR_AE` 0x00000020
- #define `SPR_DSR_IIE` 0x00000040
- #define `SPR_DSR_IE` 0x00000080

- #define `SPR_DSR_DME` 0x00000100
- #define `SPR_DSR_IME` 0x00000200
- #define `SPR_DSR_RE` 0x00000400
- #define `SPR_DSR_SCE` 0x00000800
- #define `SPR_DSR_FPE` 0x00001000
- #define `SPR_DSR_TE` 0x00002000
- #define `SPR_DRR_RSTE` 0x00000001
- #define `SPR_DRR_BUSEE` 0x00000002
- #define `SPR_DRR_DPFE` 0x00000004
- #define `SPR_DRR_IPFE` 0x00000008
- #define `SPR_DRR_TTE` 0x00000010
- #define `SPR_DRR_AE` 0x00000020
- #define `SPR_DRR_IIE` 0x00000040
- #define `SPR_DRR_IE` 0x00000080
- #define `SPR_DRR_DME` 0x00000100
- #define `SPR_DRR_IME` 0x00000200
- #define `SPR_DRR_RE` 0x00000400
- #define `SPR_DRR_SCE` 0x00000800
- #define `SPR_DRR_FPE` 0x00001000
- #define `SPR_DRR_TE` 0x00002000
- #define `SPR_PCMR_CP` 0x00000001
- #define `SPR_PCMR_UMRA` 0x00000002
- #define `SPR_PCMR_CISM` 0x00000004
- #define `SPR_PCMR_CIUM` 0x00000008
- #define `SPR_PCMR_LA` 0x00000010
- #define `SPR_PCMR_SA` 0x00000020
- #define `SPR_PCMR_IF` 0x00000040
- #define `SPR_PCMR_DCM` 0x00000080
- #define `SPR_PCMR_ICM` 0x00000100
- #define `SPR_PCMR_IFS` 0x00000200
- #define `SPR_PCMR_LSUS` 0x00000400
- #define `SPR_PCMR_BS` 0x00000800
- #define `SPR_PCMR_DTLBM` 0x00001000
- #define `SPR_PCMR_ITLBM` 0x00002000
- #define `SPR_PCMR_DDS` 0x00004000
- #define `SPR_PCMR_WPE` 0x03ff8000
- #define `SPR_PMR_SDF` 0x0000000f
- #define `SPR_PMR_DME` 0x00000010
- #define `SPR_PMR_SME` 0x00000020
- #define `SPR_PMR_DCGE` 0x00000040
- #define `SPR_PMR_SUME` 0x00000080
- #define `SPR_PICMR_IUM` 0xffffffc
- #define `SPR_PICPR_IPRIO` 0xffffffc
- #define `SPR_PICSR_IS` 0xfffffff
- #define `SPR_TTCR_PERIOD` 0x0fffff
- #define `SPR_TTMR_PERIOD` `SPR_TTCR_PERIOD`
- #define `SPR_TTMR_IP` 0x10000000
- #define `SPR_TTMR_IE` 0x20000000
- #define `SPR_TTMR_RT` 0x40000000
- #define `SPR_TTMR_SR` 0x80000000



- #define `SPR_TTMR_CR` 0xc0000000
- #define `SPR_TTMR_M` 0xc0000000
- #define `NOP_NOP` 0x0000
- #define `NOP_EXIT` 0x0001
- #define `NOP_REPORT` 0x0002
- #define `NOP_PRINTF` 0x0003
- #define `NOP_PUTC` 0x0004
- #define `NOP_CNT_RESET` 0x0005
- #define `NOP_REPORT_FIRST` 0x0400
- #define `NOP_REPORT_LAST` 0x03ff

## 6.25.1 Define Documentation

### 6.25.1.1 #define MATCHPOINTS\_TO\_NDP(n)

**Value:**

```
(1 == n ? SPR_DCFGR_NDP1 : \  
2 == n ? SPR_DCFGR_NDP2 : \  
3 == n ? SPR_DCFGR_NDP3 : \  
4 == n ? SPR_DCFGR_NDP4 : \  
5 == n ? SPR_DCFGR_NDP5 : \  
6 == n ? SPR_DCFGR_NDP6 : \  
7 == n ? SPR_DCFGR_NDP7 : SPR_DCFGR_NDP8)
```

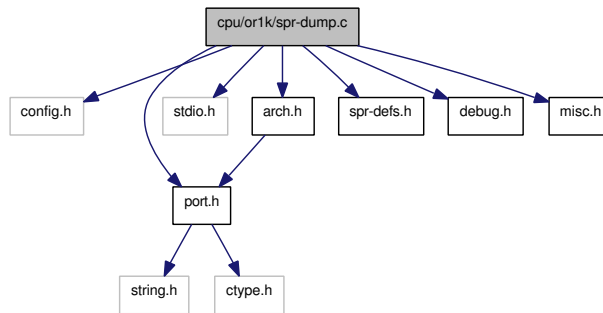


- 6.25.1.2 `#define MAX_GRPS (32)`
- 6.25.1.3 `#define MAX_MATCHPOINTS 8`
- 6.25.1.4 `#define MAX_SPRS (0x10000)`
- 6.25.1.5 `#define MAX_SPRS_PER_GRP (1 << MAX_SPRS_PER_GRP_BITS)`
- 6.25.1.6 `#define MAX_SPRS_PER_GRP_BITS (11)`
- 6.25.1.7 `#define MAX_WATCHPOINTS (MAX_MATCHPOINTS + 2)`
- 6.25.1.8 `#define NOP_CNT_RESET 0x0005`
- 6.25.1.9 `#define NOP_EXIT 0x0001`
- 6.25.1.10 `#define NOP_NOP 0x0000`
- 6.25.1.11 `#define NOP_PRINTF 0x0003`
- 6.25.1.12 `#define NOP_PUTC 0x0004`
- 6.25.1.13 `#define NOP_REPORT 0x0002`
- 6.25.1.14 `#define NOP_REPORT_FIRST 0x0400`
- 6.25.1.15 `#define NOP_REPORT_LAST 0x03ff`
- 6.25.1.16 `#define SPR_CPUCFGR (SPRGROUP_SYS + 2)`
- 6.25.1.17 `#define SPR_CPUCFGR_CGF 0x00000010`
- 6.25.1.18 `#define SPR_CPUCFGR_NSGF 0x0000000f`
- 6.25.1.19 `#define SPR_CPUCFGR_OB32S 0x00000020`
- 6.25.1.20 `#define SPR_CPUCFGR_OB64S 0x00000040`
- 6.25.1.21 `#define SPR_CPUCFGR_OF32S 0x00000080`
- 6.25.1.22 `#define SPR_CPUCFGR_OF64S 0x00000100`
- 6.25.1.23 `#define SPR_CPUCFGR_OV64S 0x00000200`
- 6.25.1.24 `#define SPR_CPUCFGR_RES 0xffffc00`
- 6.25.1.25 `#define SPR_DCBFR (SPRGROUP_DC + 2)`
- 6.25.1.26 `#define SPR_DCBIR (SPRGROUP_DC + 3)`
- 6.25.1.27 `#define SPR_DCBLR (SPRGROUP_DC + 5)`
- 6.25.1.28 `#define SPR_DCBPR (SPRGROUP_DC + 1)`
- 6.25.1.29 `#define SPR_DCBWR (SPRGROUP_DC + 4)`
- 6.25.1.30 `#define SPR_DCCFGR (SPRGROUP_SYS + 5)`
- 6.25.1.31 `#define SPR_DCCFGR_CBFRI 0x00002000`
- 6.25.1.32 `#define SPR_DCCFGR_CBIRI 0x00000400`

## 6.26 cpu/or1k/spr-dump.c File Reference

```
#include "config.h"
#include "port.h"
#include <stdio.h>
#include "arch.h"
#include "spr-defs.h"
#include "debug.h"
#include "misc.h"
```

Include dependency graph for spr-dump.c:



### Data Structures

- struct [spr\\_bit\\_def](#)
- struct [spr\\_def](#)

### Functions

- char \* [dump\\_spr](#) (uint16\_t spr, uorreg\_t spr\_val)

### Variables

- static struct [spr\\_bit\\_def](#) spr\_one\_val []
- static struct [spr\\_bit\\_def](#) spr\_sr []
- static struct [spr\\_bit\\_def](#) spr\_vr []
- static struct [spr\\_bit\\_def](#) spr\_upr []
- static struct [spr\\_bit\\_def](#) spr\_cpucfgr []
- static struct [spr\\_bit\\_def](#) spr\_dmmucfgr []
- static struct [spr\\_bit\\_def](#) spr\_immucfgr []
- static struct [spr\\_bit\\_def](#) spr\_dccfgr []
- static struct [spr\\_bit\\_def](#) spr\_iccfgr []
- static struct [spr\\_bit\\_def](#) spr\_dcfgr []
- static struct [spr\\_def](#) spr\_sys\_group []
- static struct [spr\\_bit\\_def](#) spr\_dmmucr []
- static struct [spr\\_bit\\_def](#) spr\_dtlbmr []

- static struct `spr_bit_def spr_dtlbtr []`
- static struct `spr_def spr_dmmu_group []`
- static struct `spr_bit_def spr_immucr []`
- static struct `spr_bit_def spr_itlbmr []`
- static struct `spr_bit_def spr_itlbtr []`
- static struct `spr_def spr_immu_group []`
- static struct `spr_bit_def spr_dccr []`
- static struct `spr_def spr_dc_group []`
- static struct `spr_bit_def spr_iccr []`
- static struct `spr_def spr_ic_group []`
- static struct `spr_def spr_mac_group []`
- static struct `spr_bit_def spr_dmr1 []`
- static struct `spr_bit_def spr_dmr2 []`
- static struct `spr_bit_def spr_dwcr []`
- static struct `spr_bit_def spr_dsr []`
- static struct `spr_bit_def spr_drr []`
- static struct `spr_def spr_d_group []`
- static struct `spr_bit_def spr_pcmr []`
- static struct `spr_def spr_pc_group []`
- static struct `spr_bit_def spr_pmr []`
- static struct `spr_def spr_pm_group []`
- static struct `spr_bit_def spr_picmr []`
- static struct `spr_def spr_pic_group []`
- static struct `spr_bit_def spr_tmr []`
- static struct `spr_def spr_tt_group []`
- static struct `spr_def * spr_groups []`
- static char `ret_spr [1000]`

## 6.26.1 Function Documentation

### 6.26.1.1 `char* dump_spr (uint16_t spr, uorreg_t spr_val)`

Here is the call graph for this function:



## 6.26.2 Variable Documentation

### 6.26.2.1 `char ret_spr[1000]` [static]

### 6.26.2.2 `struct spr_bit_def spr_cpucfgr[]` [static]

**Initial value:**

```

{
{ "CPUCFGR_OB32S", SPR_CPUCFGR_OB32S },
{ "CPUCFGR_OB64S", SPR_CPUCFGR_OB64S },
{ "CPUCFGR_OF32S", SPR_CPUCFGR_OF32S },
{ "CPUCFGR_OF64S", SPR_CPUCFGR_OF64S },
{ "CPUCFGR_OV64S", SPR_CPUCFGR_OV64S },
{ NULL, 0 } }
  
```

**6.26.2.3 struct spr\_def spr\_d\_group[] [static]****Initial value:**

```
{
    { 0x10, 0x10, "SPR_DMR1", spr_dmr1 },
    { 0x11, 0x11, "SPR_DMR2", spr_dmr2 },
    { 0x12, 0x12, "SPR_DWCR0", spr_dwcr },
    { 0x13, 0x13, "SPR_DWCR1", spr_dwcr },
    { 0x14, 0x14, "SPR_DSR", spr_dsr },
    { 0x15, 0x15, "SPR_DRR", spr_drr },
    { -1, -1, NULL, NULL } }
```

**6.26.2.4 struct spr\_def spr\_dc\_group[] [static]****Initial value:**

```
{
    { 0x000, 0x000, "SPR_DCCR", spr_dCCR },
    { 0x001, 0x001, "SPR_DCBPR", spr_one_val },
    { 0x002, 0x002, "SPR_DCBFR", spr_one_val },
    { 0x003, 0x003, "SPR_DCBIR", spr_one_val },
    { 0x004, 0x004, "SPR_DCBWR", spr_one_val },
    { 0x005, 0x005, "SPR_DCBLR", spr_one_val },
    { 0x200, 0x3ff, "SPR_DCR way 0 set %i", spr_one_val },
    { 0x400, 0x5ff, "SPR_DCR way 1 set %i", spr_one_val },
    { 0x600, 0x7ff, "SPR_DCR way 2 set %i", spr_one_val },
    { 0x800, 0x9ff, "SPR_DCR way 3 set %i", spr_one_val },
    { -1, -1, NULL, NULL } }
```

**6.26.2.5 struct spr\_bit\_def spr\_dccfgr[] [static]****Initial value:**

```
{
    { "DCCFGR_NCW", SPR_DCCFGR_NCW },
    { "DCCFGR_NCS", SPR_DCCFGR_NCS },
    { "DCCFGR_CBS", SPR_DCCFGR_CBS },
    { "DCCFGR_CWS", SPR_DCCFGR_CWS },
    { "DCCFGR_CCRI", SPR_DCCFGR_CCRI },
    { "DCCFGR_CBIRI", SPR_DCCFGR_CBIRI },
    { "DCCFGR_CBPRI", SPR_DCCFGR_CBPRI },
    { "DCCFGR_CBLRI", SPR_DCCFGR_CBLRI },
    { "DCCFGR_CBFRI", SPR_DCCFGR_CBFRI },
    { "DCCFGR_CBWBRI", SPR_DCCFGR_CBWBRI },
    { NULL, 0 } }
```

**6.26.2.6 struct spr\_bit\_def spr\_dCCR[] [static]****Initial value:**

```
{
    { "DCCR_EW", SPR_DCCR_EW },
    { NULL, 0 } }
```

**6.26.2.7 struct spr\_bit\_def spr\_dcfgr[] [static]****Initial value:**

```
{
{ "DCFGR_NDP", SPR_DCFGR_NDP },
{ "DCFGR_WPCI", SPR_DCFGR_WPCI },
{ NULL, 0 } }
```

**6.26.2.8 struct spr\_def spr\_dmmu\_group[] [static]****Initial value:**

```
{
{ 0, 0, "SPR_DMMUCR", spr_dmmucr },
{ 0x200, 0x27f, "SPR_DTLBMR way 0 set %i", spr_dtlbmr },
{ 0x280, 0x2ff, "SPR_DTLBTR way 0 set %i", spr_dtlbtr },
{ 0x300, 0x37f, "SPR_DTLBMR way 1 set %i", spr_dtlbmr },
{ 0x380, 0x3ff, "SPR_DTLBTR way 1 set %i", spr_dtlbtr },
{ 0x400, 0x47f, "SPR_DTLBMR way 2 set %i", spr_dtlbmr },
{ 0x480, 0x4ff, "SPR_DTLBTR way 2 set %i", spr_dtlbtr },
{ 0x500, 0x57f, "SPR_DTLBMR way 3 set %i", spr_dtlbmr },
{ 0x580, 0x5ff, "SPR_DTLBTR way 3 set %i", spr_dtlbtr },
{ -1, -1, NULL, NULL } }
```

**6.26.2.9 struct spr\_bit\_def spr\_dmmucfgr[] [static]****Initial value:**

```
{
{ "DMMUCFGR_NTW", SPR_DMMUCFGR_NTW },
{ "DMMUCFGR_NTS", SPR_DMMUCFGR_NTS },
{ "DMMUCFGR_NAE", SPR_DMMUCFGR_NAE },
{ "DMMUCFGR_CRI", SPR_DMMUCFGR_CRI },
{ "DMMUCFGR_PRI", SPR_DMMUCFGR_PRI },
{ "DMMUCFGR_TEIRI", SPR_DMMUCFGR_TEIRI },
{ "DMMUCFGR_HTR", SPR_DMMUCFGR_HTR },
{ NULL, 0 } }
```

**6.26.2.10 struct spr\_bit\_def spr\_dmmucr[] [static]****Initial value:**

```
{
{ "DMMUCR_P2S", SPR_DMMUCR_P2S },
{ "DMMUCR_P1S", SPR_DMMUCR_P1S },
{ "DMMUCR_VADDR_WIDTH", SPR_DMMUCR_VADDR_WIDTH },
{ "DMMUCR_PADDR_WIDTH", SPR_DMMUCR_PADDR_WIDTH },
{ NULL, 0 } }
```

**6.26.2.11 struct spr\_bit\_def spr\_dmr1[] [static]****Initial value:**

```

{
{ "DMR1_CW0",  SPR_DMR1_CW0  },
{ "DMR1_CW1",  SPR_DMR1_CW1  },
{ "DMR1_CW2",  SPR_DMR1_CW2  },
{ "DMR1_CW3",  SPR_DMR1_CW3  },
{ "DMR1_CW4",  SPR_DMR1_CW4  },
{ "DMR1_CW5",  SPR_DMR1_CW5  },
{ "DMR1_CW6",  SPR_DMR1_CW6  },
{ "DMR1_CW7",  SPR_DMR1_CW7  },
{ "DMR1_CW8",  SPR_DMR1_CW8  },
{ "DMR1_CW9",  SPR_DMR1_CW9  },
{ "DMR1_RES1", SPR_DMR1_RES1 },
{ "DMR1_ST",   SPR_DMR1_ST   },
{ "DMR1_BT",   SPR_DMR1_BT   },
{ "DMR1_RES2", SPR_DMR1_RES2 },
{ NULL,       0               } }

```

**6.26.2.12 struct spr\_bit\_def spr\_dmr2[] [static]****Initial value:**

```

{
{ "DMR2_WCE0", SPR_DMR2_WCE0 },
{ "DMR2_WCE1", SPR_DMR2_WCE1 },
{ "DMR2_AWTC", SPR_DMR2_AWTC },
{ "DMR2_WGB",  SPR_DMR2_WGB  },
{ "DMR2_WBS",  SPR_DMR2_WBS  },
{ NULL,       0               } }

```

**6.26.2.13 struct spr\_bit\_def spr\_drr[] [static]****Initial value:**

```

{
{ "DRR_RSTE", SPR_DRR_RSTE },
{ "DRR_BUSE", SPR_DRR_BUSEE },
{ "DRR_DPFE", SPR_DRR_DPFE },
{ "DRR_IPFE", SPR_DRR_IPFE },
{ "DRR_TTE",  SPR_DRR_TTE  },
{ "DRR_AE",   SPR_DRR_AE   },
{ "DRR_IIE",  SPR_DRR_IIE  },
{ "DRR_IE",   SPR_DRR_IE   },
{ "DRR_DME",  SPR_DRR_DME  },
{ "DRR_IME",  SPR_DRR_IME  },
{ "DRR_RE",   SPR_DRR_RE   },
{ "DRR_SCE",  SPR_DRR_SCE  },
{ "DRR_TE",   SPR_DRR_TE   },
{ NULL, 0 } }

```

**6.26.2.14 struct spr\_bit\_def spr\_dsr[] [static]****Initial value:**



```

{
  { "DSR_RSTE", SPR_DSR_RSTE },
  { "DSR_BUSE", SPR_DSR_BUSEE },
  { "DSR_DPFE", SPR_DSR_DPFE },
  { "DSR_IPFE", SPR_DSR_IPFE },
  { "DSR_TTE", SPR_DSR_TTE },
  { "DSR_AE", SPR_DSR_AE },
  { "DSR_IIE", SPR_DSR_IIE },
  { "DSR_IE", SPR_DSR_IE },
  { "DSR_DME", SPR_DSR_DME },
  { "DSR_IME", SPR_DSR_IME },
  { "DSR_RE", SPR_DSR_RE },
  { "DSR_SCE", SPR_DSR_SCE },
  { "DSR_FPE", SPR_DSR_FPE },
  { "DSR_TE", SPR_DSR_TE },
  { NULL, 0 } }

```

#### 6.26.2.15 struct spr\_bit\_def spr\_dtlbmr[] [static]

##### Initial value:

```

{
  { "DTLBMR_V", SPR_DTLBMR_V },
  { "DTLBMR_PL1", SPR_DTLBMR_PL1 },
  { "DTLBMR_CID", SPR_DTLBMR_CID },
  { "DTLBMR_LRU", SPR_DTLBMR_LRU },
  { "DTLBMR_VPN", SPR_DTLBMR_VPN },
  { NULL, 0 } }

```

#### 6.26.2.16 struct spr\_bit\_def spr\_dtlbtr[] [static]

##### Initial value:

```

{
  { "DTLBTR_CC", SPR_DTLBTR_CC },
  { "DTLBTR_CI", SPR_DTLBTR_CI },
  { "DTLBTR_WBC", SPR_DTLBTR_WBC },
  { "DTLBTR_WOM", SPR_DTLBTR_WOM },
  { "DTLBTR_A", SPR_DTLBTR_A },
  { "DTLBTR_D", SPR_DTLBTR_D },
  { "DTLBTR_URE", SPR_DTLBTR_URE },
  { "DTLBTR_UWE", SPR_DTLBTR_UWE },
  { "DTLBTR_SRE", SPR_DTLBTR_SRE },
  { "DTLBTR_SWE", SPR_DTLBTR_SWE },
  { "DTLBTR_PPN", SPR_DTLBTR_PPN },
  { NULL, 0 } }

```

#### 6.26.2.17 struct spr\_bit\_def spr\_dwcr[] [static]

##### Initial value:

```

{
  { "DWCR_COUNT", SPR_DWCR_COUNT },
  { "DWCR_MATCH", SPR_DWCR_MATCH },
  { NULL, 0 } }

```

**6.26.2.18 struct spr\_def\* spr\_groups[] [static]****Initial value:**

```
{
  spr_sys_group,
  spr_dmmu_group,
  spr_immu_group,
  spr_dc_group,
  spr_ic_group,
  spr_mac_group,
  spr_d_group,
  spr_pc_group,
  spr_pm_group,
  spr_pic_group,
  spr_tt_group }
```

**6.26.2.19 struct spr\_def spr\_ic\_group[] [static]****Initial value:**

```
{
  { 0x000, 0x000, "SPR_ICCR", spr_iccr },
  { 0x001, 0x001, "SPR_ICBPR", spr_one_val },
  { 0x002, 0x002, "SPR_ICBFR", spr_one_val },
  { 0x003, 0x003, "SPR_ICBIR", spr_one_val },
  { 0x200, 0x3ff, "SPR_ICR way 0 set %i", spr_one_val },
  { 0x400, 0x5ff, "SPR_ICR way 1 set %i", spr_one_val },
  { 0x600, 0x7ff, "SPR_ICR way 2 set %i", spr_one_val },
  { 0x800, 0x9ff, "SPR_ICR way 3 set %i", spr_one_val },
  { -1, -1, NULL, NULL } }
```

**6.26.2.20 struct spr\_bit\_def spr\_iccfgr[] [static]****Initial value:**

```
{
  { "ICCFGR_NCW", SPR_ICCFGR_NCW },
  { "ICCFGR_NCS", SPR_ICCFGR_NCS },
  { "ICCFGR_CBS", SPR_ICCFGR_CBS },
  { "ICCFGR_CCRI", SPR_ICCFGR_CCRI },
  { "ICCFGR_CBIRI", SPR_ICCFGR_CBIRI },
  { "ICCFGR_CBPRI", SPR_ICCFGR_CBPRI },
  { "ICCFGR_CBLRI", SPR_ICCFGR_CBLRI },
  { NULL, 0 } }
```

**6.26.2.21 struct spr\_bit\_def spr\_iccr[] [static]****Initial value:**

```
{
  { "ICCR_EW", SPR_ICCR_EW },
  { NULL, 0 } }
```

**6.26.2.22 struct spr\_def spr\_immu\_group[]** [static]**Initial value:**

```
{
  { 0, 0, "SPR_IMMUCR", spr_immucr },
  { 0x200, 0x27f, "SPR_ITLBMR way 0 set %i", spr_itlbmr },
  { 0x280, 0x2ff, "SPR_ITLBTR way 0 set %i", spr_itlbtr },
  { 0x300, 0x37f, "SPR_ITLBMR way 1 set %i", spr_itlbmr },
  { 0x380, 0x3ff, "SPR_ITLBTR way 1 set %i", spr_itlbtr },
  { 0x400, 0x47f, "SPR_ITLBMR way 2 set %i", spr_itlbmr },
  { 0x480, 0x4ff, "SPR_ITLBTR way 2 set %i", spr_itlbtr },
  { 0x500, 0x57f, "SPR_ITLBMR way 3 set %i", spr_itlbmr },
  { 0x580, 0x5ff, "SPR_ITLBTR way 3 set %i", spr_itlbtr },
  { -1, -1, NULL, NULL } }
```

**6.26.2.23 struct spr\_bit\_def spr\_immucfgr[]** [static]**Initial value:**

```
{
  { "IMMUCFGR_NTW", SPR_IMMUCFGR_NTW },
  { "IMMUCFGR_NTS", SPR_IMMUCFGR_NTS },
  { "IMMUCFGR_NAE", SPR_IMMUCFGR_NAE },
  { "IMMUCFGR_CRI", SPR_IMMUCFGR_CRI },
  { "IMMUCFGR_PRI", SPR_IMMUCFGR_PRI },
  { "IMMUCFGR_TEIRI", SPR_IMMUCFGR_TEIRI },
  { "IMMUCFGR_HTR", SPR_IMMUCFGR_HTR },
  { NULL, 0 } }
```

**6.26.2.24 struct spr\_bit\_def spr\_immucr[]** [static]**Initial value:**

```
{
  { "IMMUCR_P2S", SPR_IMMUCR_P2S },
  { "IMMUCR_P1S", SPR_IMMUCR_P1S },
  { "IMMUCR_VADDR_WIDTH", SPR_IMMUCR_VADDR_WIDTH },
  { "IMMUCR_PADDR_WIDTH", SPR_IMMUCR_PADDR_WIDTH },
  { NULL, 0 } }
```

**6.26.2.25 struct spr\_bit\_def spr\_itlbmr[]** [static]**Initial value:**

```
{
  { "ITLBMR_V", SPR_ITLBMR_V },
  { "ITLBMR_PL1", SPR_ITLBMR_PL1 },
  { "ITLBMR_CID", SPR_ITLBMR_CID },
  { "ITLBMR_LRU", SPR_ITLBMR_LRU },
  { "ITLBMR_VPN", SPR_ITLBMR_VPN },
  { NULL, 0 } }
```

**6.26.2.26 struct spr\_bit\_def spr\_itlbtr[]** [static]**Initial value:**

```
{
  { "ITLBTR_CC", SPR_ITLBTR_CC },
  { "ITLBTR_CI", SPR_ITLBTR_CI },
  { "ITLBTR_WBC", SPR_ITLBTR_WBC },
  { "ITLBTR_WOM", SPR_ITLBTR_WOM },
  { "ITLBTR_A", SPR_ITLBTR_A },
  { "ITLBTR_D", SPR_ITLBTR_D },
  { "ITLBTR_URE", SPR_ITLBTR_SXE },
  { "ITLBTR_UWE", SPR_ITLBTR_UXE },
  { "ITLBTR_PPN", SPR_ITLBTR_PPN },
  { NULL, 0 } }
```

**6.26.2.27 struct spr\_def spr\_mac\_group[]** [static]**Initial value:**

```
{
  { 0x1, 0x1, "SPR_MACLO", spr_one_val },
  { 0x2, 0x2, "SPR_MACHI", spr_one_val },
  { -1, -1, NULL, NULL } }
```

**6.26.2.28 struct spr\_bit\_def spr\_one\_val[]** [static]**Initial value:**

```
{
  { "", 0xffffffff },
  { NULL, 0 } }
```

**6.26.2.29 struct spr\_def spr\_pc\_group[]** [static]**Initial value:**

```
{
  { 0x00, 0x07, "PCCR", spr_one_val },
  { 0x08, 0x0f, "PCMR", spr_pcmr },
  { -1, -1, NULL, NULL } }
```

**6.26.2.30 struct spr\_bit\_def spr\_pcmr[]** [static]**Initial value:**

```
{
  { "PCMR_CP", SPR_PCMR_CP },
  { "PCMR_UMRA", SPR_PCMR_UMRA },
  { "PCMR_CISM", SPR_PCMR_CISM },
  { "PCMR_CIUUM", SPR_PCMR_CIUUM },
  { "PCMR_LA", SPR_PCMR_LA },
```

```

{ "PCMR_SA", SPR_PCMR_SA },
{ "PCMR_IF", SPR_PCMR_IF },
{ "PCMR_DCM", SPR_PCMR_DCM },
{ "PCMR_ICM", SPR_PCMR_ICM },
{ "PCMR_IFS", SPR_PCMR_IFS },
{ "PCMR_LSUS", SPR_PCMR_LSUS },
{ "PCMR_BS", SPR_PCMR_BS },
{ "PCMR_DTLBM", SPR_PCMR_DTLBM },
{ "PCMR_ITLBM", SPR_PCMR_ITLBM },
{ "PCMR_DDS", SPR_PCMR_DDS },
{ "PCMR_WPE", SPR_PCMR_WPE },
{ NULL, 0 } }

```

### 6.26.2.31 struct spr\_def spr\_pic\_group[] [static]

#### Initial value:

```

{
{ 0, 0, "PICMR", spr_picmr },
{ 2, 2, "PICSR", spr_one_val },
{ -1, -1, NULL, NULL } }

```

### 6.26.2.32 struct spr\_bit\_def spr\_picmr[] [static]

#### Initial value:

```

{
{ "PICMR_IUM", SPR_PICMR_IUM },
{ NULL, 0 } }

```

### 6.26.2.33 struct spr\_def spr\_pm\_group[] [static]

#### Initial value:

```

{
{ 0x0, 0x0, "SPR_PMR", spr_pmr },
{ -1, -1, NULL, NULL } }

```

### 6.26.2.34 struct spr\_bit\_def spr\_pmr[] [static]

#### Initial value:

```

{
{ "PMR_SDF", SPR_PMR_SDF },
{ "PMR_DME", SPR_PMR_DME },
{ "PMR_SME", SPR_PMR_SME },
{ "PMR_DCGE", SPR_PMR_DCGE },
{ "PMR_SUME", SPR_PMR_SUME },
{ NULL, 0 } }

```

**6.26.2.35 struct spr\_bit\_def spr\_sr[] [static]****Initial value:**

```

{
{ "SR_SM",      SPR_SR_SM      },
{ "SR_TEE",    SPR_SR_TEE     },
{ "SR_IEE",    SPR_SR_IEE     },
{ "SR_DCE",    SPR_SR_DCE     },
{ "SR_ICE",    SPR_SR_ICE     },
{ "SR_DME",    SPR_SR_DME     },
{ "SR_IME",    SPR_SR_IME     },
{ "SR_LEE",    SPR_SR_IME     },
{ "SR_CE",     SPR_SR_CE      },
{ "SR_F",      SPR_SR_F       },
{ "SR_CY",     SPR_SR_CY      },
{ "SR_OV",     SPR_SR_OV      },
{ "SR_OVE",    SPR_SR_OVE     },
{ "SR_DSX",    SPR_SR_DSX     },
{ "SR_EPH",    SPR_SR_EPH     },
{ "SR_FO",     SPR_SR_FO      },
{ "SR_SUMRA",  SPR_SR_SUMRA   },
{ "SR_RES",    SPR_SR_RES     },
{ "SR_CID",    SPR_SR_CID     },
{ NULL,        0              } }

```

**6.26.2.36 struct spr\_def spr\_sys\_group[] [static]****Initial value:**

```

{
{ 0x000, 0x000, "SPR_VR",      spr_vr      },
{ 0x001, 0x001, "SPR_UPR",    spr_upr    },
{ 0x002, 0x002, "SPR_CPUCFGR", spr_cpucfgr },
{ 0x003, 0x003, "SPR_DMMUCFGR", spr_dmmucfgr },
{ 0x004, 0x004, "SPR_IMMUCFGR", spr_immucfgr },
{ 0x005, 0x005, "SPR_DCCFGR",  spr_dccfgr  },
{ 0x006, 0x006, "SPR_ICCFGR",  spr_iccfgr  },
{ 0x007, 0x007, "SPR_DCFGR",   spr_dcfgr   },
{ 0x010, 0x010, "SPR_NPC",     spr_one_val },
{ 0x011, 0x011, "SPR_SR",     spr_sr      },
{ 0x012, 0x012, "SPR_PPC",     spr_one_val },
{ 0x020, 0x02f, "SPR_EPCR(%i)", spr_one_val },
{ 0x030, 0x03f, "SPR_EEAR(%i)", spr_one_val },
{ 0x040, 0x04f, "SPR_ESR(%i)", spr_sr      },
{ 0x400, 0x41f, "GPR(%i)",     spr_one_val },
{ -1,    -1,    NULL,          NULL       } }

```

**6.26.2.37 struct spr\_def spr\_tt\_group[] [static]****Initial value:**

```

{
{ 0, 0, "TTMR", spr_ttmr },
{ 0, 0, "TTCR", spr_one_val },
{ -1, -1, NULL, NULL } }

```

**6.26.2.38 struct spr\_bit\_def spr\_ttmr[]** [static]**Initial value:**

```
{
{ "TTMR_PERIOD", SPR_TTMR_PERIOD },
{ "TTMR_IP", SPR_TTMR_IP },
{ "TTMR_IE", SPR_TTMR_IE },
{ "TTMR_M", SPR_TTMR_M },
{ NULL, 0 } }
```

**6.26.2.39 struct spr\_bit\_def spr\_upr[]** [static]**Initial value:**

```
{
{ "UPR_UP", SPR_UPR_UP },
{ "UPR_DCP", SPR_UPR_DCP },
{ "UPR_ICP", SPR_UPR_ICP },
{ "UPR_DMP", SPR_UPR_DMP },
{ "UPR_IMP", SPR_UPR_IMP },
{ "UPR_MP", SPR_UPR_MP },
{ "UPR_DUP", SPR_UPR_DUP },
{ "UPR_PCUP", SPR_UPR_PCUP },
{ "UPR_PMP", SPR_UPR_PMP },
{ "UPR_PICP", SPR_UPR_PICP },
{ "UPR_TTP", SPR_UPR_TTP },
{ "UPR_RES", SPR_UPR_RES },
{ "UPR_CUP", SPR_UPR_CUP },
{ NULL, 0 } }
```

**6.26.2.40 struct spr\_bit\_def spr\_vr[]** [static]**Initial value:**

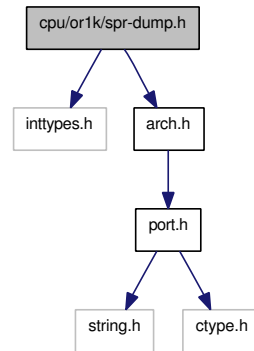
```
{
{ "VR_VER", SPR_VR_VER },
{ "VR_REV", SPR_VR_REV },
{ NULL, 0 } }
```

## 6.27 cpu/or1k/spr-dump.h File Reference

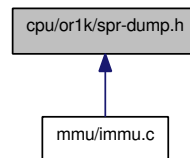
```
#include <inttypes.h>
```

```
#include "arch.h"
```

Include dependency graph for spr-dump.h:



This graph shows which files directly or indirectly include this file:



### Functions

- `char * dump_spr (uint16_t spr, uorreg_t spr_val)`

#### 6.27.1 Function Documentation

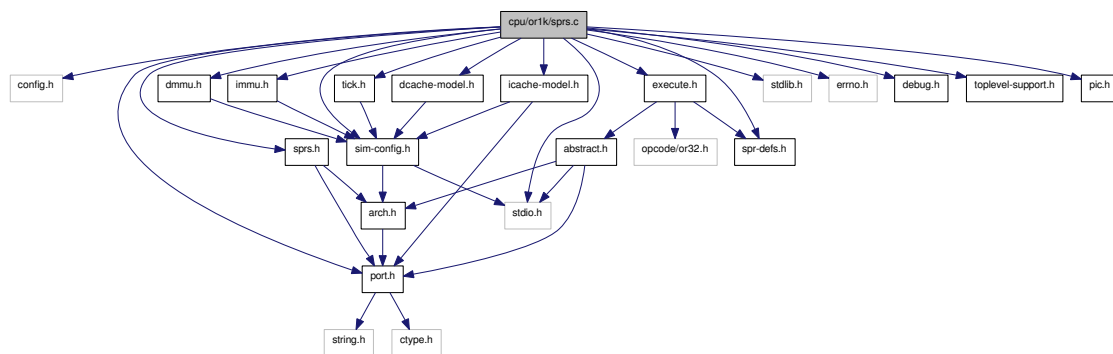
##### 6.27.1.1 `char* dump_spr (uint16_t spr, uorreg_t spr_val)`



## 6.28 cpu/or1k/sprs.c File Reference

```
#include "config.h"
#include "port.h"
#include <stdlib.h>
#include <stdio.h>
#include <errno.h>
#include "sprs.h"
#include "sim-config.h"
#include "debug.h"
#include "execute.h"
#include "spr-defs.h"
#include "tick.h"
#include "dcache-model.h"
#include "icache-model.h"
#include "dmmu.h"
#include "immu.h"
#include "toplevel-support.h"
#include "pic.h"
```

Include dependency graph for sprs.c:



### Functions

- [DECLARE\\_DEBUG\\_CHANNEL](#) ([immu](#))
- void [mfspr](#) ([uint16\\_t](#) regno, const [uorreg\\_t](#) value)
- [uorreg\\_t](#) [mfspr](#) (const [uint16\\_t](#) regno)
- void [sprs\\_status](#) (void)

### Variables

- static int [audio\\_cnt](#) = 0

- static FILE \* fo = 0

## 6.28.1 Function Documentation

### 6.28.1.1 DECLARE\_DEBUG\_CHANNEL (immu)

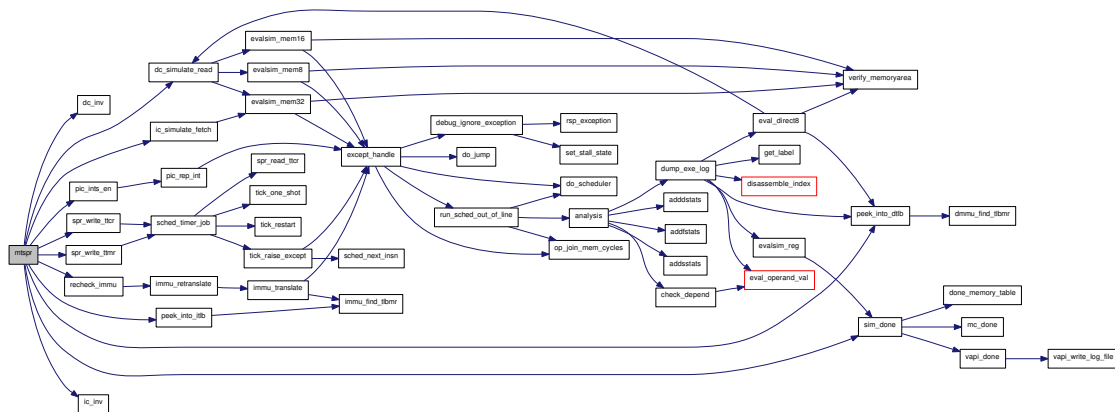
### 6.28.1.2 uorreg\_t mfspr (const uint16\_t regno)

Here is the call graph for this function:



### 6.28.1.3 void mtspr (uint16\_t regno, const uorreg\_t value)

Here is the call graph for this function:



### 6.28.1.4 void sprs\_status (void)

## 6.28.2 Variable Documentation

### 6.28.2.1 int audio\_cnt = 0 [static]

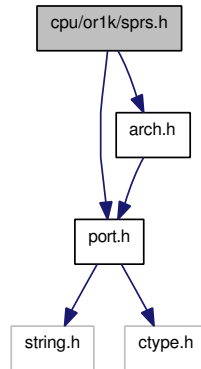
### 6.28.2.2 FILE\* fo = 0 [static]

## 6.29 cpu/or1k/sprs.h File Reference

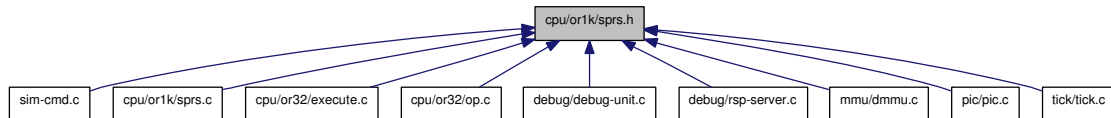
```
#include "port.h"
```

```
#include "arch.h"
```

Include dependency graph for sprs.h:



This graph shows which files directly or indirectly include this file:



## Functions

- void `mtspr` (uint16\_t regno, const `uorreg_t` value)
- `uorreg_t` `mfspr` (const uint16\_t regno)
- void `sprs_status` ()
- char \* `dump_spr` (uint16\_t spr, `uorreg_t` spr\_val)

### 6.29.1 Function Documentation

#### 6.29.1.1 char\* `dump_spr` (uint16\_t *spr*, `uorreg_t` *spr\_val*)

Here is the call graph for this function:



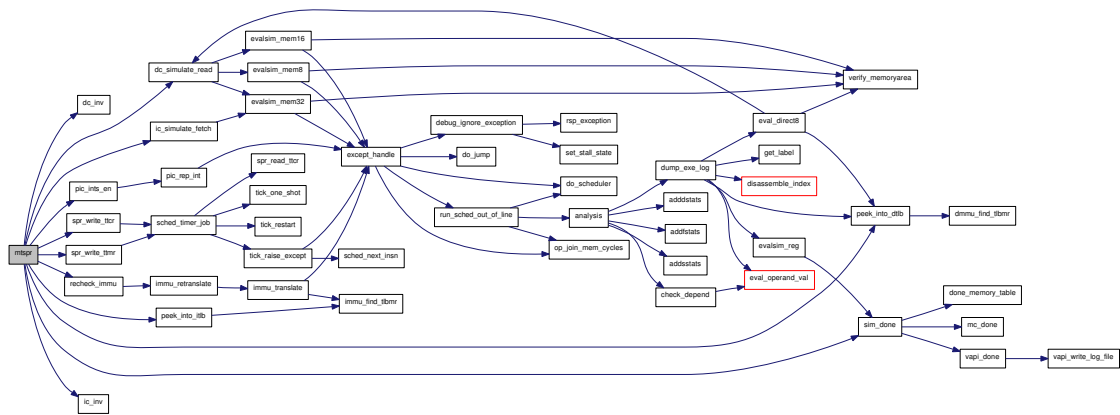
### 6.29.1.2 uorreg\_t mfspr (const uint16\_t regno)

Here is the call graph for this function:



### 6.29.1.3 void mtspr (uint16\_t regno, const uorreg\_t value)

Here is the call graph for this function:



### 6.29.1.4 void sprs\_status ()

## 6.30 cpu/or32/common-i386.h File Reference

### Functions

- static void `set_pc` (`oraddr_t pc`)
- static `oraddr_t get_pc` (`void`)
- static void `upd_sim_cycles` (`void`)

### Variables

- union {
  - struct {
    - `uint32_t low32`
    - `uint32_t high32`
  - } `val3232`
  - `uint64_t val64`
  - } `useless_x86`

### 6.30.1 Function Documentation

**6.30.1.1** `static oraddr_t get_pc (void)` [static]

**6.30.1.2** `static void set_pc (oraddr_t pc)` [static]

**6.30.1.3** `static void upd_sim_cycles (void)` [static]

### 6.30.2 Variable Documentation

**6.30.2.1** `uint32_t high32`

**6.30.2.2** `uint32_t low32`

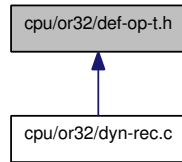
**6.30.2.3** `union { ... } useless_x86` [static]

**6.30.2.4** `struct { ... } val3232`

**6.30.2.5** `uint64_t val64`

## 6.31 cpu/or32/def-op-t.h File Reference

This graph shows which files directly or indirectly include this file:



### Defines

- #define [GPR\\_T](#)(op\_name, temp)
- #define [DEF\\_1T\\_OP](#)(type, name, op\_name)
- #define [DEF\\_2T\\_OP](#)(type, name, op\_name)
- #define [DEF\\_3T\\_OP](#)(type, name, op\_name)
- #define [DEF\\_2T\\_OP\\_NEQ](#)(type, name, op\_name)
- #define [DEF\\_3T\\_OP\\_NEQ](#)(type, name, op\_name)
- #define [DEF\\_GPR\\_OP](#)(type, name, op\_name)

### 6.31.1 Define Documentation

#### 6.31.1.1 #define DEF\_1T\_OP(type, name, op\_name)

##### Value:

```
static const type name[NUM_T_REGS] = \
    OP_ROW(op_name)
```

#### 6.31.1.2 #define DEF\_2T\_OP(type, name, op\_name)

##### Value:

```
static const type name[NUM_T_REGS][NUM_T_REGS] = \
    OP_ROW_COL(op_name)
```

#### 6.31.1.3 #define DEF\_2T\_OP\_NEQ(type, name, op\_name)

##### Value:

```
static const type name[NUM_T_REGS][NUM_T_REGS] = \
    OP_ROW_COL_NEQ(op_name)
```

**6.31.1.4 #define DEF\_3T\_OP(type, name, op\_name)****Value:**

```
static const type name[NUM_T_REGS][NUM_T_REGS][NUM_T_REGS] = \
    OP_ROW_COL_3D(op_name)
```

**6.31.1.5 #define DEF\_3T\_OP\_NEQ(type, name, op\_name)****Value:**

```
static const type name[NUM_T_REGS][NUM_T_REGS][NUM_T_REGS] = \
    OP_ROW_COL_3D_NEQ(op_name)
```

**6.31.1.6 #define DEF\_GPR\_OP(type, name, op\_name)****Value:**

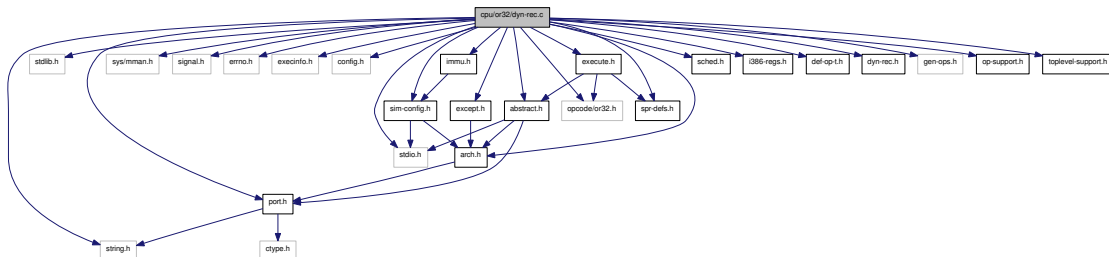
```
static const generic_gen_op name[NUM_T_REGS][32] = \
    GPR_ROW_COL(op_name)
```

**6.31.1.7 #define GPR\_T(op\_name, temp)**

## 6.32 cpu/or32/dyn-rec.c File Reference

```
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <sys/mman.h>
#include <signal.h>
#include <errno.h>
#include <execinfo.h>
#include "config.h"
#include "port.h"
#include "arch.h"
#include "immu.h"
#include "abstract.h"
#include "opcode/or32.h"
#include "spr-defs.h"
#include "execute.h"
#include "except.h"
#include "sim-config.h"
#include "sched.h"
#include "i386-regs.h"
#include "def-op-t.h"
#include "dyn-rec.h"
#include "gen-ops.h"
#include "op-support.h"
#include "toplevel-support.h"
```

Include dependency graph for dyn-rec.c:



### Defines

- #define [RECED\\_PAGE\\_ENLARGE\\_BY](#) 51200



- #define `OPS_ENLARGE_BY` 5
- #define `T_NONE` (-1)
- #define `TFLAG_SRC` 1
- #define `TFLAG_DST` 2
- #define `TFLAG_SAVED` 4
- #define `TFLAG_SOURCED` 8

## Typedefs

- typedef void(\* `generic_gen_op`)(struct `op_queue` \*opq, int end)
- typedef void(\* `imm_gen_op`)(struct `op_queue` \*opq, int end, `uorreg_t` imm)

## Functions

- void `gen_l_invalid` (struct `op_queue` \*opq, int `param_t`[3], int delay\_slot)
- `DEF_GPR_OP` (`generic_gen_op`, `gen_op_move_gpr_t`, `gen_op_ttg_gpr`)
- `DEF_GPR_OP` (`generic_gen_op`, `gen_op_move_t_gpr`, `gen_op_gtt_gpr`)
- `DEF_1T_OP` (`imm_gen_op`, `calc_insn_ea_table`, `gen_op_calc_insn_ea`)
- void `dyn_ret_stack_prot` (void)
- void `dyn_sigsegv_debug` (int u, `siginfo_t` \*siginf, void \*dat)
- struct `dyn_page` \* `new_dp` (`oraddr_t` page)
- void `dyn_main` (void)
- static void `immu_retranslate` (void \*dat)
- void `recheck_immu` (int got\_en\_dis)
- void `run_sched_out_of_line` (void)
- static void `dirtyfy_page` (struct `dyn_page` \*dp)
- void `dyn_checkwrite` (`oraddr_t` addr)
- static void `ship_t_out` (struct `op_queue` \*opq, unsigned int t)
- static void `ship_gprs_out_t` (struct `op_queue` \*opq)
- static int `find_t` (struct `op_queue` \*opq, unsigned int reg)
- void \* `enough_host_page` (struct `dyn_page` \*dp, void \*cur, unsigned int \*len, unsigned int amount)
- void `add_to_opq` (struct `op_queue` \*opq, int end, int op)
- static void `gen_op_mark_loc` (struct `op_queue` \*opq, int end)
- void `add_to_op_params` (struct `op_queue` \*opq, int end, unsigned long param)
- void `init_dyn_recomp` (void)
- static void `eval_insn_ops` (struct `op_queue` \*opq, `oraddr_t` addr)
- static void `recompile_insn` (struct `op_queue` \*opq, int delay\_insn)
- void `recompile_page` (struct `dyn_page` \*dyn)
- static void `recompile_delay_insn` (struct `op_queue` \*opq)
- static int `find_jump_loc` (`oraddr_t` j\_ea, struct `op_queue` \*opq)
- static void `gen_j_imm` (struct `op_queue` \*opq, `oraddr_t` off)
- static void `gen_j_reg` (struct `op_queue` \*opq, unsigned int gpr)
- `DEF_1T_OP` (`generic_gen_op`, `clear_t`, `gen_op_clear`)
- `DEF_2T_OP_NEQ` (`generic_gen_op`, `move_t_t`, `gen_op_move`)
- `DEF_1T_OP` (`imm_gen_op`, `mov_t_imm`, `gen_op_imm`)
- `DEF_2T_OP` (`imm_gen_op`, `l_add_imm_t_table`, `gen_op_add_imm`)
- `DEF_3T_OP` (`generic_gen_op`, `l_add_t_table`, `gen_op_add`)
- void `gen_l_add` (struct `op_queue` \*opq, int `param_t`[3], int delay\_slot)
- `DEF_3T_OP` (`generic_gen_op`, `l_addc_t_table`, `gen_op_addc`)

- void `gen_l_addc` (struct `op_queue` \*opq, int `param_t`[3], int `delay_slot`)
- `DEF_2T_OP` (`imm_gen_op`, `l_and_imm_t_table`, `gen_op_and_imm`)
- `DEF_3T_OP_NEQ` (`generic_gen_op`, `l_and_t_table`, `gen_op_and`)
- void `gen_l_and` (struct `op_queue` \*opq, int `param_t`[3], int `delay_slot`)
- void `gen_l_bf` (struct `op_queue` \*opq, int `param_t`[3], int `delay_slot`)
- void `gen_l_bnf` (struct `op_queue` \*opq, int `param_t`[3], int `delay_slot`)
- `DEF_3T_OP_NEQ` (`generic_gen_op`, `l_cmov_t_table`, `gen_op_cmov`)
- void `gen_l_cmov` (struct `op_queue` \*opq, int `param_t`[3], int `delay_slot`)
- void `gen_l_cust1` (struct `op_queue` \*opq, int `param_t`[3], int `delay_slot`)
- void `gen_l_cust2` (struct `op_queue` \*opq, int `param_t`[3], int `delay_slot`)
- void `gen_l_cust3` (struct `op_queue` \*opq, int `param_t`[3], int `delay_slot`)
- void `gen_l_cust4` (struct `op_queue` \*opq, int `param_t`[3], int `delay_slot`)
- void `gen_l_cust5` (struct `op_queue` \*opq, int `param_t`[3], int `delay_slot`)
- void `gen_l_cust6` (struct `op_queue` \*opq, int `param_t`[3], int `delay_slot`)
- void `gen_l_cust7` (struct `op_queue` \*opq, int `param_t`[3], int `delay_slot`)
- void `gen_l_cust8` (struct `op_queue` \*opq, int `param_t`[3], int `delay_slot`)
- `DEF_1T_OP` (`generic_gen_op`, `check_null_except`, `gen_op_check_null_except`)
- `DEF_1T_OP` (`generic_gen_op`, `check_null_except_delay`, `gen_op_check_null_except_delay`)
- `DEF_3T_OP` (`generic_gen_op`, `l_div_t_table`, `gen_op_div`)
- void `gen_l_div` (struct `op_queue` \*opq, int `param_t`[3], int `delay_slot`)
- `DEF_3T_OP` (`generic_gen_op`, `l_divu_t_table`, `gen_op_divu`)
- void `gen_l_divu` (struct `op_queue` \*opq, int `param_t`[3], int `delay_slot`)
- `DEF_2T_OP` (`generic_gen_op`, `l_extbs_t_table`, `gen_op_extbs`)
- void `gen_l_extbs` (struct `op_queue` \*opq, int `param_t`[3], int `delay_slot`)
- `DEF_2T_OP` (`generic_gen_op`, `l_extbz_t_table`, `gen_op_extbz`)
- void `gen_l_extbz` (struct `op_queue` \*opq, int `param_t`[3], int `delay_slot`)
- `DEF_2T_OP` (`generic_gen_op`, `l_exths_t_table`, `gen_op_exths`)
- void `gen_l_exths` (struct `op_queue` \*opq, int `param_t`[3], int `delay_slot`)
- `DEF_2T_OP` (`generic_gen_op`, `l_exthz_t_table`, `gen_op_exthz`)
- void `gen_l_exthz` (struct `op_queue` \*opq, int `param_t`[3], int `delay_slot`)
- void `gen_l_extws` (struct `op_queue` \*opq, int `param_t`[3], int `delay_slot`)
- void `gen_l_extwz` (struct `op_queue` \*opq, int `param_t`[3], int `delay_slot`)
- `DEF_2T_OP` (`generic_gen_op`, `l_ff1_t_table`, `gen_op_ff1`)
- void `gen_l_ff1` (struct `op_queue` \*opq, int `param_t`[3], int `delay_slot`)
- void `gen_l_j` (struct `op_queue` \*opq, int `param_t`[3], int `delay_slot`)
- void `gen_l_jal` (struct `op_queue` \*opq, int `param_t`[3], int `delay_slot`)
- void `gen_l_jr` (struct `op_queue` \*opq, int `param_t`[3], int `delay_slot`)
- void `gen_l_jalr` (struct `op_queue` \*opq, int `param_t`[3], int `delay_slot`)
- `DEF_1T_OP` (`imm_gen_op`, `l_lbs_imm_t_table`, `gen_op_lbs_imm`)
- `DEF_2T_OP` (`imm_gen_op`, `l_lbs_t_table`, `gen_op_lbs`)
- void `gen_l_lbs` (struct `op_queue` \*opq, int `param_t`[3], int `delay_slot`)
- `DEF_1T_OP` (`imm_gen_op`, `l_lbz_imm_t_table`, `gen_op_lbz_imm`)
- `DEF_2T_OP` (`imm_gen_op`, `l_lbz_t_table`, `gen_op_lbz`)
- void `gen_l_lbz` (struct `op_queue` \*opq, int `param_t`[3], int `delay_slot`)
- `DEF_1T_OP` (`imm_gen_op`, `l_lhs_imm_t_table`, `gen_op_lhs_imm`)
- `DEF_2T_OP` (`imm_gen_op`, `l_lhs_t_table`, `gen_op_lhs`)
- void `gen_l_lhs` (struct `op_queue` \*opq, int `param_t`[3], int `delay_slot`)
- `DEF_1T_OP` (`imm_gen_op`, `l_lhz_imm_t_table`, `gen_op_lhz_imm`)
- `DEF_2T_OP` (`imm_gen_op`, `l_lhz_t_table`, `gen_op_lhz`)
- void `gen_l_lhz` (struct `op_queue` \*opq, int `param_t`[3], int `delay_slot`)

- DEF\_1T\_OP (imm\_gen\_op, l\_lws\_imm\_t\_table, gen\_op\_lws\_imm)
- DEF\_2T\_OP (imm\_gen\_op, l\_lws\_t\_table, gen\_op\_lws)
- void gen\_l\_lws (struct op\_queue \*opq, int param\_t[3], int delay\_slot)
- DEF\_1T\_OP (imm\_gen\_op, l\_lwz\_imm\_t\_table, gen\_op\_lwz\_imm)
- DEF\_2T\_OP (imm\_gen\_op, l\_lwz\_t\_table, gen\_op\_lwz)
- void gen\_l\_lwz (struct op\_queue \*opq, int param\_t[3], int delay\_slot)
- DEF\_1T\_OP (imm\_gen\_op, l\_mac\_imm\_t\_table, gen\_op\_mac\_imm)
- DEF\_2T\_OP (generic\_gen\_op, l\_mac\_t\_table, gen\_op\_mac)
- void gen\_l\_mac (struct op\_queue \*opq, int param\_t[3], int delay\_slot)
- DEF\_1T\_OP (generic\_gen\_op, l\_macrc\_t\_table, gen\_op\_macrc)
- void gen\_l\_macrc (struct op\_queue \*opq, int param\_t[3], int delay\_slot)
- DEF\_1T\_OP (imm\_gen\_op, l\_mfspr\_imm\_t\_table, gen\_op\_mfspr\_imm)
- DEF\_2T\_OP (imm\_gen\_op, l\_mfspr\_t\_table, gen\_op\_mfspr)
- void gen\_l\_mfspr (struct op\_queue \*opq, int param\_t[3], int delay\_slot)
- void gen\_l\_movhi (struct op\_queue \*opq, int param\_t[3], int delay\_slot)
- DEF\_2T\_OP (generic\_gen\_op, l\_msb\_t\_table, gen\_op\_msb)
- void gen\_l\_msb (struct op\_queue \*opq, int param\_t[3], int delay\_slot)
- DEF\_1T\_OP (imm\_gen\_op, l\_mtspr\_clear\_t\_table, gen\_op\_mtspr\_clear)
- DEF\_1T\_OP (imm\_gen\_op, l\_mtspr\_imm\_t\_table, gen\_op\_mtspr\_imm)
- DEF\_2T\_OP (imm\_gen\_op, l\_mtspr\_t\_table, gen\_op\_mtspr)
- void gen\_l\_mtspr (struct op\_queue \*opq, int param\_t[3], int delay\_slot)
- DEF\_2T\_OP (imm\_gen\_op, l\_mul\_imm\_t\_table, gen\_op\_mul\_imm)
- DEF\_3T\_OP (generic\_gen\_op, l\_mul\_t\_table, gen\_op\_mul)
- void gen\_l\_mul (struct op\_queue \*opq, int param\_t[3], int delay\_slot)
- DEF\_3T\_OP (generic\_gen\_op, l\_mulu\_t\_table, gen\_op\_mulu)
- void gen\_l\_mulu (struct op\_queue \*opq, int param\_t[3], int delay\_slot)
- void gen\_l\_nop (struct op\_queue \*opq, int param\_t[3], int delay\_slot)
- DEF\_2T\_OP (imm\_gen\_op, l\_or\_imm\_t\_table, gen\_op\_or\_imm)
- DEF\_3T\_OP\_NEQ (generic\_gen\_op, l\_or\_t\_table, gen\_op\_or)
- void gen\_l\_or (struct op\_queue \*opq, int param\_t[3], int delay\_slot)
- void gen\_l\_rfe (struct op\_queue \*opq, int param\_t[3], int delay\_slot)
- DEF\_1T\_OP (imm\_gen\_op, l\_sb\_clear\_table, gen\_op\_sb\_clear)
- DEF\_1T\_OP (imm\_gen\_op, l\_sb\_imm\_t\_table, gen\_op\_sb\_imm)
- DEF\_2T\_OP (imm\_gen\_op, l\_sb\_t\_table, gen\_op\_sb)
- void gen\_l\_sb (struct op\_queue \*opq, int param\_t[3], int delay\_slot)
- DEF\_1T\_OP (imm\_gen\_op, l\_sh\_clear\_table, gen\_op\_sh\_clear)
- DEF\_1T\_OP (imm\_gen\_op, l\_sh\_imm\_t\_table, gen\_op\_sh\_imm)
- DEF\_2T\_OP (imm\_gen\_op, l\_sh\_t\_table, gen\_op\_sh)
- void gen\_l\_sh (struct op\_queue \*opq, int param\_t[3], int delay\_slot)
- DEF\_1T\_OP (imm\_gen\_op, l\_sw\_clear\_table, gen\_op\_sw\_clear)
- DEF\_1T\_OP (imm\_gen\_op, l\_sw\_imm\_t\_table, gen\_op\_sw\_imm)
- DEF\_2T\_OP (imm\_gen\_op, l\_sw\_t\_table, gen\_op\_sw)
- void gen\_l\_sw (struct op\_queue \*opq, int param\_t[3], int delay\_slot)
- DEF\_1T\_OP (generic\_gen\_op, l\_sfeq\_null\_t\_table, gen\_op\_sfeq\_null)
- DEF\_1T\_OP (imm\_gen\_op, l\_sfeq\_imm\_t\_table, gen\_op\_sfeq\_imm)
- DEF\_2T\_OP (generic\_gen\_op, l\_sfeq\_t\_table, gen\_op\_sfeq)
- void gen\_l\_sfeq (struct op\_queue \*opq, int param\_t[3], int delay\_slot)
- DEF\_1T\_OP (generic\_gen\_op, l\_sfges\_null\_t\_table, gen\_op\_sfges\_null)
- DEF\_1T\_OP (generic\_gen\_op, l\_sfles\_null\_t\_table, gen\_op\_sfles\_null)
- DEF\_1T\_OP (imm\_gen\_op, l\_sfges\_imm\_t\_table, gen\_op\_sfges\_imm)

- DEF\_2T\_OP (generic\_gen\_op, l\_sfges\_t\_table, gen\_op\_sfges)
- void gen\_l\_sfges (struct op\_queue \*opq, int param\_t[3], int delay\_slot)
- DEF\_1T\_OP (generic\_gen\_op, l\_sfgeu\_null\_t\_table, gen\_op\_sfgeu\_null)
- DEF\_1T\_OP (generic\_gen\_op, l\_sfleu\_null\_t\_table, gen\_op\_sfleu\_null)
- DEF\_1T\_OP (imm\_gen\_op, l\_sfgeu\_imm\_t\_table, gen\_op\_sfgeu\_imm)
- DEF\_2T\_OP (generic\_gen\_op, l\_sfgeu\_t\_table, gen\_op\_sfgeu)
- void gen\_l\_sfgeu (struct op\_queue \*opq, int param\_t[3], int delay\_slot)
- DEF\_1T\_OP (generic\_gen\_op, l\_sfgts\_null\_t\_table, gen\_op\_sfgts\_null)
- DEF\_1T\_OP (generic\_gen\_op, l\_sflts\_null\_t\_table, gen\_op\_sflts\_null)
- DEF\_1T\_OP (imm\_gen\_op, l\_sfgts\_imm\_t\_table, gen\_op\_sfgts\_imm)
- DEF\_2T\_OP (generic\_gen\_op, l\_sfgts\_t\_table, gen\_op\_sfgts)
- void gen\_l\_sfgts (struct op\_queue \*opq, int param\_t[3], int delay\_slot)
- DEF\_1T\_OP (generic\_gen\_op, l\_sfgtu\_null\_t\_table, gen\_op\_sfgtu\_null)
- DEF\_1T\_OP (generic\_gen\_op, l\_sfltu\_null\_t\_table, gen\_op\_sfltu\_null)
- DEF\_1T\_OP (imm\_gen\_op, l\_sfgtu\_imm\_t\_table, gen\_op\_sfgtu\_imm)
- DEF\_2T\_OP (generic\_gen\_op, l\_sfgtu\_t\_table, gen\_op\_sfgtu)
- void gen\_l\_sfgtu (struct op\_queue \*opq, int param\_t[3], int delay\_slot)
- DEF\_1T\_OP (imm\_gen\_op, l\_sfles\_imm\_t\_table, gen\_op\_sfles\_imm)
- DEF\_2T\_OP (generic\_gen\_op, l\_sfles\_t\_table, gen\_op\_sfles)
- void gen\_l\_sfles (struct op\_queue \*opq, int param\_t[3], int delay\_slot)
- DEF\_1T\_OP (imm\_gen\_op, l\_sfleu\_imm\_t\_table, gen\_op\_sfleu\_imm)
- DEF\_2T\_OP (generic\_gen\_op, l\_sfleu\_t\_table, gen\_op\_sfleu)
- void gen\_l\_sfleu (struct op\_queue \*opq, int param\_t[3], int delay\_slot)
- DEF\_1T\_OP (imm\_gen\_op, l\_sflts\_imm\_t\_table, gen\_op\_sflts\_imm)
- DEF\_2T\_OP (generic\_gen\_op, l\_sflts\_t\_table, gen\_op\_sflts)
- void gen\_l\_sflts (struct op\_queue \*opq, int param\_t[3], int delay\_slot)
- DEF\_1T\_OP (imm\_gen\_op, l\_sfltu\_imm\_t\_table, gen\_op\_sfltu\_imm)
- DEF\_2T\_OP (generic\_gen\_op, l\_sfltu\_t\_table, gen\_op\_sfltu)
- void gen\_l\_sfltu (struct op\_queue \*opq, int param\_t[3], int delay\_slot)
- DEF\_1T\_OP (generic\_gen\_op, l\_sfne\_null\_t\_table, gen\_op\_sfne\_null)
- DEF\_1T\_OP (imm\_gen\_op, l\_sfne\_imm\_t\_table, gen\_op\_sfne\_imm)
- DEF\_2T\_OP (generic\_gen\_op, l\_sfne\_t\_table, gen\_op\_sfne)
- void gen\_l\_sfne (struct op\_queue \*opq, int param\_t[3], int delay\_slot)
- DEF\_2T\_OP (imm\_gen\_op, l\_sll\_imm\_t\_table, gen\_op\_sll\_imm)
- DEF\_3T\_OP (generic\_gen\_op, l\_sll\_t\_table, gen\_op\_sll)
- void gen\_l\_sll (struct op\_queue \*opq, int param\_t[3], int delay\_slot)
- DEF\_2T\_OP (imm\_gen\_op, l\_sra\_imm\_t\_table, gen\_op\_sra\_imm)
- DEF\_3T\_OP (generic\_gen\_op, l\_sra\_t\_table, gen\_op\_sra)
- void gen\_l\_sra (struct op\_queue \*opq, int param\_t[3], int delay\_slot)
- DEF\_2T\_OP (imm\_gen\_op, l\_srl\_imm\_t\_table, gen\_op\_srl\_imm)
- DEF\_3T\_OP (generic\_gen\_op, l\_srl\_t\_table, gen\_op\_srl)
- void gen\_l\_srl (struct op\_queue \*opq, int param\_t[3], int delay\_slot)
- DEF\_2T\_OP (generic\_gen\_op, l\_neg\_t\_table, gen\_op\_neg)
- DEF\_3T\_OP (generic\_gen\_op, l\_sub\_t\_table, gen\_op\_sub)
- void gen\_l\_sub (struct op\_queue \*opq, int param\_t[3], int delay\_slot)
- void gen\_l\_sys (struct op\_queue \*opq, int param\_t[3], int delay\_slot)
- void gen\_l\_trap (struct op\_queue \*opq, int param\_t[3], int delay\_slot)
- DEF\_2T\_OP (imm\_gen\_op, l\_xor\_imm\_t\_table, gen\_op\_xor\_imm)
- DEF\_3T\_OP\_NEQ (generic\_gen\_op, l\_xor\_t\_table, gen\_op\_xor)
- void gen\_l\_xor (struct op\_queue \*opq, int param\_t[3], int delay\_slot)

- void [gen\\_lf\\_add\\_s](#) (struct [op\\_queue](#) \*opq, int [param\\_t](#)[3], int delay\_slot)
- void [gen\\_lf\\_div\\_s](#) (struct [op\\_queue](#) \*opq, int [param\\_t](#)[3], int delay\_slot)
- void [gen\\_lf\\_ftoi\\_s](#) (struct [op\\_queue](#) \*opq, int [param\\_t](#)[3], int delay\_slot)
- void [gen\\_lf\\_itof\\_s](#) (struct [op\\_queue](#) \*opq, int [param\\_t](#)[3], int delay\_slot)
- void [gen\\_lf\\_madd\\_s](#) (struct [op\\_queue](#) \*opq, int [param\\_t](#)[3], int delay\_slot)
- void [gen\\_lf\\_mul\\_s](#) (struct [op\\_queue](#) \*opq, int [param\\_t](#)[3], int delay\_slot)
- void [gen\\_lf\\_rem\\_s](#) (struct [op\\_queue](#) \*opq, int [param\\_t](#)[3], int delay\_slot)
- void [gen\\_lf\\_sfeq\\_s](#) (struct [op\\_queue](#) \*opq, int [param\\_t](#)[3], int delay\_slot)
- void [gen\\_lf\\_sfge\\_s](#) (struct [op\\_queue](#) \*opq, int [param\\_t](#)[3], int delay\_slot)
- void [gen\\_lf\\_sfgt\\_s](#) (struct [op\\_queue](#) \*opq, int [param\\_t](#)[3], int delay\_slot)
- void [gen\\_lf\\_sfle\\_s](#) (struct [op\\_queue](#) \*opq, int [param\\_t](#)[3], int delay\_slot)
- void [gen\\_lf\\_sflt\\_s](#) (struct [op\\_queue](#) \*opq, int [param\\_t](#)[3], int delay\_slot)
- void [gen\\_lf\\_sfne\\_s](#) (struct [op\\_queue](#) \*opq, int [param\\_t](#)[3], int delay\_slot)
- void [gen\\_lf\\_sub\\_s](#) (struct [op\\_queue](#) \*opq, int [param\\_t](#)[3], int delay\_slot)

## Variables

- [uorreg\\_t \\_\\_op\\_param1](#)
- [uorreg\\_t \\_\\_op\\_param2](#)
- [uorreg\\_t \\_\\_op\\_param3](#)
- [int do\\_stats](#)
- [static int sigsegv\\_state = 0](#)
- [static void \\* sigsegv\\_addr = NULL](#)
- [static const generic\\_gen\\_op set\\_pc\\_delay\\_gpr \[32\]](#)



### 6.32.1 Define Documentation

- 6.32.1.1 `#define OPS_ENLARGE_BY 5`
- 6.32.1.2 `#define RECED_PAGE_ENLARGE_BY 51200`
- 6.32.1.3 `#define T_NONE (-1)`
- 6.32.1.4 `#define TFLAG_DST 2`
- 6.32.1.5 `#define TFLAG_SAVED 4`
- 6.32.1.6 `#define TFLAG_SOURCED 8`
- 6.32.1.7 `#define TFLAG_SRC 1`

### 6.32.2 Typedef Documentation

- 6.32.2.1 `typedef void(* generic_gen_op)(struct op_queue *opq, int end)`
- 6.32.2.2 `typedef void(* imm_gen_op)(struct op_queue *opq, int end, uorreg_t imm)`

### 6.32.3 Function Documentation

- 6.32.3.1 `void add_to_op_params (struct op_queue * opq, int end, unsigned long param)`
- 6.32.3.2 `void add_to_opq (struct op_queue * opq, int end, int op)`
- 6.32.3.3 `DEF_1T_OP (imm_gen_op, l_sfne_imm_t_table, gen_op_sfne_imm)`
- 6.32.3.4 `DEF_1T_OP (generic_gen_op, l_sfne_null_t_table, gen_op_sfne_null)`
- 6.32.3.5 `DEF_1T_OP (imm_gen_op, l_sftu_imm_t_table, gen_op_sftu_imm)`
- 6.32.3.6 `DEF_1T_OP (imm_gen_op, l_sfts_imm_t_table, gen_op_sfts_imm)`
- 6.32.3.7 `DEF_1T_OP (imm_gen_op, l_sfleu_imm_t_table, gen_op_sfleu_imm)`
- 6.32.3.8 `DEF_1T_OP (imm_gen_op, l_sfles_imm_t_table, gen_op_sfles_imm)`
- 6.32.3.9 `DEF_1T_OP (imm_gen_op, l_sfgtu_imm_t_table, gen_op_sfgtu_imm)`
- 6.32.3.10 `DEF_1T_OP (generic_gen_op, l_sftu_null_t_table, gen_op_sftu_null)`
- 6.32.3.11 `DEF_1T_OP (generic_gen_op, l_sfgtu_null_t_table, gen_op_sfgtu_null)`
- 6.32.3.12 `DEF_1T_OP (imm_gen_op, l_sfgts_imm_t_table, gen_op_sfgts_imm)`
- 6.32.3.13 `DEF_1T_OP (generic_gen_op, l_sfts_null_t_table, gen_op_sfts_null)`
- 6.32.3.14 `DEF_1T_OP (generic_gen_op, l_sfgts_null_t_table, gen_op_sfgts_null)`
- 6.32.3.15 `DEF_1T_OP (imm_gen_op, l_sfgeu_imm_t_table, gen_op_sfgeu_imm)`
- 6.32.3.16 `DEF_1T_OP (generic_gen_op, l_sfne_null_t_table, gen_op_sfne_null)`
- 6.32.3.17 `DEF_1T_OP (generic_gen_op, l_sfgeu_null_t_table, gen_op_sfgeu_null)`
- 6.32.3.18 `DEF_1T_OP (imm_gen_op, l_sfges_imm_t_table, gen_op_sfges_imm)`
- 6.32.3.19 `DEF_1T_OP (generic_gen_op, l_sfges_null_t_table, gen_op_sfges_null)`



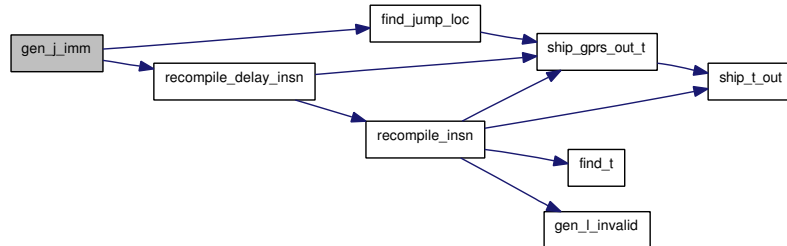




**6.32.3.107** `static int find_t (struct op_queue * opq, unsigned int reg)` [static]

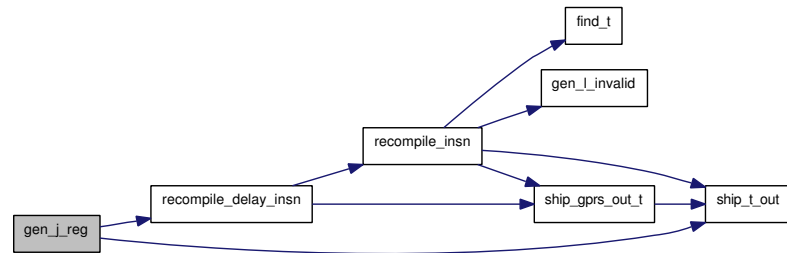
**6.32.3.108** `static void gen_j_imm (struct op_queue * opq, oraddr_t off)` [static]

Here is the call graph for this function:



**6.32.3.109** `static void gen_j_reg (struct op_queue * opq, unsigned int gpr)` [static]

Here is the call graph for this function:



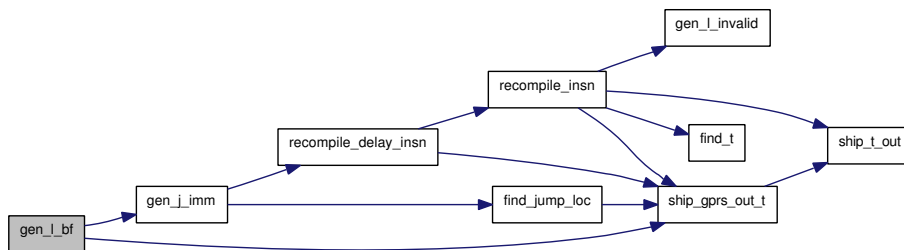
**6.32.3.110** `void gen_l_add (struct op_queue * opq, int param_t[3], int delay_slot)`

**6.32.3.111** `void gen_l_addc (struct op_queue * opq, int param_t[3], int delay_slot)`

**6.32.3.112** `void gen_l_and (struct op_queue * opq, int param_t[3], int delay_slot)`

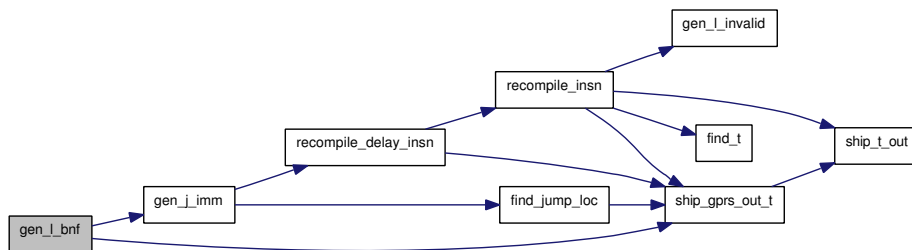
**6.32.3.113** `void gen_l_bf (struct op_queue * opq, int param_t[3], int delay_slot)`

Here is the call graph for this function:



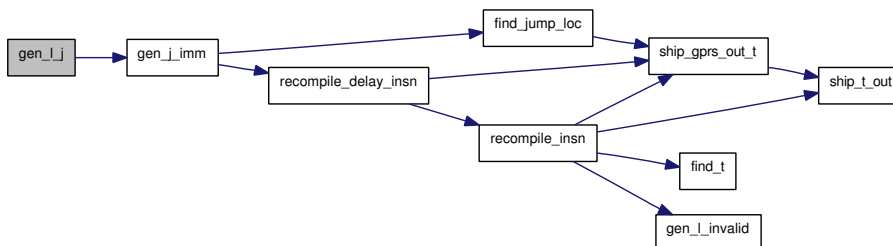
6.32.3.114 void `gen_l_bnf` (`struct op_queue * opq`, `int param_t[3]`, `int delay_slot`)

Here is the call graph for this function:



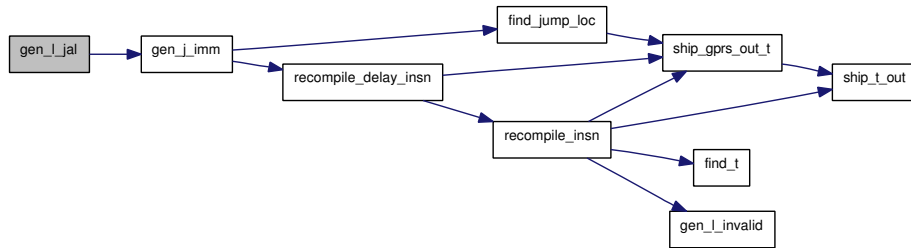
- 6.32.3.115 void `gen_l_cmov` (`struct op_queue * opq`, `int param_t[3]`, `int delay_slot`)
- 6.32.3.116 void `gen_l_cust1` (`struct op_queue * opq`, `int param_t[3]`, `int delay_slot`)
- 6.32.3.117 void `gen_l_cust2` (`struct op_queue * opq`, `int param_t[3]`, `int delay_slot`)
- 6.32.3.118 void `gen_l_cust3` (`struct op_queue * opq`, `int param_t[3]`, `int delay_slot`)
- 6.32.3.119 void `gen_l_cust4` (`struct op_queue * opq`, `int param_t[3]`, `int delay_slot`)
- 6.32.3.120 void `gen_l_cust5` (`struct op_queue * opq`, `int param_t[3]`, `int delay_slot`)
- 6.32.3.121 void `gen_l_cust6` (`struct op_queue * opq`, `int param_t[3]`, `int delay_slot`)
- 6.32.3.122 void `gen_l_cust7` (`struct op_queue * opq`, `int param_t[3]`, `int delay_slot`)
- 6.32.3.123 void `gen_l_cust8` (`struct op_queue * opq`, `int param_t[3]`, `int delay_slot`)
- 6.32.3.124 void `gen_l_div` (`struct op_queue * opq`, `int param_t[3]`, `int delay_slot`)
- 6.32.3.125 void `gen_l_divu` (`struct op_queue * opq`, `int param_t[3]`, `int delay_slot`)
- 6.32.3.126 void `gen_l_extbs` (`struct op_queue * opq`, `int param_t[3]`, `int delay_slot`)
- 6.32.3.127 void `gen_l_extbz` (`struct op_queue * opq`, `int param_t[3]`, `int delay_slot`)
- 6.32.3.128 void `gen_l_exths` (`struct op_queue * opq`, `int param_t[3]`, `int delay_slot`)
- 6.32.3.129 void `gen_l_exthz` (`struct op_queue * opq`, `int param_t[3]`, `int delay_slot`)
- 6.32.3.130 void `gen_l_extws` (`struct op_queue * opq`, `int param_t[3]`, `int delay_slot`)
- 6.32.3.131 void `gen_l_extwz` (`struct op_queue * opq`, `int param_t[3]`, `int delay_slot`)
- 6.32.3.132 void `gen_l_ff1` (`struct op_queue * opq`, `int param_t[3]`, `int delay_slot`)
- 6.32.3.133 void `gen_l_invalid` (`struct op_queue * opq`, `int param_t[3]`, `int delay_slot`)
- 6.32.3.134 void `gen_l_j` (`struct op_queue * opq`, `int param_t[3]`, `int delay_slot`)

Here is the call graph for this function:

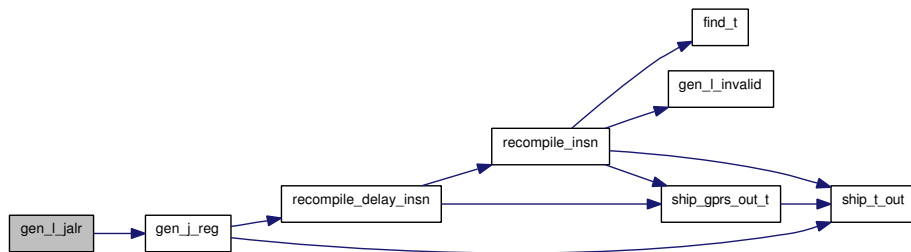


**6.32.3.135 void gen\_l\_jal (struct op\_queue \* opq, int param\_t[3], int delay\_slot)**

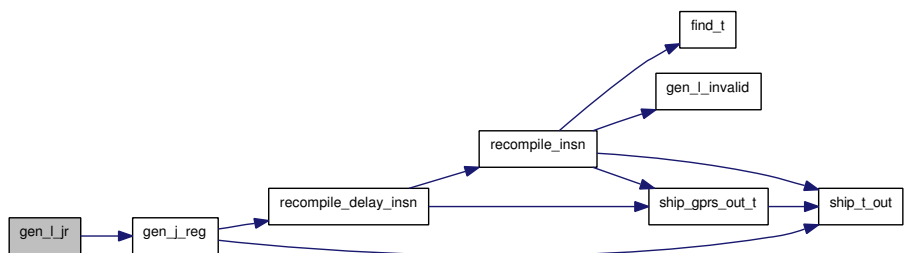
Here is the call graph for this function:

**6.32.3.136 void gen\_l\_jalr (struct op\_queue \* opq, int param\_t[3], int delay\_slot)**

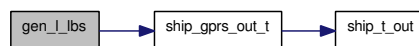
Here is the call graph for this function:

**6.32.3.137 void gen\_l\_jr (struct op\_queue \* opq, int param\_t[3], int delay\_slot)**

Here is the call graph for this function:

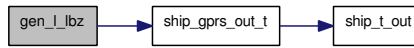
**6.32.3.138 void gen\_l\_lbs (struct op\_queue \* opq, int param\_t[3], int delay\_slot)**

Here is the call graph for this function:

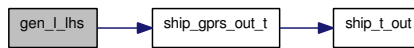


**6.32.3.139 void gen\_l\_lbz (struct op\_queue \* opq, int param\_t[3], int delay\_slot)**

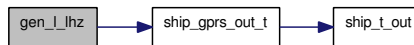
Here is the call graph for this function:

**6.32.3.140 void gen\_l\_lhs (struct op\_queue \* opq, int param\_t[3], int delay\_slot)**

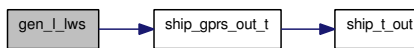
Here is the call graph for this function:

**6.32.3.141 void gen\_l\_lhz (struct op\_queue \* opq, int param\_t[3], int delay\_slot)**

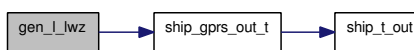
Here is the call graph for this function:

**6.32.3.142 void gen\_l\_lws (struct op\_queue \* opq, int param\_t[3], int delay\_slot)**

Here is the call graph for this function:

**6.32.3.143 void gen\_l\_lwz (struct op\_queue \* opq, int param\_t[3], int delay\_slot)**

Here is the call graph for this function:



6.32.3.144 void `gen_l_mac` (`struct op_queue * opq`, `int param_t[3]`, `int delay_slot`)

6.32.3.145 void `gen_l_macrc` (`struct op_queue * opq`, `int param_t[3]`, `int delay_slot`)

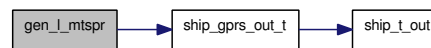
6.32.3.146 void `gen_l_mfspr` (`struct op_queue * opq`, `int param_t[3]`, `int delay_slot`)

6.32.3.147 void `gen_l_movhi` (`struct op_queue * opq`, `int param_t[3]`, `int delay_slot`)

6.32.3.148 void `gen_l_msb` (`struct op_queue * opq`, `int param_t[3]`, `int delay_slot`)

6.32.3.149 void `gen_l_mtspr` (`struct op_queue * opq`, `int param_t[3]`, `int delay_slot`)

Here is the call graph for this function:

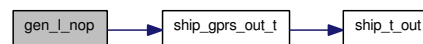


6.32.3.150 void `gen_l_mul` (`struct op_queue * opq`, `int param_t[3]`, `int delay_slot`)

6.32.3.151 void `gen_l_mulu` (`struct op_queue * opq`, `int param_t[3]`, `int delay_slot`)

6.32.3.152 void `gen_l_nop` (`struct op_queue * opq`, `int param_t[3]`, `int delay_slot`)

Here is the call graph for this function:

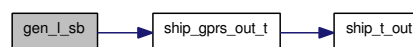


6.32.3.153 void `gen_l_or` (`struct op_queue * opq`, `int param_t[3]`, `int delay_slot`)

6.32.3.154 void `gen_l_rfe` (`struct op_queue * opq`, `int param_t[3]`, `int delay_slot`)

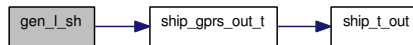
6.32.3.155 void `gen_l_sb` (`struct op_queue * opq`, `int param_t[3]`, `int delay_slot`)

Here is the call graph for this function:



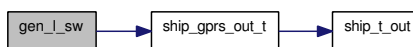
- 6.32.3.156 void gen\_l\_sfeq (struct op\_queue \* opq, int param\_t[3], int delay\_slot)
- 6.32.3.157 void gen\_l\_sfges (struct op\_queue \* opq, int param\_t[3], int delay\_slot)
- 6.32.3.158 void gen\_l\_sfgeu (struct op\_queue \* opq, int param\_t[3], int delay\_slot)
- 6.32.3.159 void gen\_l\_sfgts (struct op\_queue \* opq, int param\_t[3], int delay\_slot)
- 6.32.3.160 void gen\_l\_sfgtu (struct op\_queue \* opq, int param\_t[3], int delay\_slot)
- 6.32.3.161 void gen\_l\_sfles (struct op\_queue \* opq, int param\_t[3], int delay\_slot)
- 6.32.3.162 void gen\_l\_sfleu (struct op\_queue \* opq, int param\_t[3], int delay\_slot)
- 6.32.3.163 void gen\_l\_sfits (struct op\_queue \* opq, int param\_t[3], int delay\_slot)
- 6.32.3.164 void gen\_l\_sftu (struct op\_queue \* opq, int param\_t[3], int delay\_slot)
- 6.32.3.165 void gen\_l\_sfne (struct op\_queue \* opq, int param\_t[3], int delay\_slot)
- 6.32.3.166 void gen\_l\_sh (struct op\_queue \* opq, int param\_t[3], int delay\_slot)

Here is the call graph for this function:



- 6.32.3.167 void gen\_l\_sll (struct op\_queue \* opq, int param\_t[3], int delay\_slot)
- 6.32.3.168 void gen\_l\_sra (struct op\_queue \* opq, int param\_t[3], int delay\_slot)
- 6.32.3.169 void gen\_l\_srl (struct op\_queue \* opq, int param\_t[3], int delay\_slot)
- 6.32.3.170 void gen\_l\_sub (struct op\_queue \* opq, int param\_t[3], int delay\_slot)
- 6.32.3.171 void gen\_l\_sw (struct op\_queue \* opq, int param\_t[3], int delay\_slot)

Here is the call graph for this function:





**6.32.3.172** void `gen_l_sys` (struct `op_queue` \* *opq*, int *param\_t*[3], int *delay\_slot*)

**6.32.3.173** void `gen_l_trap` (struct `op_queue` \* *opq*, int *param\_t*[3], int *delay\_slot*)

**6.32.3.174** void `gen_l_xor` (struct `op_queue` \* *opq*, int *param\_t*[3], int *delay\_slot*)

**6.32.3.175** void `gen_lf_add_s` (struct `op_queue` \* *opq*, int *param\_t*[3], int *delay\_slot*)

Here is the call graph for this function:



**6.32.3.176** void `gen_lf_div_s` (struct `op_queue` \* *opq*, int *param\_t*[3], int *delay\_slot*)

Here is the call graph for this function:



**6.32.3.177** void `gen_lf_ftoi_s` (struct `op_queue` \* *opq*, int *param\_t*[3], int *delay\_slot*)

Here is the call graph for this function:



**6.32.3.178** void `gen_lf_itof_s` (struct `op_queue` \* *opq*, int *param\_t*[3], int *delay\_slot*)

Here is the call graph for this function:



**6.32.3.179** void `gen_lf_madd_s` (struct `op_queue` \* *opq*, int *param\_t*[3], int *delay\_slot*)

Here is the call graph for this function:



**6.32.3.180 void gen\_lf\_mul\_s (struct op\_queue \* opq, int param\_t[3], int delay\_slot)**

Here is the call graph for this function:

**6.32.3.181 void gen\_lf\_rem\_s (struct op\_queue \* opq, int param\_t[3], int delay\_slot)**

Here is the call graph for this function:

**6.32.3.182 void gen\_lf\_sfeq\_s (struct op\_queue \* opq, int param\_t[3], int delay\_slot)**

Here is the call graph for this function:

**6.32.3.183 void gen\_lf\_sfge\_s (struct op\_queue \* opq, int param\_t[3], int delay\_slot)**

Here is the call graph for this function:

**6.32.3.184 void gen\_lf\_sfgt\_s (struct op\_queue \* opq, int param\_t[3], int delay\_slot)**

Here is the call graph for this function:

**6.32.3.185 void gen\_lf\_sfle\_s (struct op\_queue \* opq, int param\_t[3], int delay\_slot)**

Here is the call graph for this function:



**6.32.3.186** void `gen_lf_sflt_s` (`struct op_queue * opq`, `int param_t[3]`, `int delay_slot`)

Here is the call graph for this function:



**6.32.3.187** void `gen_lf_sfne_s` (`struct op_queue * opq`, `int param_t[3]`, `int delay_slot`)

Here is the call graph for this function:



**6.32.3.188** void `gen_lf_sub_s` (`struct op_queue * opq`, `int param_t[3]`, `int delay_slot`)

Here is the call graph for this function:



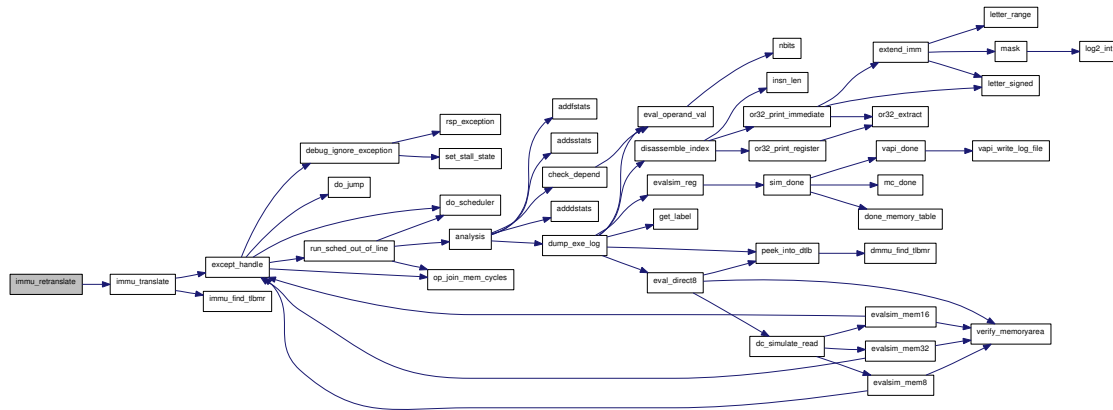
**6.32.3.189** static void `gen_op_mark_loc` (`struct op_queue * opq`, `int end`) [static]

Here is the call graph for this function:



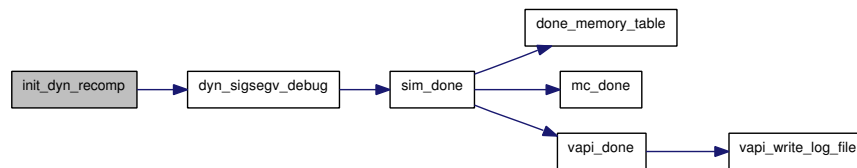
### 6.32.3.190 static void immu\_retranslate (void \* *dat*) [static]

Here is the call graph for this function:



### 6.32.3.191 void init\_dyn\_recomp (void)

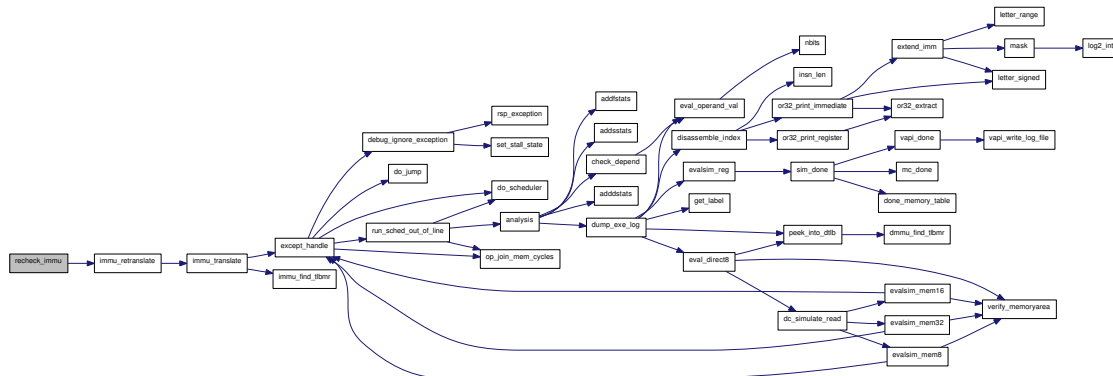
Here is the call graph for this function:



### 6.32.3.192 struct dyn\_page\* new\_dp (oraddr\_t *page*) [read]

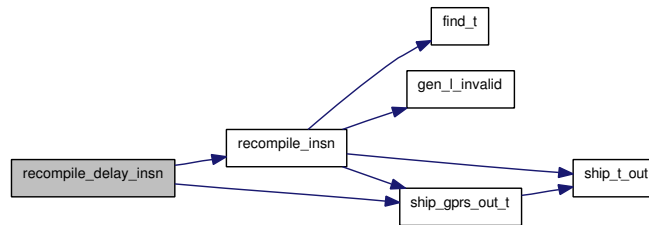
### 6.32.3.193 void recheck\_immu (int *got\_en\_dis*)

Here is the call graph for this function:

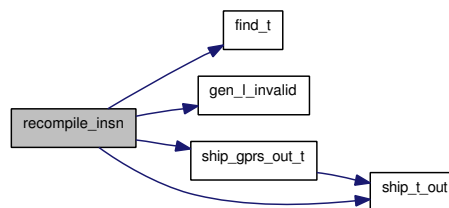


**6.32.3.194** static void recompile\_delay\_insn (struct op\_queue \* opq) [static]

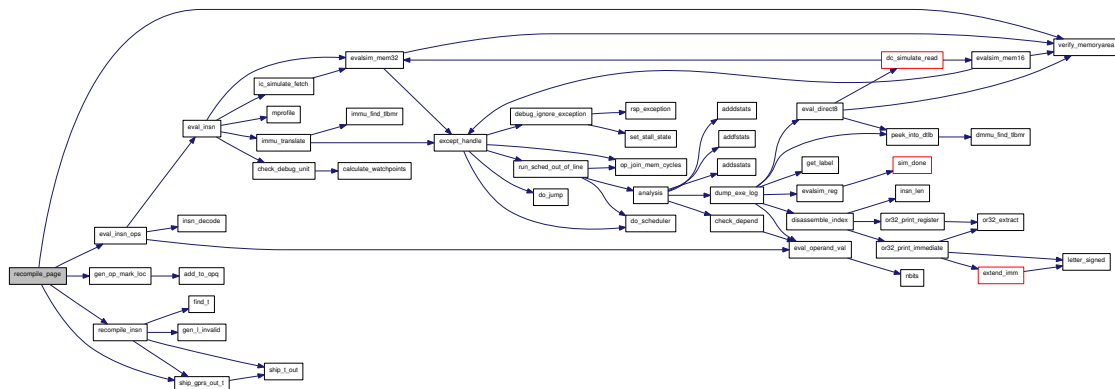
Here is the call graph for this function:

**6.32.3.195** static void recompile\_insn (struct op\_queue \* opq, int delay\_insn) [static]

Here is the call graph for this function:

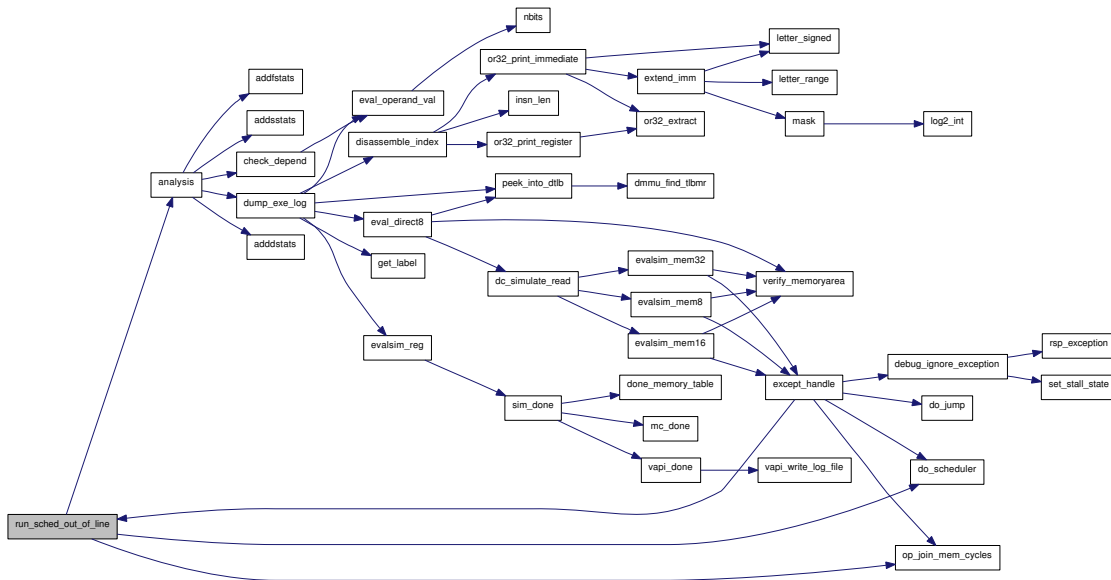
**6.32.3.196** void recompile\_page (struct dyn\_page \* dyn)

Here is the call graph for this function:



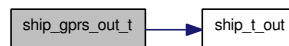
### 6.32.3.197 void run\_sched\_out\_of\_line (void)

Here is the call graph for this function:



### 6.32.3.198 static void ship\_gprs\_out\_t (struct op\_queue \* opq) [static]

Here is the call graph for this function:



### 6.32.3.199 static void ship\_t\_out (struct op\_queue \* opq, unsigned int t) [static]

## 6.32.4 Variable Documentation

### 6.32.4.1 uorreg\_t \_\_op\_param1

### 6.32.4.2 uorreg\_t \_\_op\_param2

### 6.32.4.3 uorreg\_t \_\_op\_param3

### 6.32.4.4 int do\_stats

Whether we are doing statistical analysis. Globally available

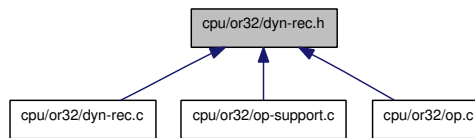
**6.32.4.5** `const generic_gen_op set_pc_delay_gpr[32]` [static]

**6.32.4.6** `void* sigsegv_addr = NULL` [static]

**6.32.4.7** `int sigsegv_state = 0` [static]

## 6.33 cpu/or32/dyn-rec.h File Reference

This graph shows which files directly or indirectly include this file:



### Data Structures

- struct [dyn\\_page](#)

### Defines

- #define [IMMU\\_GOT\\_ENABLED](#) 1
- #define [IMMU\\_GOT\\_DISABLED](#) 2
- #define [xglue\(x, y\)](#) x ## y
- #define [glue\(x, y\)](#) xglue(x, y)

### Typedefs

- typedef void(\* [gen\\_code\\_ent](#) )(void)

### Functions

- void [recompile\\_page](#) (struct [dyn\\_page](#) \*dyn)
- struct [dyn\\_page](#) \* [new\\_dp](#) (oraddr\_t page)
- void [add\\_to\\_opq](#) (struct [op\\_queue](#) \*opq, int end, int op)
- void [add\\_to\\_op\\_params](#) (struct [op\\_queue](#) \*opq, int end, unsigned long param)
- void \* [enough\\_host\\_page](#) (struct [dyn\\_page](#) \*dp, void \*cur, unsigned int \*len, unsigned int amount)
- void [init\\_dyn\\_recomp](#) (void)
- void [run\\_sched\\_out\\_of\\_line](#) (void)
- void [recheck\\_immu](#) (int got\_en\_dis)
- void [enter\\_dyn\\_code](#) (oraddr\_t addr, struct [dyn\\_page](#) \*dp)
- void [dyn\\_checkwrite](#) (oraddr\_t addr)
- void [dyn\\_main](#) (void)

### Variables

- void \* [rec\\_stack\\_base](#)



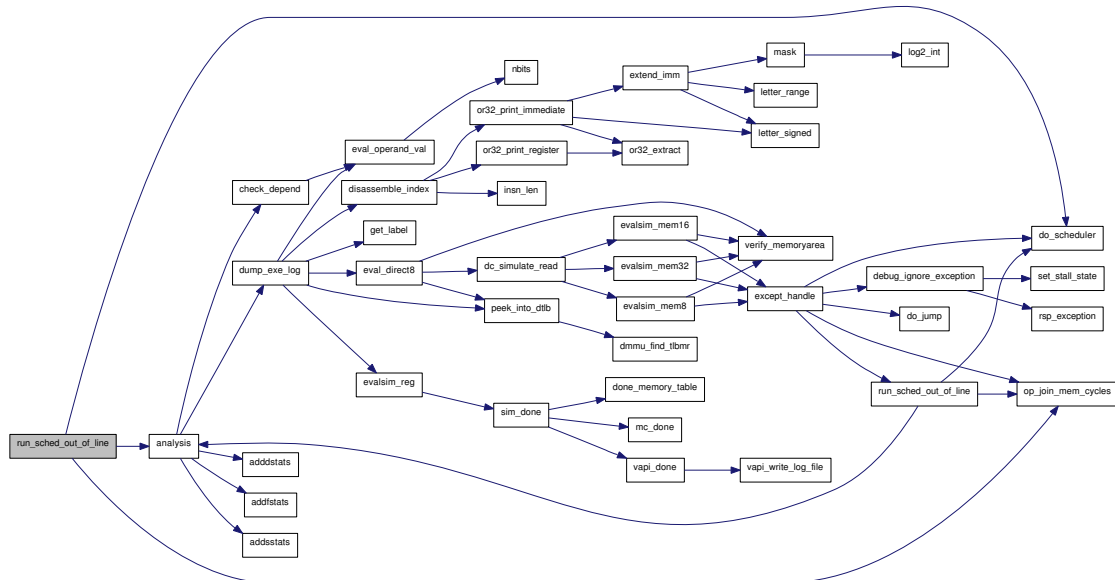






### 6.33.3.11 void run\_sched\_out\_of\_line (void)

Here is the call graph for this function:



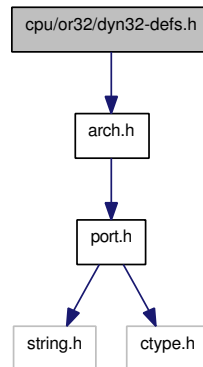
## 6.33.4 Variable Documentation

### 6.33.4.1 void\* rec\_stack\_base

## 6.34 cpu/or32/dyn32-defs.h File Reference

```
#include "arch.h"
```

Include dependency graph for dyn32-defs.h:



### Data Structures

- struct [op\\_queue](#)

### Functions

- void `gen_l_add` PARAMS ((struct [op\\_queue](#) \*, int \*, int))
- void `l_none` (struct [op\\_queue](#) \*opq, int \*param\_t, int delay\_slot)

#### 6.34.1 Function Documentation

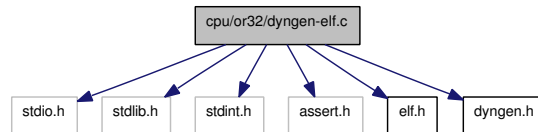
**6.34.1.1** void `l_none` (struct [op\\_queue](#) \* *opq*, int \* *param\_t*, int *delay\_slot*)

**6.34.1.2** void `gen_lf_sub_s` PARAMS ((struct [op\\_queue](#) \*, int \*, int))

## 6.35 cpu/or32/dyngen-elf.c File Reference

```
#include <stdio.h>
#include <stdlib.h>
#include <stdint.h>
#include <assert.h>
#include <elf.h>
#include "dyngen.h"
```

Include dependency graph for dyngen-elf.c:



### Data Structures

- struct [elf\\_obj](#)

### Functions

- void \* [elf\\_open\\_obj](#) (const char \*file)
- void [elf\\_close\\_obj](#) (void \*e\_obj)
- static [Elf32\\_Sym](#) \* [elf\\_find\\_func](#) (struct [elf\\_obj](#) \*obj, unsigned int func)
- char \* [elf\\_get\\_func\\_name](#) (void \*e\_obj, unsigned int func)
- unsigned int [elf\\_get\\_func\\_len](#) (void \*e\_obj, unsigned int func)
- void \* [elf\\_get\\_func\\_start](#) (void \*e\_obj, unsigned int func)
- static char \* [elf\\_get\\_sym\\_name](#) (struct [elf\\_obj](#) \*obj, unsigned int sym)
- int [elf\\_get\\_func\\_reloc](#) (void \*e\_obj, unsigned int func, unsigned int relocn, struct [reloc](#) \*reloc)

### Variables

- struct [bff](#) [bffb](#)

### 6.35.1 Function Documentation

**6.35.1.1** void [elf\\_close\\_obj](#) (void \* *e\_obj*)

**6.35.1.2** static [Elf32\\_Sym](#)\* [elf\\_find\\_func](#) (struct [elf\\_obj](#) \* *obj*, unsigned int *func*) [static]

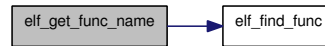
**6.35.1.3** unsigned int [elf\\_get\\_func\\_len](#) (void \* *e\_obj*, unsigned int *func*)

Here is the call graph for this function:

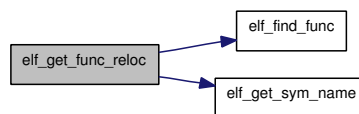


**6.35.1.4** `char* elf_get_func_name (void * e_obj, unsigned int func)`

Here is the call graph for this function:

**6.35.1.5** `int elf_get_func_reloc (void * e_obj, unsigned int func, unsigned int relocn, struct reloc * reloc)`

Here is the call graph for this function:

**6.35.1.6** `void* elf_get_func_start (void * e_obj, unsigned int func)`

Here is the call graph for this function:

**6.35.1.7** `static char* elf_get_sym_name (struct elf_obj * obj, unsigned int sym)` [static]**6.35.1.8** `void* elf_open_obj (const char * file)`**6.35.2** Variable Documentation**6.35.2.1** struct bff bffs

**Initial value:**

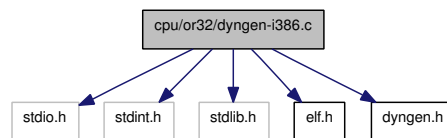
```

{
  elf_open_obj,
  elf_close_obj,
  elf_get_func_name,
  elf_get_func_start,
  elf_get_func_len,
  elf_get_func_reloc }
  
```

## 6.36 cpu/or32/dyngen-i386.c File Reference

```
#include <stdio.h>
#include <stdint.h>
#include <stdlib.h>
#include <elf.h>
#include "dyngen.h"
```

Include dependency graph for dyngen-i386.c:



### Defines

- #define [RET\\_OPCODE](#) 0xc3

### Functions

- unsigned int [i386\\_get\\_real\\_func\\_len](#) (void \*f\_start, unsigned int f\_len, char \*name)
- void [i386\\_gen\\_reloc](#) (FILE \*f, struct [reloc](#) \*reloc, unsigned int param)
- void [i386\\_gen\\_func\\_reloc](#) (FILE \*f, struct [reloc](#) \*reloc)

### Variables

- struct [archf](#) archfs

#### 6.36.1 Define Documentation

##### 6.36.1.1 #define RET\_OPCODE 0xc3

#### 6.36.2 Function Documentation

##### 6.36.2.1 void i386\_gen\_func\_reloc (FILE \*f, struct reloc \*reloc)

##### 6.36.2.2 void i386\_gen\_reloc (FILE \*f, struct reloc \*reloc, unsigned int param)

##### 6.36.2.3 unsigned int i386\_get\_real\_func\_len (void \*f\_start, unsigned int f\_len, char \*name)

#### 6.36.3 Variable Documentation

##### 6.36.3.1 struct archf archfs

Initial value:



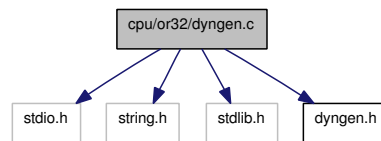
---

```
{
  i386_get_real_func_len,
  i386_gen_reloc,
  i386_gen_func_reloc
}
```

## 6.37 cpu/or32/dyngen.c File Reference

```
#include <stdio.h>
#include <string.h>
#include <stdlib.h>
#include "dyngen.h"
```

Include dependency graph for dyngen.c:



### Defines

- #define `OP_FUNC_PREFIX` "op\_"
- #define `OP_FUNC_PARAM_PREFIX` "\_\_op\_param"
- #define `MAX_PARAMS` (3 + 1)

### Functions

- static void `gen_func_proto` (FILE \*f, const char \*name, int \*params)
- int `main` (int argc, char \*\*argv)

### Variables

- static const char \* `c_file_head`
- static const char \* `gen_code_proto`
- static const char \* `c_sw_file_head`
- static const char \* `c_sw_file_tail`
- static const char \* `c_rel_file_head`
- static const char \* `c_rel_file_tail`

## 6.37.1 Define Documentation

**6.37.1.1** `#define MAX_PARAMS (3 + 1)`

**6.37.1.2** `#define OP_FUNC_PARAM_PREFIX "__op_param"`

**6.37.1.3** `#define OP_FUNC_PREFIX "op_"`

## 6.37.2 Function Documentation

**6.37.2.1** `static void gen_func_proto (FILE *f, const char *name, int *params)` [static]

**6.37.2.2** `int main (int argc, char **argv)`

Here is the call graph for this function:



## 6.37.3 Variable Documentation

**6.37.3.1** `const char* c_file_head` [static]

**Initial value:**

```

#include "config.h"\n"
\n"
#include <inttypes.h>\n"
\n"
#include "arch.h"\n"
#include "opcode/or32.h"\n"
#include "spr-defs.h"\n"
#include "i386-regs.h"\n"
#include "abstract.h"\n"
\n"
#include "dyn-rec.h"\n"
#include "%s"\n"
\n"
  
```

**6.37.3.2** `const char* c_rel_file_head` [static]

**6.37.3.3** `const char* c_rel_file_tail` [static]

**Initial value:**

```

    }\n"
  }\n"
  opq = opq->next;\n"
}\n"
}
  
```

**6.37.3.4** `const char* c_sw_file_head` [static]

**6.37.3.5** `const char* c_sw_file_tail` [static]

**Initial value:**

```
"    }\n"
"  }\n"
"  opq = opq->next;\n"
"  pc += 4;\n"
"  }\n"
"\n"
"  dp->host_len = host_cur - dp->host_page;\n"
"  dp->host_page = realloc(dp->host_page, dp->host_len);\n"
"}\n"
```

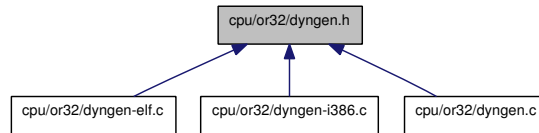
**6.37.3.6** `const char* gen_code_proto` [static]

**Initial value:**

```
"void gen_code(struct op_queue *opq, struct dyn_page *dp);\n"
"void patch_relocs(struct op_queue *opq, void *host_page);\n"
"\n"
```

## 6.38 cpu/or32/dyngen.h File Reference

This graph shows which files directly or indirectly include this file:



### Data Structures

- struct [reloc](#)
- struct [bff](#)
- struct [archf](#)

### Variables

- struct [bff](#) [bffs](#)
- struct [archf](#) [archfs](#)

### 6.38.1 Variable Documentation

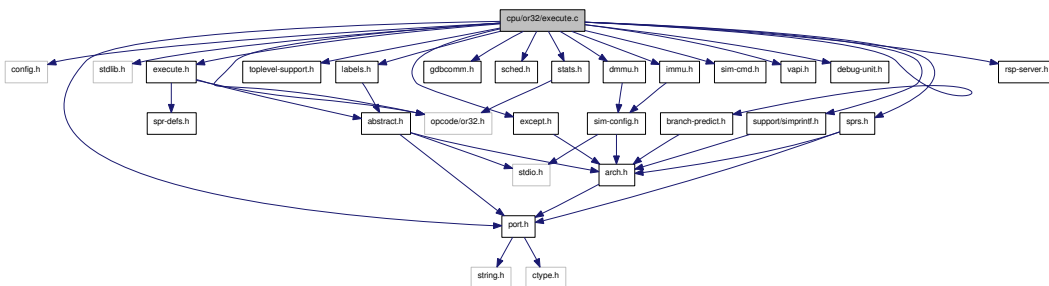
#### 6.38.1.1 struct archf archfs

#### 6.38.1.2 struct bff bffs

## 6.39 cpu/or32/execute.c File Reference

```
#include "config.h"
#include "port.h"
#include <stdlib.h>
#include "execute.h"
#include "toplevel-support.h"
#include "except.h"
#include "labels.h"
#include "gdbcomm.h"
#include "sched.h"
#include "stats.h"
#include "opcode/or32.h"
#include "dmmu.h"
#include "immu.h"
#include "sim-cmd.h"
#include "vapi.h"
#include "debug-unit.h"
#include "branch-predict.h"
#include "support/simprintf.h"
#include "sprs.h"
#include "rsp-server.h"
```

Include dependency graph for execute.c:



## Functions

- static void [decode\\_execute](#) (struct [iqueue\\_entry](#) \*current)
- [uorreg\\_t evalsim\\_reg](#) (unsigned int regno)
- void [setsim\\_reg](#) (unsigned int regno, [uorreg\\_t](#) value)
- [uorreg\\_t eval\\_operand\\_val](#) (uint32\_t insn, struct insn\_op\_struct \*opd)
- static int [check\\_depend](#) (struct [iqueue\\_entry](#) \*prev, struct [iqueue\\_entry](#) \*next)
- static int [fetch](#) ()

- static void `update_pc` ()
- void `analysis` (struct `iqueue_entry` \**current*)
- static void `sbuf_store` (int cyc)
- static void `sbuf_load` ()
- void `dump_exe_log` ()
- void `dumpreg` ()
- static void `decode_execute_wrapper` (struct `iqueue_entry` \**current*)
- void `cpu_reset` ()
- int `cpu_clock` ()
- void `l_invalid` ()
- void `exec_main` ()

## Variables

- struct `cpu_state` `cpu_state`
- `oraddr_t` `pcnext`
- int `sbuf_wait_cyc` = 0
- int `sbuf_total_cyc` = 0
- int `do_stats` = 0
- struct `hist_exec` \* `hist_exec_tail` = NULL
- static int `multissue` [20]
- static int `issued_per_cycle` = 4
- static int `sbuf_head` = 0
- static int `sbuf_tail` = 0
- static int `sbuf_count` = 0
- static int `sbuf_buf` [MAX\_SBUF\_LEN] = { 0 }
- static int `sbuf_prev_cycles` = 0
- static int `breakpoint`
- static int `next_delay_insn`

### 6.39.1 Function Documentation

#### 6.39.1.1 void `analysis` (struct `iqueue_entry` \* *current*)

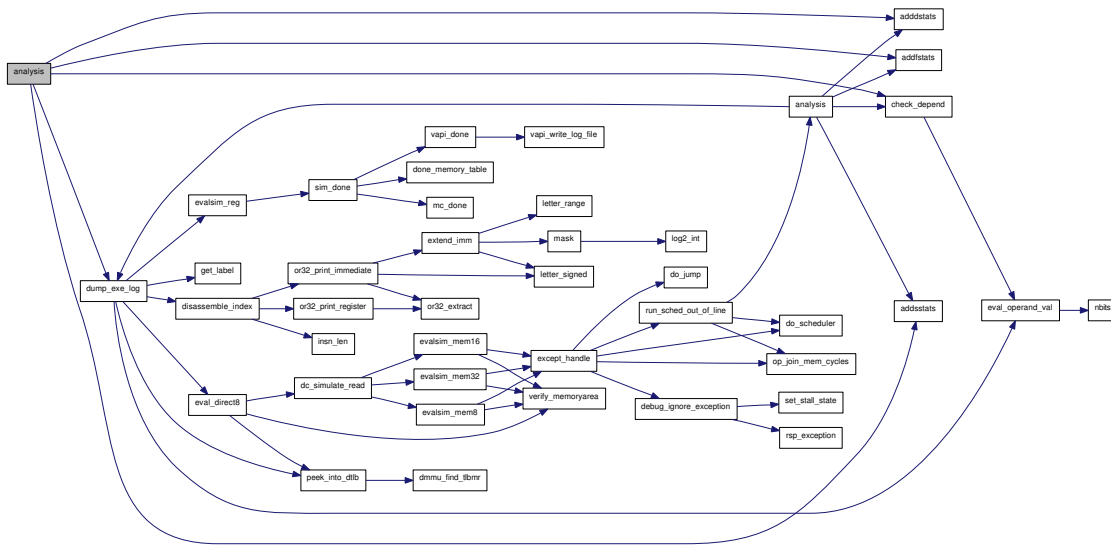
Perform analysis of the instruction being executed

This could be static for SIMPLE\_EXECUTION, but made global for general use.

#### Parameters:

← *current* The instruction being executed

Here is the call graph for this function:



### 6.39.1.2 static int check\_depend (struct iqueue\_entry \* prev, struct iqueue\_entry \* next) [static]

Does source operand depend on computation of dest operand?

Cycle t Cycle t+1 dst: irrelevant src: immediate always 0 dst: reg1 direct src: reg2 direct 0 if reg1 != reg2  
dst: reg1 disp src: reg2 direct always 0 dst: reg1 direct src: reg2 disp 0 if reg1 != reg2 dst: reg1 disp src:  
reg2 disp always 1 (store must finish before load) dst: flag src: flag always 1

#### Parameters:

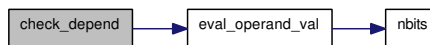
← *prev* Previous instruction

← *next* Next instruction

#### Returns:

Non-zero if yes.

Here is the call graph for this function:



### 6.39.1.3 int cpu\_clock ()

Simulates one CPU clock cycle

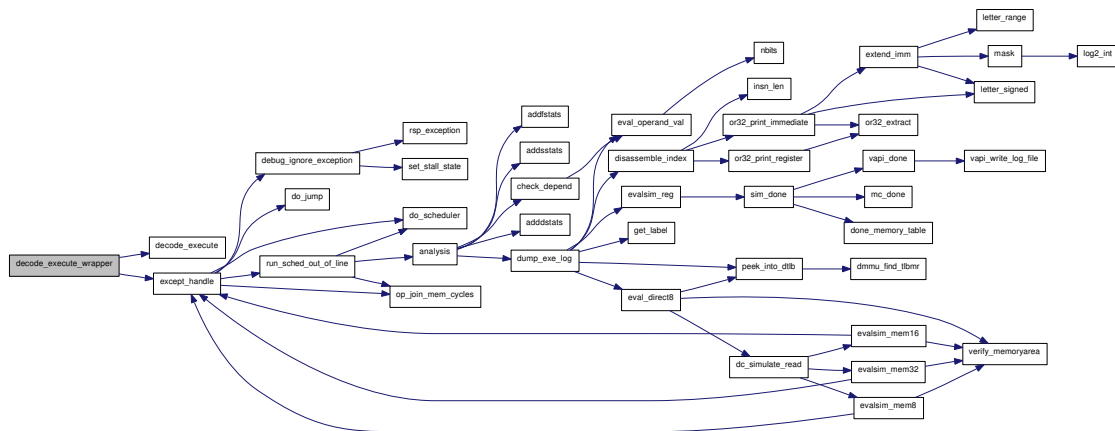
#### Returns:

non-zero if a breakpoint is hit, zero otherwise.





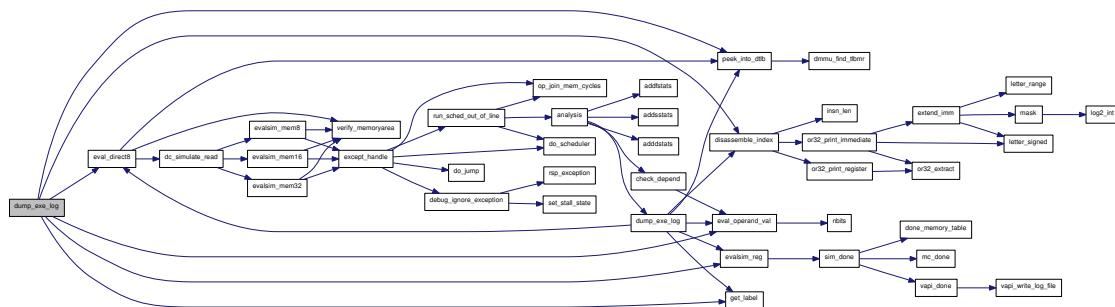
Here is the call graph for this function:



### 6.39.1.7 void dump\_exe\_log ()

Outputs disassembled instruction

Here is the call graph for this function:



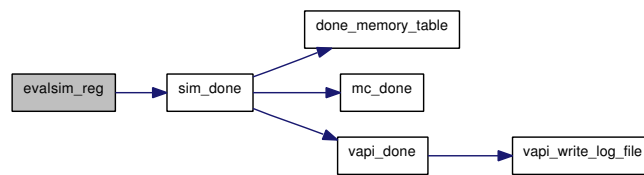
### 6.39.1.8 void dumpreg ()

Dump registers

Supports the CLI 'r' and 't' commands



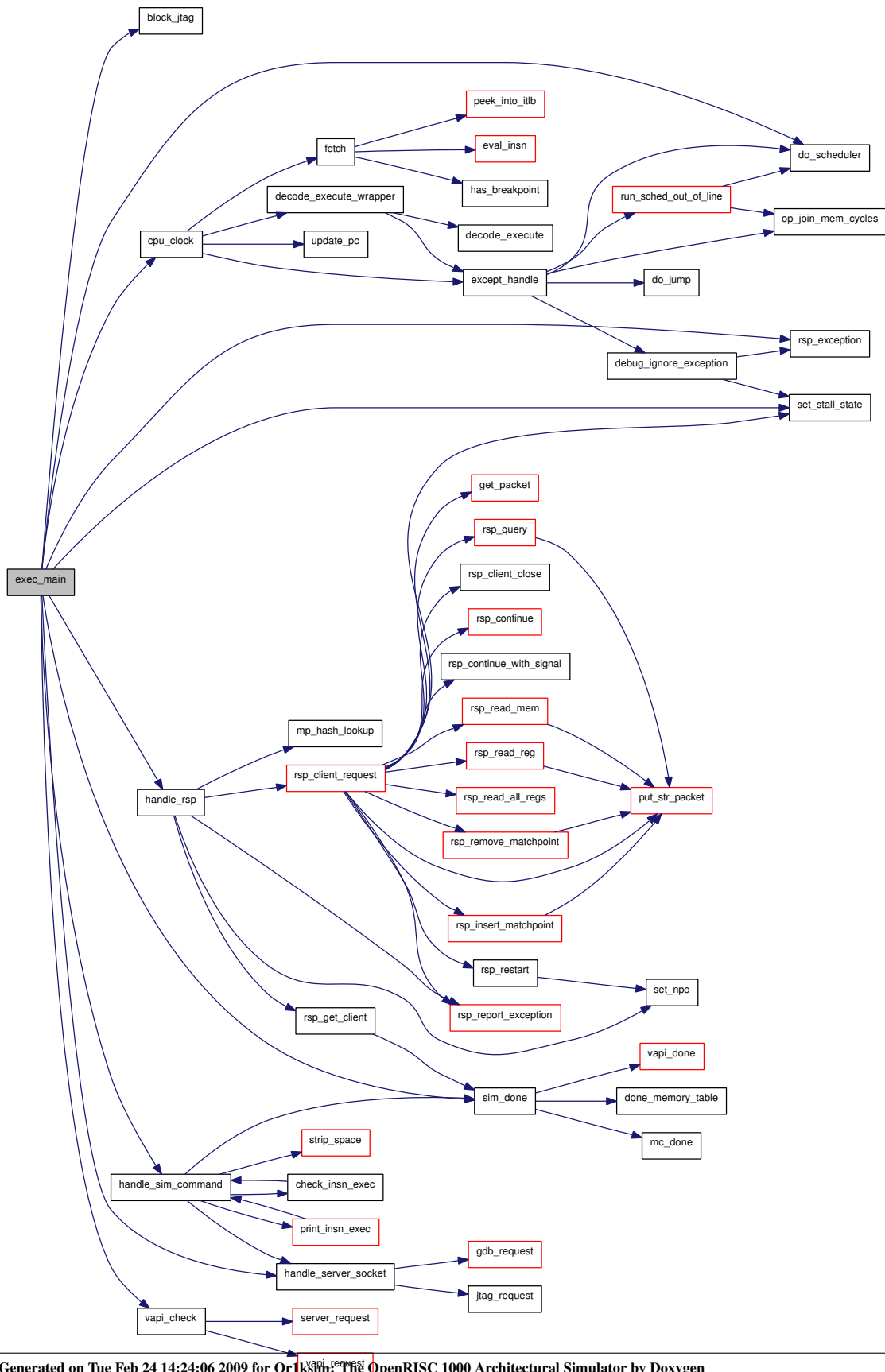
Here is the call graph for this function:



### 6.39.1.11 void exec\_main ()

The main execution loop

Here is the call graph for this function:



**6.39.1.12 static int fetch () [static]**

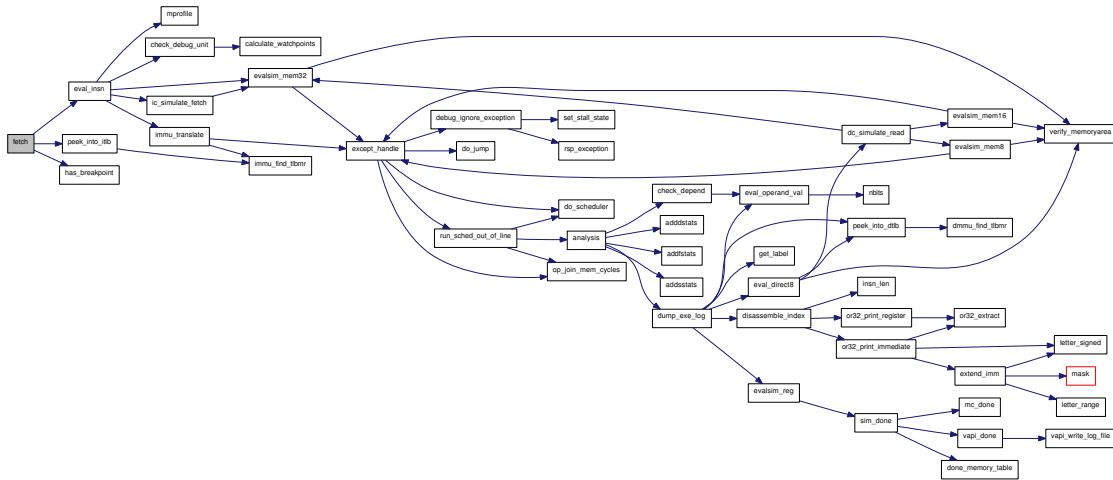
Should instruction NOT be executed?

Modified by CZ 26/05/01 for new mode execution.

**Returns:**

Nonzero if instruction should NOT be executed

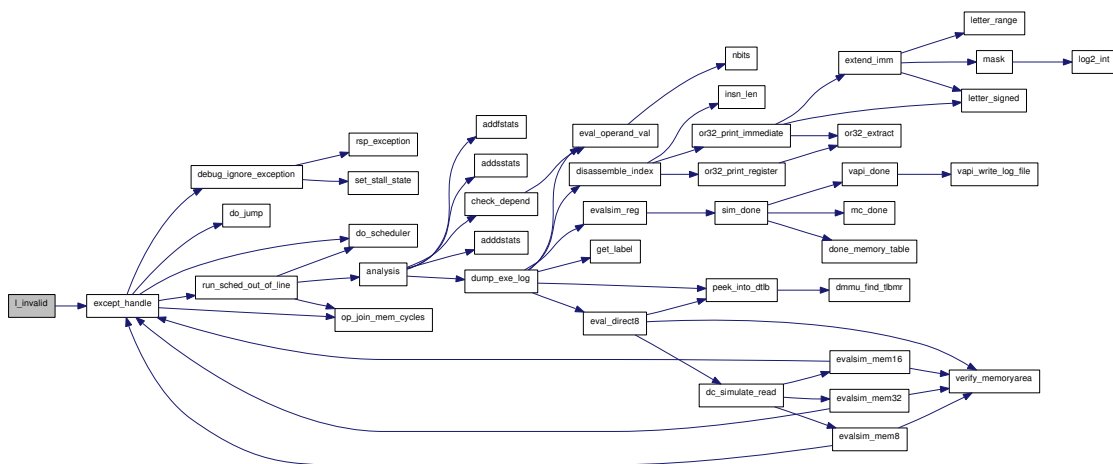
Here is the call graph for this function:



**6.39.1.13 void L\_invalid ()**

If decoding cannot be found, call this function

Here is the call graph for this function:



**6.39.1.14 static void sbuf\_load () [static]**

Store buffer analysis for load instructions

Previous stores should commit, before any load

**6.39.1.15 static void sbuf\_store (int cyc) [static]**

Store buffer analysis for store instructions

Stores are accumulated and committed when IO is idle

**Parameters:**

← *cyc* Number of cycles being analysed

**6.39.1.16 void setsim\_reg (unsigned int regno, uorreg\_t value)**

Set a specific register with value

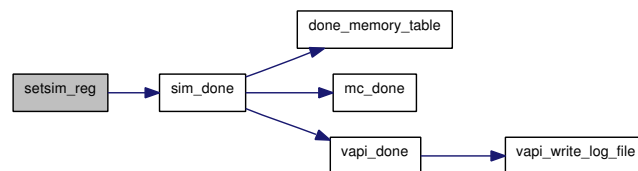
Implementation specific. Abort if we are given a duff register.

**Parameters:**

← *regno* The register of interest

← *value* The value to be set

Here is the call graph for this function:

**6.39.1.17 static void update\_pc () [static]**

This code actually updates the PC value

**6.39.2 Variable Documentation****6.39.2.1 int breakpoint [static]****6.39.2.2 struct cpu\_state cpu\_state**

Current cpu state. Globally available.

**6.39.2.3 int do\_stats = 0**

Whether we are doing statistical analysis. Globally available

**6.39.2.4 struct hist\_exec\* hist\_exec\_tail = NULL**

History of execution. Globally available

**6.39.2.5 int issued\_per\_cycle = 4 [static]****6.39.2.6 int multissue[20] [static]****6.39.2.7 int next\_delay\_insn [static]****6.39.2.8 oraddr\_t pcnext**

Temporary program counter. Globally available

**6.39.2.9 int sbuf\_buf[MAX\_SBUF\_LEN] = { 0 } [static]****6.39.2.10 int sbuf\_count = 0 [static]****6.39.2.11 int sbuf\_head = 0 [static]****6.39.2.12 int sbuf\_prev\_cycles = 0 [static]****6.39.2.13 int sbuf\_tail = 0 [static]****6.39.2.14 int sbuf\_total\_cyc = 0**

Number of total store cycles. Globally available

**6.39.2.15 int sbuf\_wait\_cyc = 0**

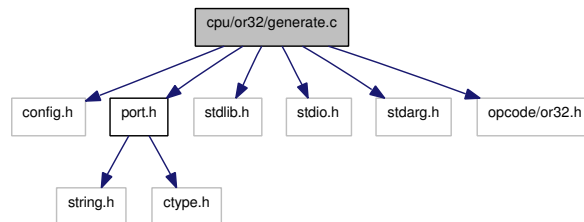
Num cycles waiting for stores to complete. Globally available



## 6.40 cpu/or32/generate.c File Reference

```
#include "config.h"
#include "port.h"
#include <stdlib.h>
#include <stdio.h>
#include <stdarg.h>
#include "opcode/or32.h"
```

Include dependency graph for generate.c:



### Functions

- static int [shift\\_fprintf](#) (int level, FILE \*f, const char \*fmt,...)
- int [output\\_function](#) (FILE \*fo, const char \*func\_name, int level)
- static int [gen\\_eval\\_operands](#) (FILE \*fo, int insn\_index, int level)
- static int [output\\_call](#) (FILE \*fo, int index, int level)
- static int [generate\\_header](#) (FILE \*fo)
- static int [generate\\_footer](#) (FILE \*fo)
- static int [generate\\_body](#) (FILE \*fo, unsigned long \*a, unsigned long cur\_mask, int level)
- int [main](#) (int argc, char \*argv[])

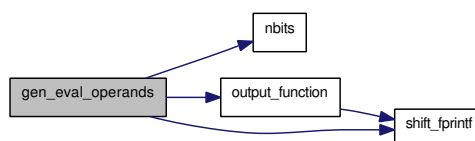
### Variables

- static char \* [in\\_file](#)
- static char \* [out\\_file](#)
- static int [write\\_to\\_reg](#)
- static int [out\\_lines](#) = 0

### 6.40.1 Function Documentation

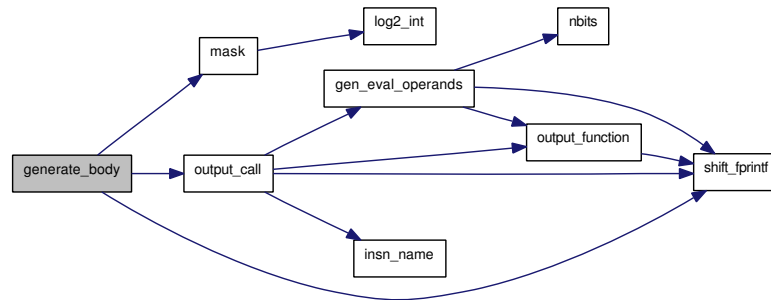
#### 6.40.1.1 static int [gen\\_eval\\_operands](#) (FILE \*fo, int *insn\_index*, int *level*) [static]

Here is the call graph for this function:



### 6.40.1.2 static int generate\_body (FILE \*fo, unsigned long \*a, unsigned long cur\_mask, int level) [static]

Here is the call graph for this function:

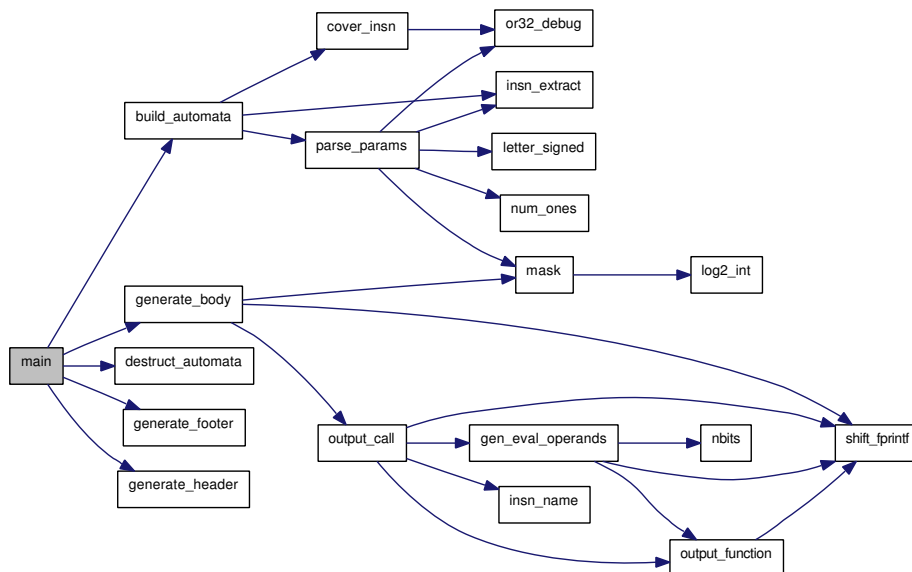


### 6.40.1.3 static int generate\_footer (FILE \*fo) [static]

### 6.40.1.4 static int generate\_header (FILE \*fo) [static]

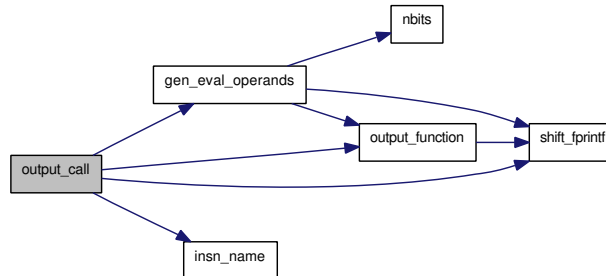
### 6.40.1.5 int main (int argc, char \*argv[ ])

Here is the call graph for this function:



**6.40.1.6** `static int output_call (FILE *fo, int index, int level)` [static]

Here is the call graph for this function:

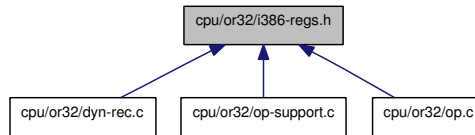
**6.40.1.7** `int output_function (FILE *fo, const char *func_name, int level)`

Here is the call graph for this function:

**6.40.1.8** `static int shift_fprintf (int level, FILE *f, const char *fmt, ...)` [static]**6.40.2** Variable Documentation**6.40.2.1** `char* in_file` [static]**6.40.2.2** `char* out_file` [static]**6.40.2.3** `int out_lines = 0` [static]**6.40.2.4** `int write_to_reg` [static]

## 6.41 cpu/or32/i386-regs.h File Reference

This graph shows which files directly or indirectly include this file:



### Defines

- #define `CPU_STATE_REG` "ebp"
- #define `T0_REG` "ebx"
- #define `T1_REG` "esi"
- #define `T2_REG` "edi"
- #define `NUM_T_REGS` 3

#### 6.41.1 Define Documentation

6.41.1.1 #define `CPU_STATE_REG` "ebp"

6.41.1.2 #define `NUM_T_REGS` 3

6.41.1.3 #define `T0_REG` "ebx"

6.41.1.4 #define `T1_REG` "esi"

6.41.1.5 #define `T2_REG` "edi"

## 6.42 cpu/or32/insnset.c File Reference

### Functions

- [INSTRUCTION \(l\\_add\)](#)
- [INSTRUCTION \(l\\_addc\)](#)
- [INSTRUCTION \(l\\_sw\)](#)
- [INSTRUCTION \(l\\_sb\)](#)
- [INSTRUCTION \(l\\_sh\)](#)
- [INSTRUCTION \(l\\_lwz\)](#)
- [INSTRUCTION \(l\\_lbs\)](#)
- [INSTRUCTION \(l\\_lbz\)](#)
- [INSTRUCTION \(l\\_lhs\)](#)
- [INSTRUCTION \(l\\_lhz\)](#)
- [INSTRUCTION \(l\\_movhi\)](#)
- [INSTRUCTION \(l\\_and\)](#)
- [INSTRUCTION \(l\\_or\)](#)
- [INSTRUCTION \(l\\_xor\)](#)
- [INSTRUCTION \(l\\_sub\)](#)
- [INSTRUCTION \(l\\_mul\)](#)
- [INSTRUCTION \(l\\_div\)](#)
- [INSTRUCTION \(l\\_divu\)](#)
- [INSTRUCTION \(l\\_sll\)](#)
- [INSTRUCTION \(l\\_sra\)](#)
- [INSTRUCTION \(l\\_srl\)](#)
- [INSTRUCTION \(l\\_bf\)](#)
- [INSTRUCTION \(l\\_bnf\)](#)
- [INSTRUCTION \(l\\_j\)](#)
- [INSTRUCTION \(l\\_jal\)](#)
- [INSTRUCTION \(l\\_jalr\)](#)
- [INSTRUCTION \(l\\_jr\)](#)
- [INSTRUCTION \(l\\_rfe\)](#)
- [INSTRUCTION \(l\\_nop\)](#)
- [INSTRUCTION \(l\\_sfeq\)](#)
- [INSTRUCTION \(l\\_sfne\)](#)
- [INSTRUCTION \(l\\_sfgts\)](#)
- [INSTRUCTION \(l\\_sfges\)](#)
- [INSTRUCTION \(l\\_sflts\)](#)
- [INSTRUCTION \(l\\_sfles\)](#)
- [INSTRUCTION \(l\\_sfgtu\)](#)
- [INSTRUCTION \(l\\_sfgeu\)](#)
- [INSTRUCTION \(l\\_sfltu\)](#)
- [INSTRUCTION \(l\\_sfleu\)](#)
- [INSTRUCTION \(l\\_extbs\)](#)
- [INSTRUCTION \(l\\_extbz\)](#)
- [INSTRUCTION \(l\\_exths\)](#)
- [INSTRUCTION \(l\\_exthz\)](#)
- [INSTRUCTION \(l\\_extws\)](#)
- [INSTRUCTION \(l\\_extwz\)](#)
- [INSTRUCTION \(l\\_mtspr\)](#)

- [INSTRUCTION](#) (l\_mfspr)
- [INSTRUCTION](#) (l\_sys)
- [INSTRUCTION](#) (l\_trap)
- [INSTRUCTION](#) (l\_mac)
- [INSTRUCTION](#) (l\_msb)
- [INSTRUCTION](#) (l\_macrc)
- [INSTRUCTION](#) (l\_cmov)
- [INSTRUCTION](#) (l\_ff1)
- [INSTRUCTION](#) (lf\_add\_s)
- [INSTRUCTION](#) (lf\_div\_s)
- [INSTRUCTION](#) (lf\_ftoi\_s)
- [INSTRUCTION](#) (lf\_itof\_s)
- [INSTRUCTION](#) (lf\_madd\_s)
- [INSTRUCTION](#) (lf\_mul\_s)
- [INSTRUCTION](#) (lf\_rem\_s)
- [INSTRUCTION](#) (lf\_sfeq\_s)
- [INSTRUCTION](#) (lf\_sfge\_s)
- [INSTRUCTION](#) (lf\_sfgt\_s)
- [INSTRUCTION](#) (lf\_sfle\_s)
- [INSTRUCTION](#) (lf\_sflt\_s)
- [INSTRUCTION](#) (lf\_sfne\_s)
- [INSTRUCTION](#) (lf\_sub\_s)
- [INSTRUCTION](#) (l\_cust1)
- [INSTRUCTION](#) (l\_cust2)
- [INSTRUCTION](#) (l\_cust3)
- [INSTRUCTION](#) (l\_cust4)



## 6.42.1 Function Documentation

6.42.1.1 INSTRUCTION (l\_cust4)

6.42.1.2 INSTRUCTION (l\_cust3)

6.42.1.3 INSTRUCTION (l\_cust2)

6.42.1.4 INSTRUCTION (l\_cust1)

6.42.1.5 INSTRUCTION (lf\_sub\_s)

6.42.1.6 INSTRUCTION (lf\_sfne\_s)

6.42.1.7 INSTRUCTION (lf\_sflt\_s)

6.42.1.8 INSTRUCTION (lf\_sfle\_s)

6.42.1.9 INSTRUCTION (lf\_sfgt\_s)

6.42.1.10 INSTRUCTION (lf\_sfge\_s)

6.42.1.11 INSTRUCTION (lf\_sfeq\_s)

6.42.1.12 INSTRUCTION (lf\_rem\_s)

6.42.1.13 INSTRUCTION (lf\_mul\_s)

6.42.1.14 INSTRUCTION (lf\_madd\_s)

6.42.1.15 INSTRUCTION (lf\_itof\_s)

6.42.1.16 INSTRUCTION (lf\_ftoi\_s)

6.42.1.17 INSTRUCTION (lf\_div\_s)

6.42.1.18 INSTRUCTION (lf\_add\_s)

6.42.1.19 INSTRUCTION (l\_ff1)

6.42.1.20 INSTRUCTION (l\_cmov)

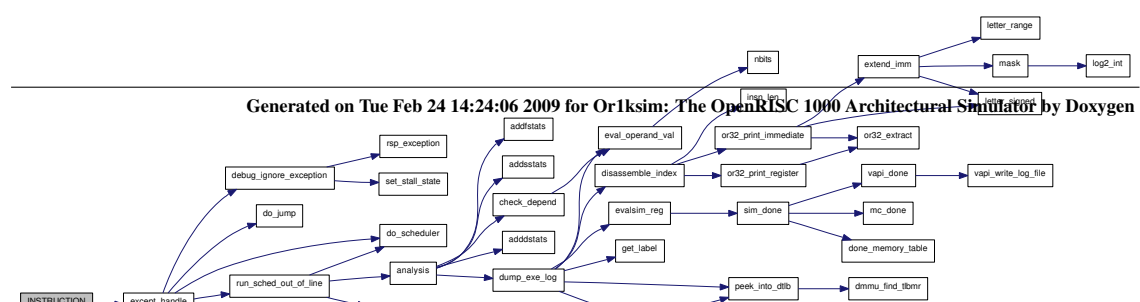
6.42.1.21 INSTRUCTION (l\_macrc)

6.42.1.22 INSTRUCTION (l\_msb)

6.42.1.23 INSTRUCTION (l\_mac)

6.42.1.24 INSTRUCTION (l\_trap)

Here is the call graph for this function:

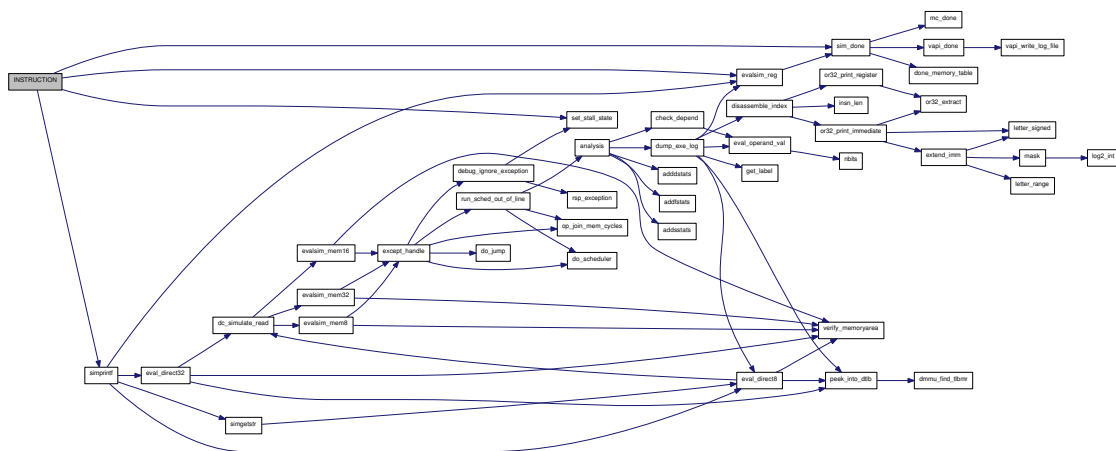






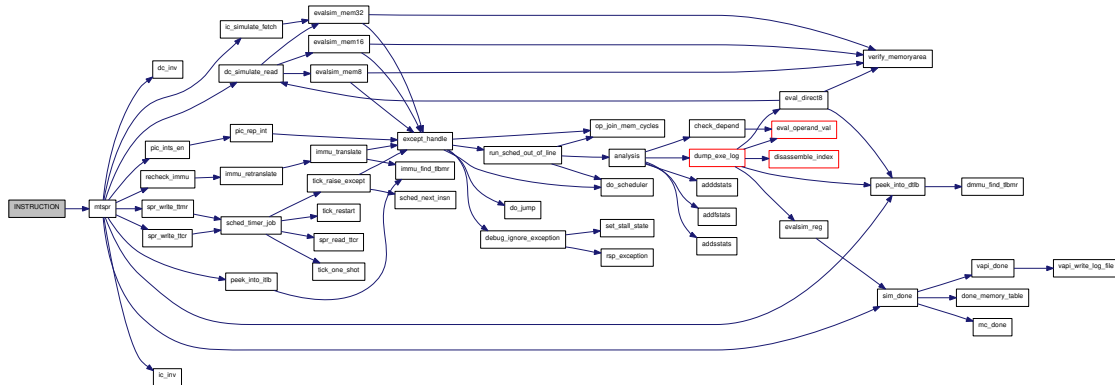
- 6.42.1.28 INSTRUCTION (l\_extwz)
- 6.42.1.29 INSTRUCTION (l\_extws)
- 6.42.1.30 INSTRUCTION (l\_exthz)
- 6.42.1.31 INSTRUCTION (l\_exths)
- 6.42.1.32 INSTRUCTION (l\_extbz)
- 6.42.1.33 INSTRUCTION (l\_extbs)
- 6.42.1.34 INSTRUCTION (l\_sfleu)
- 6.42.1.35 INSTRUCTION (l\_sftu)
- 6.42.1.36 INSTRUCTION (l\_sfgeu)
- 6.42.1.37 INSTRUCTION (l\_sfgtu)
- 6.42.1.38 INSTRUCTION (l\_sfles)
- 6.42.1.39 INSTRUCTION (l\_sfts)
- 6.42.1.40 INSTRUCTION (l\_sfges)
- 6.42.1.41 INSTRUCTION (l\_sfgts)
- 6.42.1.42 INSTRUCTION (l\_sfne)
- 6.42.1.43 INSTRUCTION (l\_sfeq)
- 6.42.1.44 INSTRUCTION (l\_nop)

Here is the call graph for this function:



6.42.1.45 INSTRUCTION (l\_rfe)

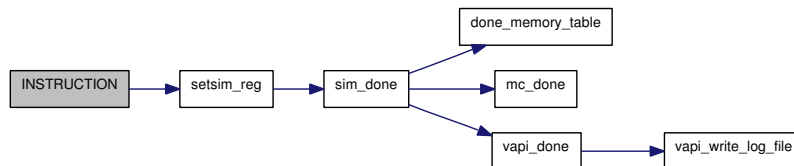
Here is the call graph for this function:



6.42.1.46 INSTRUCTION (l\_jr)

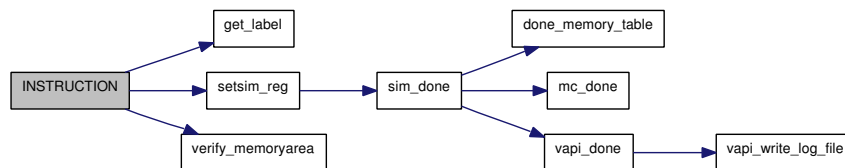
6.42.1.47 INSTRUCTION (l\_jalr)

Here is the call graph for this function:



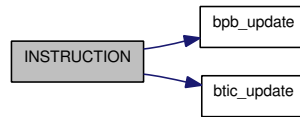
6.42.1.48 INSTRUCTION (l\_jal)

Here is the call graph for this function:

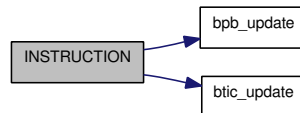


**6.42.1.49 INSTRUCTION (l\_j)****6.42.1.50 INSTRUCTION (l\_bnf)**

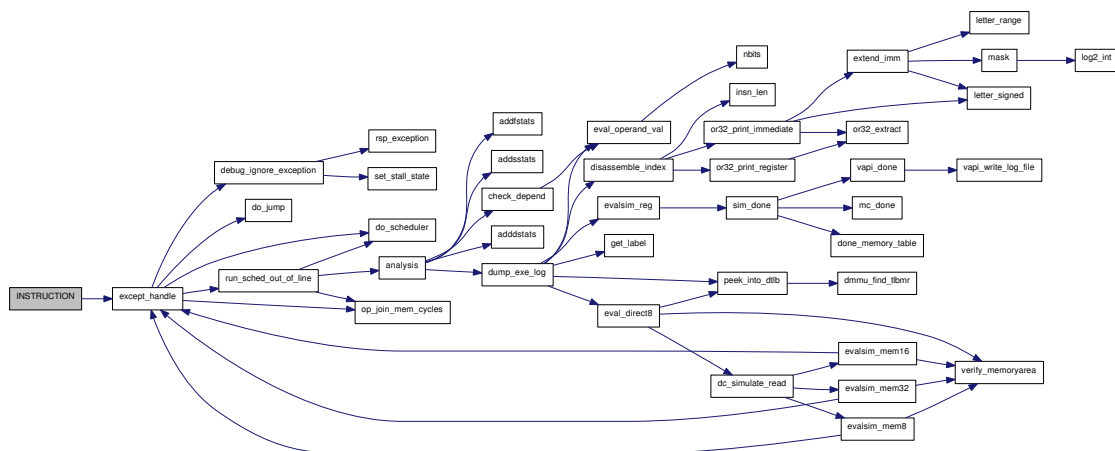
Here is the call graph for this function:

**6.42.1.51 INSTRUCTION (l\_bf)**

Here is the call graph for this function:

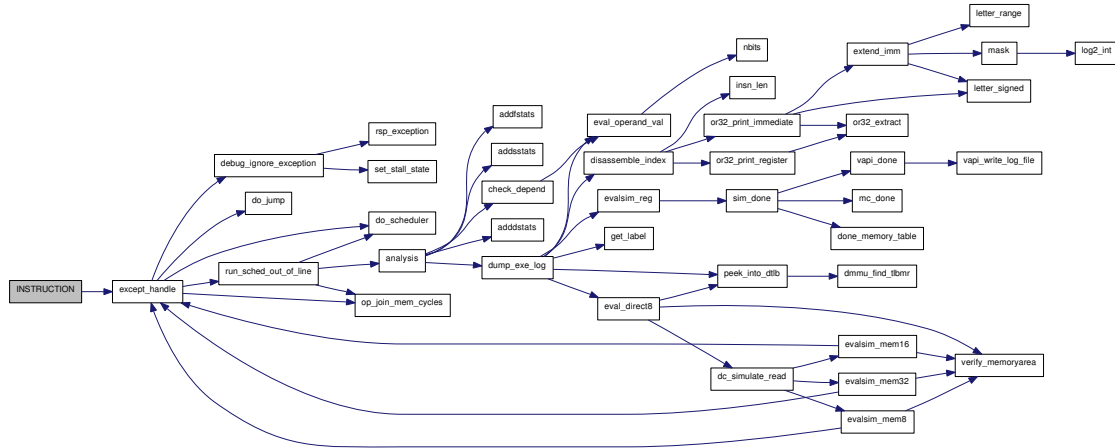
**6.42.1.52 INSTRUCTION (l\_sr1)****6.42.1.53 INSTRUCTION (l\_sra)****6.42.1.54 INSTRUCTION (l\_sl1)****6.42.1.55 INSTRUCTION (l\_divu)**

Here is the call graph for this function:



## 6.42.1.56 INSTRUCTION (l\_div)

Here is the call graph for this function:



## 6.42.1.57 INSTRUCTION (l\_mul)

## 6.42.1.58 INSTRUCTION (l\_sub)

## 6.42.1.59 INSTRUCTION (l\_xor)

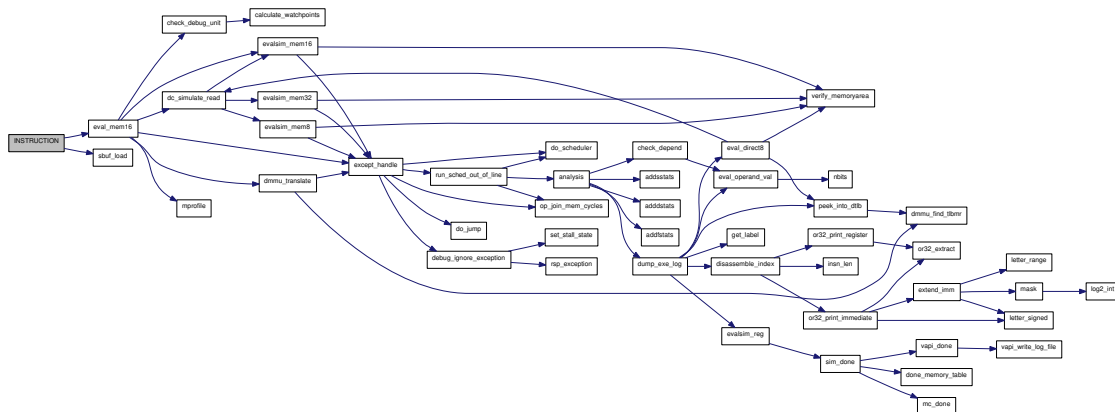
## 6.42.1.60 INSTRUCTION (l\_or)

## 6.42.1.61 INSTRUCTION (l\_and)

## 6.42.1.62 INSTRUCTION (l\_movhi)

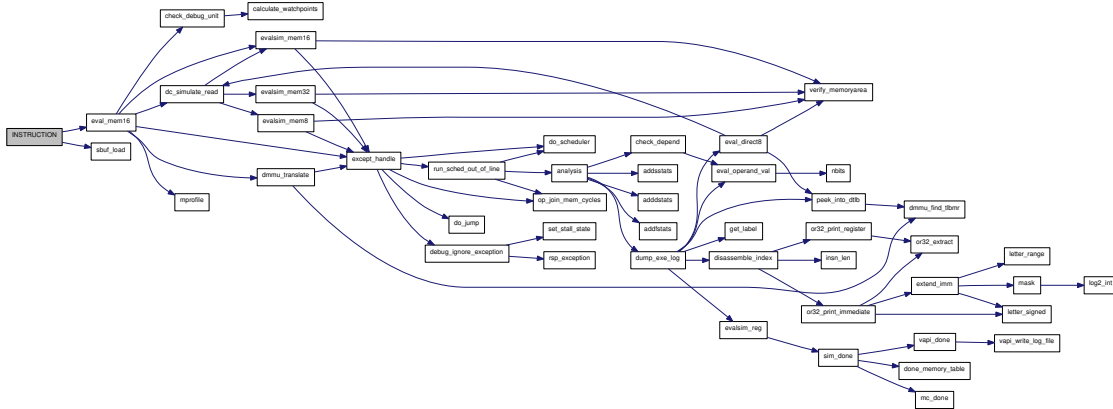
## 6.42.1.63 INSTRUCTION (l\_lhz)

Here is the call graph for this function:



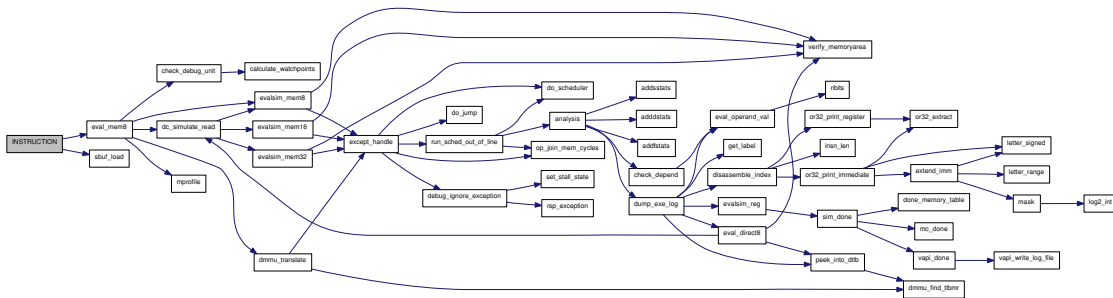
### 6.42.1.64 INSTRUCTION (l\_lhs)

Here is the call graph for this function:



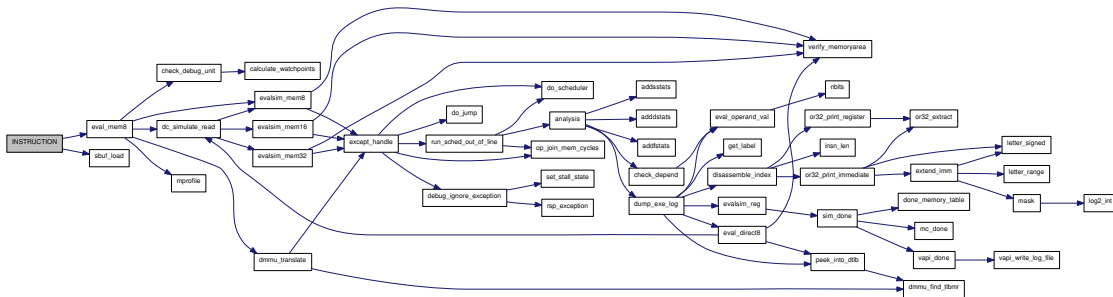
### 6.42.1.65 INSTRUCTION (l\_ibz)

Here is the call graph for this function:



### 6.42.1.66 INSTRUCTION (l\_lbs)

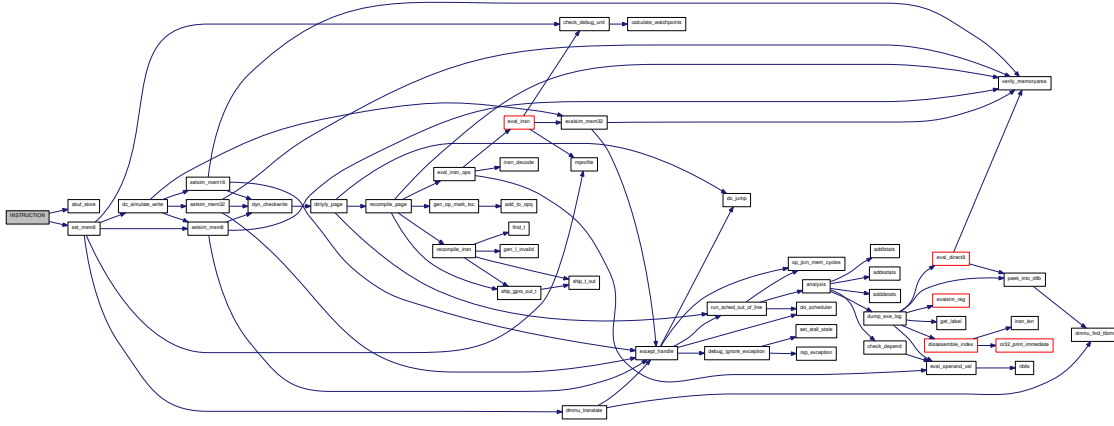
Here is the call graph for this function:





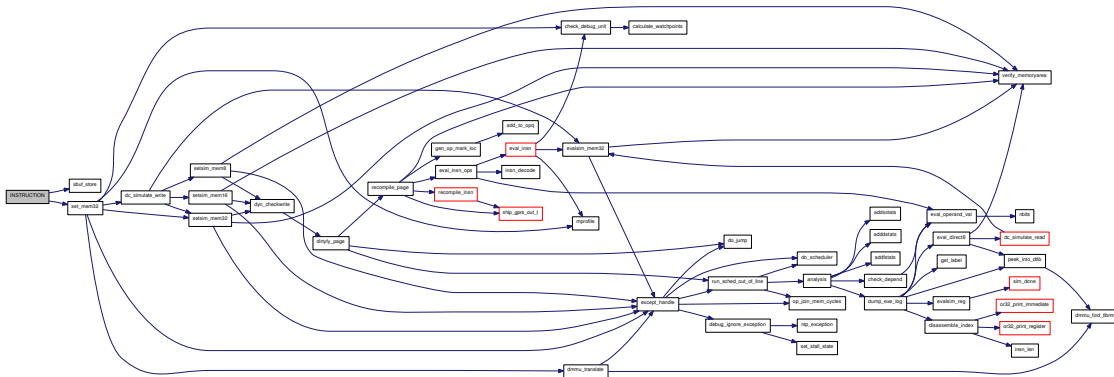
### 6.42.1.69 INSTRUCTION (l\_sb)

Here is the call graph for this function:



### 6.42.1.70 INSTRUCTION (l\_sw)

Here is the call graph for this function:



### 6.42.1.71 INSTRUCTION (l\_adde)

### 6.42.1.72 INSTRUCTION (l\_add)



## 6.43 cpu/or32/op-1t-op.h File Reference

### Functions

- `__or_dynop void glue (op_imm, T)(void)`
- `__or_dynop void glue (op_clear, T)(void)`
- `__or_dynop void glue (op_check_null_except_delay, T)(void)`
- `__or_dynop void glue (op_check_null_except, T)(void)`
- `__or_dynop void glue (op_calc_insn_ea, T)(void)`
- `__or_dynop void glue (op_macrc, T)(void)`
- `__or_dynop void glue (op_mac_imm, T)(void)`

### 6.43.1 Function Documentation

**6.43.1.1** `__or_dynop void glue (op_mac_imm, T)`

**6.43.1.2** `__or_dynop void glue (op_macrc, T)`

**6.43.1.3** `__or_dynop void glue (op_calc_insn_ea, T)`

**6.43.1.4** `__or_dynop void glue (op_check_null_except, T)`

Here is the call graph for this function:



**6.43.1.5** `__or_dynop void glue (op_check_null_except_delay, T)`

Here is the call graph for this function:

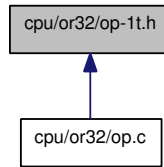


**6.43.1.6** `__or_dynop void glue (op_clear, T)`

**6.43.1.7** `__or_dynop void glue (op_imm, T)`

## 6.44 cpu/or32/op-1t.h File Reference

This graph shows which files directly or indirectly include this file:



### Defines

- #define [OP\\_1T](#)
- #define [T](#) glue(\_, T0)

### 6.44.1 Define Documentation

#### 6.44.1.1 #define OP\_1T

#### 6.44.1.2 #define T glue(\_, T0)

## 6.45 cpu/or32/op-2t-op.h File Reference

### Functions

- `__or_dynop void glue (op_move, T)(void)`
- `__or_dynop void glue (op_ff1, T)(void)`
- `__or_dynop void glue (op_neg, T)(void)`

#### 6.45.1 Function Documentation

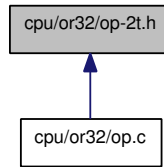
6.45.1.1 `__or_dynop void glue (op_neg, T)`

6.45.1.2 `__or_dynop void glue (op_ff1, T)`

6.45.1.3 `__or_dynop void glue (op_move, T)`

## 6.46 cpu/or32/op-2t.h File Reference

This graph shows which files directly or indirectly include this file:



### Defines

- #define [OP\\_2T](#)
- #define [T](#) glue(glue(glue(\_, T0), \_), T1)

### 6.46.1 Define Documentation

#### 6.46.1.1 #define OP\_2T

#### 6.46.1.2 #define T glue(glue(glue(\_, T0), \_), T1)

## 6.47 cpu/or32/op-3t-op.h File Reference

### Functions

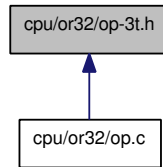
- `__or_dynop void glue (op_cmov, T)(void)`

#### 6.47.1 Function Documentation

##### 6.47.1.1 `__or_dynop void glue (op_cmov, T)`

## 6.48 cpu/or32/op-3t.h File Reference

This graph shows which files directly or indirectly include this file:



### Defines

- #define [OP\\_3T](#)
- #define [T](#) glue(glue(glue(glue(glue(\_, T0), \_), T1), \_), T2)

### 6.48.1 Define Documentation

#### 6.48.1.1 #define OP\_3T

#### 6.48.1.2 #define T glue(glue(glue(glue(glue(\_, T0), \_), T1), \_), T2)

## 6.49 cpu/or32/op-arith-op.h File Reference

## 6.50 `cpu/or32/op-comp-op.h` File Reference



## 6.51 `cpu/or32/op-extend-op.h` File Reference

### Functions

- void `glue`(`glue(op_, EXT_NAME), T`)(void)

#### 6.51.1 Function Documentation

##### 6.51.1.1 void `glue`(`glue(op_, EXT_NAME), T`)

## 6.52 cpu/or32/op-ff1-op.h File Reference

### Functions

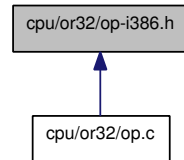
- `__or_dynop void glue(glue(glue(op_ff1_, DST_T), _), SRC_T)(void)`

#### 6.52.1 Function Documentation

##### 6.52.1.1 `__or_dynop void glue(glue(glue(op_ff1_, DST_T), _), SRC_T)`

## 6.53 cpu/or32/op-i386.h File Reference

This graph shows which files directly or indirectly include this file:



### Defines

- #define [OP\\_JUMP\(x\)](#) `asm("jmp *%0" : : "rm" (x))`
- #define [FORCE\\_RET](#) `asm volatile ("")`
- #define [SPEEDY\\_CALL\(func\)](#) `asm("call "#func"\n")`

### Functions

- `asm (".align 2\n"" .p2align 4,,15\n"" .globl op_do_jump\n"" .type op_do_jump,@function\n""op_do_jump:\n"" ret\n"" ret\n""1:\n"" .size op_do_jump,1b-op_do_jump\n")`

#### 6.53.1 Define Documentation

**6.53.1.1** #define [FORCE\\_RET](#) `asm volatile ("")`

**6.53.1.2** #define [OP\\_JUMP\(x\)](#) `asm("jmp *%0" : : "rm" (x))`

**6.53.1.3** #define [SPEEDY\\_CALL\(func\)](#) `asm("call "#func"\n")`

#### 6.53.2 Function Documentation

**6.53.2.1** `asm (".align 2\n"" .p2align 4, 15\n"" .globl op_do_jump\n"" .type op_do_jump,@function\n""op_do_jump:\n""ret\n""ret\n""1:\n"" .size op_do_jump,1b-op_do_jump\n")`

## 6.54 `cpu/or32/op-lwhb-op.h` File Reference

## 6.55 cpu/or32/op-mac-op.h File Reference

### Functions

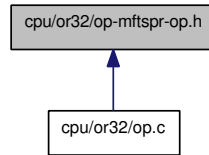
- `__or_dynop void glue (glue(op_, OP_NAME), T)(void)`

#### 6.55.1 Function Documentation

##### 6.55.1.1 `__or_dynop void glue (glue(op_, OP_NAME), T)`

## 6.56 cpu/or32/op-mftspr-op.h File Reference

This graph shows which files directly or indirectly include this file:



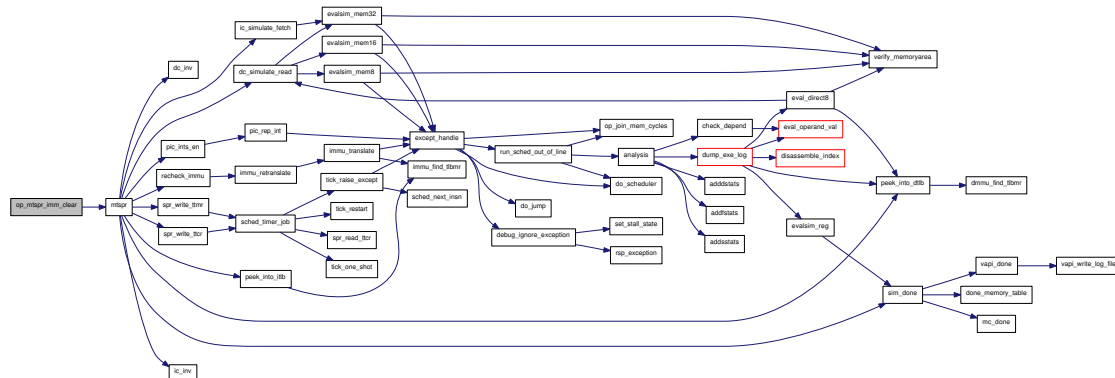
### Functions

- `__or_dynop void op_mtspr_imm_clear (void)`

### 6.56.1 Function Documentation

#### 6.56.1.1 `__or_dynop void op_mtspr_imm_clear (void)`

Here is the call graph for this function:



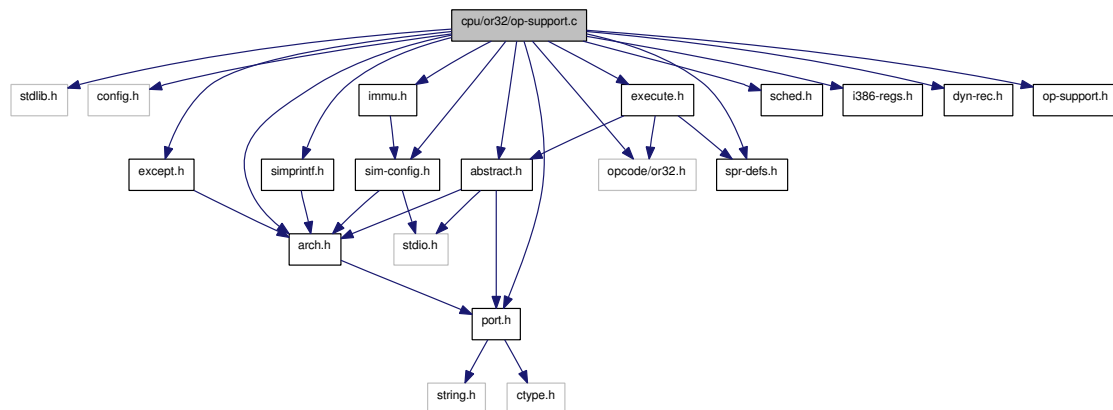
## 6.57 cpu/or32/op-support.c File Reference

```

#include <stdlib.h>
#include "config.h"
#include "port.h"
#include "arch.h"
#include "opcode/or32.h"
#include "sim-config.h"
#include "spr-defs.h"
#include "except.h"
#include "immu.h"
#include "abstract.h"
#include "execute.h"
#include "sched.h"
#include "i386-regs.h"
#include "dyn-rec.h"
#include "op-support.h"
#include "simprintf.h"

```

Include dependency graph for op-support.c:



### Functions

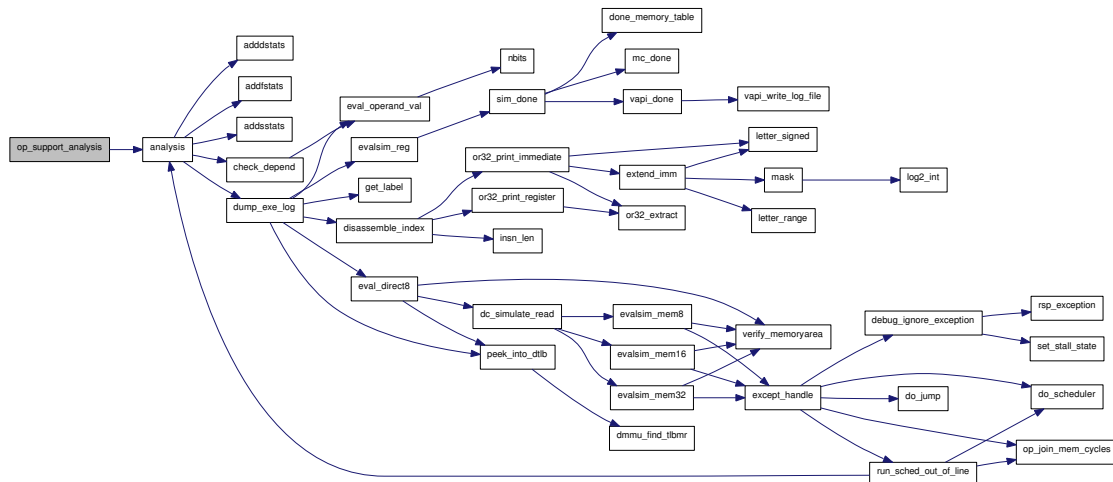
- void [op\\_support\\_nop\\_exit](#) (void)
- void [op\\_support\\_nop\\_reset](#) (void)
- void [op\\_support\\_nop\\_printf](#) (void)
- void [op\\_support\\_nop\\_report](#) (void)
- void [op\\_support\\_nop\\_report\\_imm](#) (int imm)
- void [do\\_jump](#) (oraddr\_t addr)
- void [op\\_support\\_analysis](#) (void)

## 6.57.1 Function Documentation

### 6.57.1.1 void do\_jump (oraddr\_t addr)

### 6.57.1.2 void op\_support\_analysis (void)

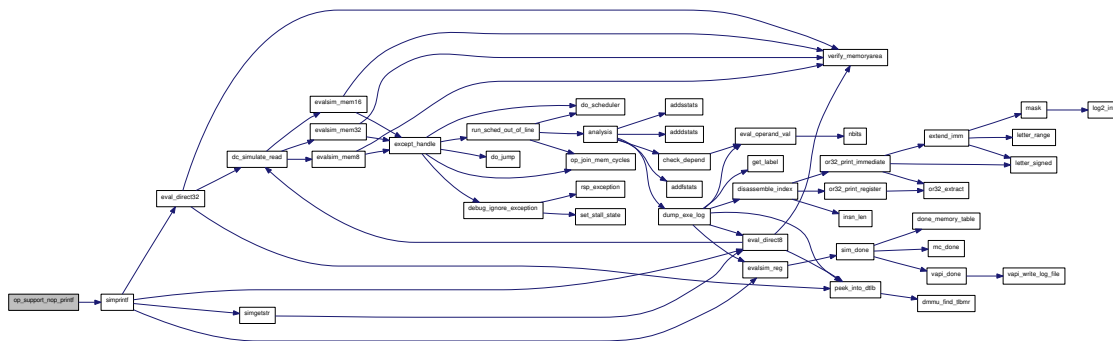
Here is the call graph for this function:



### 6.57.1.3 void op\_support\_nop\_exit (void)

### 6.57.1.4 void op\_support\_nop\_printf (void)

Here is the call graph for this function:



### 6.57.1.5 void op\_support\_nop\_report (void)

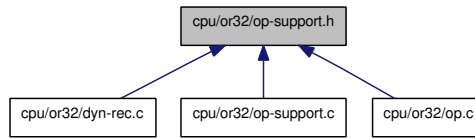
### 6.57.1.6 void op\_support\_nop\_report\_imm (int imm)

### 6.57.1.7 void op\_support\_nop\_reset (void)



## 6.58 cpu/or32/op-support.h File Reference

This graph shows which files directly or indirectly include this file:



### Functions

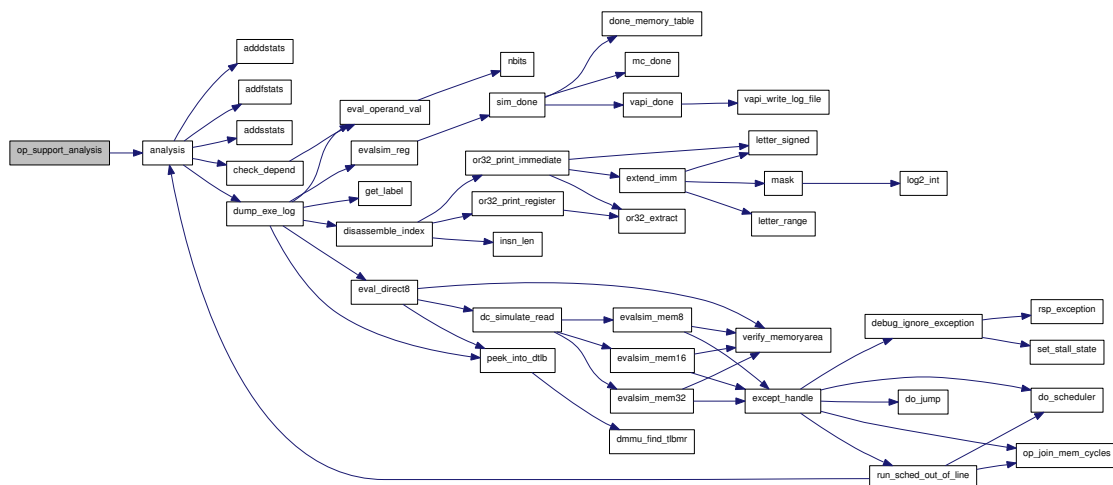
- void [op\\_support\\_nop\\_exit](#) (void)
- void [op\\_support\\_nop\\_reset](#) (void)
- void [op\\_support\\_nop\\_printf](#) (void)
- void [op\\_support\\_nop\\_report](#) (void)
- void [op\\_support\\_nop\\_report\\_imm](#) (int imm)
- void [op\\_support\\_analysis](#) (void)
- void [do\\_jump](#) (oraddr\_t addr)
- void [upd\\_reg\\_from\\_t](#) (oraddr\_t pc, int bound)

### 6.58.1 Function Documentation

#### 6.58.1.1 void do\_jump (oraddr\_t addr)

#### 6.58.1.2 void op\_support\_analysis (void)

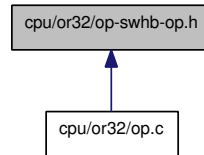
Here is the call graph for this function:





## 6.59 cpu/or32/op-swhb-op.h File Reference

This graph shows which files directly or indirectly include this file:



### Functions

- `__or_dynop void glue (glue(op_, S_OP_NAME), _clear_imm)(void)`

#### 6.59.1 Function Documentation

##### 6.59.1.1 `__or_dynop void glue (glue(op_, S_OP_NAME), _clear_imm)`

## 6.60 cpu/or32/op-t-reg-mov-op.h File Reference

### Functions

- `__or_dynop void glue (op_gtt_gpr1, T)(void)`
- `__or_dynop void glue (op_gtt_gpr2, T)(void)`
- `__or_dynop void glue (op_gtt_gpr3, T)(void)`
- `__or_dynop void glue (op_gtt_gpr4, T)(void)`
- `__or_dynop void glue (op_gtt_gpr5, T)(void)`
- `__or_dynop void glue (op_gtt_gpr6, T)(void)`
- `__or_dynop void glue (op_gtt_gpr7, T)(void)`
- `__or_dynop void glue (op_gtt_gpr8, T)(void)`
- `__or_dynop void glue (op_gtt_gpr9, T)(void)`
- `__or_dynop void glue (op_gtt_gpr10, T)(void)`
- `__or_dynop void glue (op_gtt_gpr11, T)(void)`
- `__or_dynop void glue (op_gtt_gpr12, T)(void)`
- `__or_dynop void glue (op_gtt_gpr13, T)(void)`
- `__or_dynop void glue (op_gtt_gpr14, T)(void)`
- `__or_dynop void glue (op_gtt_gpr15, T)(void)`
- `__or_dynop void glue (op_gtt_gpr16, T)(void)`
- `__or_dynop void glue (op_gtt_gpr17, T)(void)`
- `__or_dynop void glue (op_gtt_gpr18, T)(void)`
- `__or_dynop void glue (op_gtt_gpr19, T)(void)`
- `__or_dynop void glue (op_gtt_gpr20, T)(void)`
- `__or_dynop void glue (op_gtt_gpr21, T)(void)`
- `__or_dynop void glue (op_gtt_gpr22, T)(void)`
- `__or_dynop void glue (op_gtt_gpr23, T)(void)`
- `__or_dynop void glue (op_gtt_gpr24, T)(void)`
- `__or_dynop void glue (op_gtt_gpr25, T)(void)`
- `__or_dynop void glue (op_gtt_gpr26, T)(void)`
- `__or_dynop void glue (op_gtt_gpr27, T)(void)`
- `__or_dynop void glue (op_gtt_gpr28, T)(void)`
- `__or_dynop void glue (op_gtt_gpr29, T)(void)`
- `__or_dynop void glue (op_gtt_gpr30, T)(void)`
- `__or_dynop void glue (op_gtt_gpr31, T)(void)`
- `__or_dynop void glue (op_ttg_gpr1, T)(void)`
- `__or_dynop void glue (op_ttg_gpr2, T)(void)`
- `__or_dynop void glue (op_ttg_gpr3, T)(void)`
- `__or_dynop void glue (op_ttg_gpr4, T)(void)`
- `__or_dynop void glue (op_ttg_gpr5, T)(void)`
- `__or_dynop void glue (op_ttg_gpr6, T)(void)`
- `__or_dynop void glue (op_ttg_gpr7, T)(void)`
- `__or_dynop void glue (op_ttg_gpr8, T)(void)`
- `__or_dynop void glue (op_ttg_gpr9, T)(void)`
- `__or_dynop void glue (op_ttg_gpr10, T)(void)`
- `__or_dynop void glue (op_ttg_gpr11, T)(void)`
- `__or_dynop void glue (op_ttg_gpr12, T)(void)`
- `__or_dynop void glue (op_ttg_gpr13, T)(void)`
- `__or_dynop void glue (op_ttg_gpr14, T)(void)`
- `__or_dynop void glue (op_ttg_gpr15, T)(void)`

- `__or_dynop void glue (op_ttg_gpr16, T)(void)`
- `__or_dynop void glue (op_ttg_gpr17, T)(void)`
- `__or_dynop void glue (op_ttg_gpr18, T)(void)`
- `__or_dynop void glue (op_ttg_gpr19, T)(void)`
- `__or_dynop void glue (op_ttg_gpr20, T)(void)`
- `__or_dynop void glue (op_ttg_gpr21, T)(void)`
- `__or_dynop void glue (op_ttg_gpr22, T)(void)`
- `__or_dynop void glue (op_ttg_gpr23, T)(void)`
- `__or_dynop void glue (op_ttg_gpr24, T)(void)`
- `__or_dynop void glue (op_ttg_gpr25, T)(void)`
- `__or_dynop void glue (op_ttg_gpr26, T)(void)`
- `__or_dynop void glue (op_ttg_gpr27, T)(void)`
- `__or_dynop void glue (op_ttg_gpr28, T)(void)`
- `__or_dynop void glue (op_ttg_gpr29, T)(void)`
- `__or_dynop void glue (op_ttg_gpr30, T)(void)`
- `__or_dynop void glue (op_ttg_gpr31, T)(void)`



## 6.60.1 Function Documentation

6.60.1.1 `__or_dynop void glue (op_ttg_gpr31, T)`

6.60.1.2 `__or_dynop void glue (op_ttg_gpr30, T)`

6.60.1.3 `__or_dynop void glue (op_ttg_gpr29, T)`

6.60.1.4 `__or_dynop void glue (op_ttg_gpr28, T)`

6.60.1.5 `__or_dynop void glue (op_ttg_gpr27, T)`

6.60.1.6 `__or_dynop void glue (op_ttg_gpr26, T)`

6.60.1.7 `__or_dynop void glue (op_ttg_gpr25, T)`

6.60.1.8 `__or_dynop void glue (op_ttg_gpr24, T)`

6.60.1.9 `__or_dynop void glue (op_ttg_gpr23, T)`

6.60.1.10 `__or_dynop void glue (op_ttg_gpr22, T)`

6.60.1.11 `__or_dynop void glue (op_ttg_gpr21, T)`

6.60.1.12 `__or_dynop void glue (op_ttg_gpr20, T)`

6.60.1.13 `__or_dynop void glue (op_ttg_gpr19, T)`

6.60.1.14 `__or_dynop void glue (op_ttg_gpr18, T)`

6.60.1.15 `__or_dynop void glue (op_ttg_gpr17, T)`

6.60.1.16 `__or_dynop void glue (op_ttg_gpr16, T)`

6.60.1.17 `__or_dynop void glue (op_ttg_gpr15, T)`

6.60.1.18 `__or_dynop void glue (op_ttg_gpr14, T)`

6.60.1.19 `__or_dynop void glue (op_ttg_gpr13, T)`

6.60.1.20 `__or_dynop void glue (op_ttg_gpr12, T)`

6.60.1.21 `__or_dynop void glue (op_ttg_gpr11, T)`

6.60.1.22 `__or_dynop void glue (op_ttg_gpr10, T)`

6.60.1.23 `__or_dynop void glue (op_ttg_gpr9, T)`

6.60.1.24 `__or_dynop void glue (op_ttg_gpr8, T)`

6.60.1.25 `__or_dynop void glue (op_ttg_gpr7, T)`

6.60.1.26 `__or_dynop void glue (op_ttg_gpr6, T)`

6.60.1.27 `__or_dynop void glue (op_ttg_gpr5, T)`

6.60.1.28 `__or_dynop void glue (op_ttg_gpr4, T)`

6.60.1.29 `__or_dynop void glue (op_ttg_gpr3, T)`

6.60.1.30 `__or_dynop void glue (op_ttg_gpr2, T)`

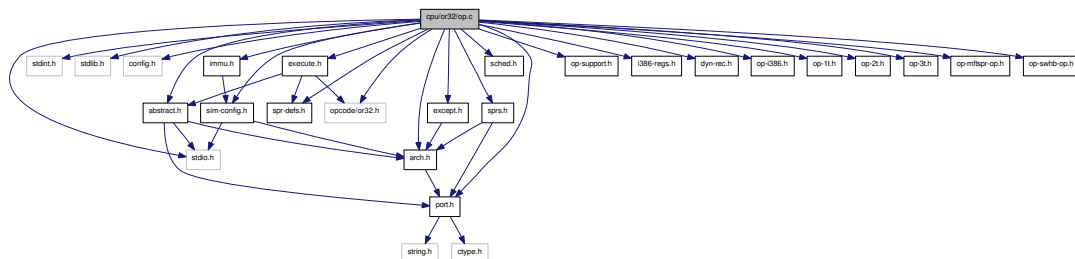
## 6.61 cpu/or32/op.c File Reference

```

#include <stdio.h>
#include <stdint.h>
#include <stdlib.h>
#include "config.h"
#include "port.h"
#include "arch.h"
#include "spr-defs.h"
#include "opcode/or32.h"
#include "sim-config.h"
#include "except.h"
#include "abstract.h"
#include "execute.h"
#include "sprs.h"
#include "sched.h"
#include "immu.h"
#include "op-support.h"
#include "i386-regs.h"
#include "dyn-rec.h"
#include "op-i386.h"
#include "op-1t.h"
#include "op-2t.h"
#include "op-3t.h"
#include "op-mftspr-op.h"
#include "op-swhb-op.h"

```

Include dependency graph for op.c:



### Defines

- #define `__or_dynop`



- #define OP\_PARAM1 ((uorreg\_t)(&\_\_op\_param1))
- #define OP\_PARAM2 ((uorreg\_t)(&\_\_op\_param2))
- #define OP\_PARAM3 ((uorreg\_t)(&\_\_op\_param3))
- #define OP\_FILE "op-1t-op.h"
- #define OP\_FILE "op-2t-op.h"
- #define OP\_FILE "op-3t-op.h"
- #define OP\_FILE "op-arith-op.h"
- #define OP\_EXTRA
- #define OP /
- #define OP\_CAST(x) (orreg\_t)(x)
- #define OP\_NAME div
- #define OP /
- #define OP\_CAST(x) (x)
- #define OP\_NAME divu
- #define OP \*
- #define OP\_CAST(x) (x)
- #define OP\_NAME mulu
- #define OP -
- #define OP\_CAST(x) (orreg\_t)(x)
- #define OP\_NAME sub
- #define OP\_EXTRA + ((env → sprs[SPR\_SR] & SPR\_SR\_CY) >> 10)
- #define OP +
- #define OP\_CAST(x) (orreg\_t)(x)
- #define OP\_NAME addc
- #define OP\_EXTRA
- #define OP +
- #define OP\_CAST(x) (orreg\_t)(x)
- #define OP\_NAME add
- #define OP &
- #define OP\_CAST(x) (x)
- #define OP\_NAME and
- #define OP \*
- #define OP\_CAST(x) (orreg\_t)(x)
- #define OP\_NAME mul
- #define OP |
- #define OP\_CAST(x) (x)
- #define OP\_NAME or
- #define OP <<
- #define OP\_CAST(x) (x)
- #define OP\_NAME sll
- #define OP >>
- #define OP\_CAST(x) (orreg\_t)(x)
- #define OP\_NAME sra
- #define OP >>
- #define OP\_CAST(x) (x)
- #define OP\_NAME srl
- #define OP ^
- #define OP\_CAST(x) (x)
- #define OP\_NAME xor
- #define OP\_FILE "op-extend-op.h"

- #define EXT\_NAME extbs
- #define EXT\_TYPE int8\_t
- #define EXT\_CAST (orreg\_t)
- #define EXT\_NAME extbz
- #define EXT\_TYPE uint8\_t
- #define EXT\_CAST (uorreg\_t)
- #define EXT\_NAME exths
- #define EXT\_TYPE int16\_t
- #define EXT\_CAST (orreg\_t)
- #define EXT\_NAME exthz
- #define EXT\_TYPE uint16\_t
- #define EXT\_CAST (uorreg\_t)
- #define OP\_FILE "op-comp-op.h"
- #define COMP ==
- #define COMP\_NAME sfeq
- #define COMP\_CAST(x) (x)
- #define COMP !=
- #define COMP\_NAME sfne
- #define COMP\_CAST(x) (x)
- #define COMP >
- #define COMP\_NAME sfgtu
- #define COMP\_CAST(x) (x)
- #define COMP >=
- #define COMP\_NAME sfgeu
- #define COMP\_CAST(x) (x)
- #define COMP <
- #define COMP\_NAME sfltu
- #define COMP\_CAST(x) (x)
- #define COMP <=
- #define COMP\_NAME sfleu
- #define COMP\_CAST(x) (x)
- #define COMP >
- #define COMP\_NAME sfgts
- #define COMP\_CAST(x) (orreg\_t)(x)
- #define COMP >=
- #define COMP\_NAME sfges
- #define COMP\_CAST(x) (orreg\_t)(x)
- #define COMP <
- #define COMP\_NAME sflts
- #define COMP\_CAST(x) (orreg\_t)(x)
- #define COMP <=
- #define COMP\_NAME sfles
- #define COMP\_CAST(x) (orreg\_t)(x)
- #define OP\_FILE "op-t-reg-mov-op.h"
- #define OP\_FILE "op-mftspr-op.h"
- #define OP\_FILE "op-mac-op.h"
- #define OP +=
- #define OP\_NAME mac
- #define OP -=
- #define OP\_NAME msb

- #define `OP_FILE` "op-lwhb-op.h"
- #define `LS_OP_NAME` lbz
- #define `LS_OP_CAST`
- #define `LS_OP_FUNC` eval\_mem8
- #define `LS_OP_NAME` lbs
- #define `LS_OP_CAST` (int8\_t)
- #define `LS_OP_FUNC` eval\_mem8
- #define `LS_OP_NAME` lhz
- #define `LS_OP_CAST`
- #define `LS_OP_FUNC` eval\_mem16
- #define `LS_OP_NAME` lhs
- #define `LS_OP_CAST` (int16\_t)
- #define `LS_OP_FUNC` eval\_mem16
- #define `LS_OP_NAME` lwz
- #define `LS_OP_CAST`
- #define `LS_OP_FUNC` eval\_mem32
- #define `LS_OP_NAME` lws
- #define `LS_OP_CAST` (int32\_t)
- #define `LS_OP_FUNC` eval\_mem32
- #define `OP_FILE` "op-swhb-op.h"
- #define `S_OP_NAME` sb
- #define `S_FUNC` set\_mem8
- #define `S_OP_NAME` sh
- #define `S_FUNC` set\_mem16
- #define `S_OP_NAME` sw
- #define `S_FUNC` set\_mem32

## Functions

- register struct `cpu_state` \*env `asm` (CPU\_STATE\_REG)
- register uint32\_t t0 `asm` (T0\_REG)
- register uint32\_t t1 `asm` (T1\_REG)
- register uint32\_t t2 `asm` (T2\_REG)
- static void `save_t_bound` (oraddr\_t pc)
- void `do_sched_wrap` (void)
- void `do_sched_wrap_delay` (void)
- void `enter_dyn_code` (oraddr\_t addr, struct `dyn_page` \*dp)
- \_\_or\_dynop void `op_set_pc_pc_delay` (void)
- \_\_or\_dynop void `op_set_pc_delay_imm` (void)
- \_\_or\_dynop void `op_set_pc_delay_pc` (void)
- \_\_or\_dynop void `op_clear_pc_delay` (void)
- \_\_or\_dynop void `op_do_jump_delay` (void)
- \_\_or\_dynop void `op_clear_delay_insn` (void)
- \_\_or\_dynop void `op_set_delay_insn` (void)
- \_\_or\_dynop void `op_check_delay_slot` (void)
- \_\_or\_dynop void `op_jump_imm` (void)
- \_\_or\_dynop void `op_set_flag` (void)
- \_\_or\_dynop void `op_clear_flag` (void)
- \_\_or\_dynop void `op_check_flag` (void)
- \_\_or\_dynop void `op_check_flag_delay` (void)

- `__or_dynop` void `op_check_not_flag` (void)
- `__or_dynop` void `op_check_not_flag_delay` (void)
- `__or_dynop` void `op_add_pc` (void)
- `__or_dynop` void `op_nop_exit` (void)
- `__or_dynop` void `op_nop_reset` (void)
- `__or_dynop` void `op_nop_printf` (void)
- `__or_dynop` void `op_nop_report` (void)
- `__or_dynop` void `op_nop_report_imm` (void)
- `__or_dynop` void `op_analysis` (void)
- `__or_dynop` void `op_move_gpr1_pc_delay` (void)
- `__or_dynop` void `op_move_gpr2_pc_delay` (void)
- `__or_dynop` void `op_move_gpr3_pc_delay` (void)
- `__or_dynop` void `op_move_gpr4_pc_delay` (void)
- `__or_dynop` void `op_move_gpr5_pc_delay` (void)
- `__or_dynop` void `op_move_gpr6_pc_delay` (void)
- `__or_dynop` void `op_move_gpr7_pc_delay` (void)
- `__or_dynop` void `op_move_gpr8_pc_delay` (void)
- `__or_dynop` void `op_move_gpr9_pc_delay` (void)
- `__or_dynop` void `op_move_gpr10_pc_delay` (void)
- `__or_dynop` void `op_move_gpr11_pc_delay` (void)
- `__or_dynop` void `op_move_gpr12_pc_delay` (void)
- `__or_dynop` void `op_move_gpr13_pc_delay` (void)
- `__or_dynop` void `op_move_gpr14_pc_delay` (void)
- `__or_dynop` void `op_move_gpr15_pc_delay` (void)
- `__or_dynop` void `op_move_gpr16_pc_delay` (void)
- `__or_dynop` void `op_move_gpr17_pc_delay` (void)
- `__or_dynop` void `op_move_gpr18_pc_delay` (void)
- `__or_dynop` void `op_move_gpr19_pc_delay` (void)
- `__or_dynop` void `op_move_gpr20_pc_delay` (void)
- `__or_dynop` void `op_move_gpr21_pc_delay` (void)
- `__or_dynop` void `op_move_gpr22_pc_delay` (void)
- `__or_dynop` void `op_move_gpr23_pc_delay` (void)
- `__or_dynop` void `op_move_gpr24_pc_delay` (void)
- `__or_dynop` void `op_move_gpr25_pc_delay` (void)
- `__or_dynop` void `op_move_gpr26_pc_delay` (void)
- `__or_dynop` void `op_move_gpr27_pc_delay` (void)
- `__or_dynop` void `op_move_gpr28_pc_delay` (void)
- `__or_dynop` void `op_move_gpr29_pc_delay` (void)
- `__or_dynop` void `op_move_gpr30_pc_delay` (void)
- `__or_dynop` void `op_move_gpr31_pc_delay` (void)
- `__or_dynop` void `op_join_mem_cycles` (void)
- `__or_dynop` void `op_store_link_addr_gpr` (void)
- `__or_dynop` void `op_prep_rfe` (void)
- static void `prep_except` (oraddr\_t epcr\_base)
- `__or_dynop` void `op_prep_sys_delay` (void)
- `__or_dynop` void `op_prep_sys` (void)
- `__or_dynop` void `op_prep_trap_delay` (void)
- `__or_dynop` void `op_prep_trap` (void)
- `__or_dynop` void `op_illegal_delay` (void)
- `__or_dynop` void `op_illegal` (void)

- `__or_dynop` void [op\\_do\\_sched](#) (void)
- `__or_dynop` void [op\\_do\\_sched\\_delay](#) (void)
- `__or_dynop` void [op\\_macc](#) (void)
- `__or_dynop` void [op\\_store\\_insn\\_ea](#) (void)

## Variables

- `uorreg_t` [\\_\\_op\\_param1](#)
- `uorreg_t` [\\_\\_op\\_param2](#)
- `uorreg_t` [\\_\\_op\\_param3](#)



## 6.61.1 Define Documentation

6.61.1.1 `#define __or_dynop`

6.61.1.2 `#define COMP <=`

6.61.1.3 `#define COMP <`

6.61.1.4 `#define COMP >=`

6.61.1.5 `#define COMP >`

6.61.1.6 `#define COMP <=`

6.61.1.7 `#define COMP <`

6.61.1.8 `#define COMP >=`

6.61.1.9 `#define COMP >`

6.61.1.10 `#define COMP !=`

6.61.1.11 `#define COMP ==`

6.61.1.12 `#define COMP_CAST(x) (orreg_t)(x)`

6.61.1.13 `#define COMP_CAST(x) (orreg_t)(x)`

6.61.1.14 `#define COMP_CAST(x) (orreg_t)(x)`

6.61.1.15 `#define COMP_CAST(x) (orreg_t)(x)`

6.61.1.16 `#define COMP_CAST(x) (x)`

6.61.1.17 `#define COMP_CAST(x) (x)`

6.61.1.18 `#define COMP_CAST(x) (x)`

6.61.1.19 `#define COMP_CAST(x) (x)`

6.61.1.20 `#define COMP_CAST(x) (x)`

6.61.1.21 `#define COMP_CAST(x) (x)`

6.61.1.22 `#define COMP_NAME sfles`

6.61.1.23 `#define COMP_NAME sflts`

6.61.1.24 `#define COMP_NAME sfges`

6.61.1.25 `#define COMP_NAME sfgts`

6.61.1.26 `#define COMP_NAME sfleu`

6.61.1.27 `#define COMP_NAME sfltu`

6.61.1.28 `#define COMP_NAME sfgeu`

6.61.1.29 `#define COMP_NAME sfgtu`

6.61.1.30 `#define COMP_NAME sfne`

### 6.61.2.6 void do\_sched\_wrap\_delay (void)

Here is the call graph for this function:

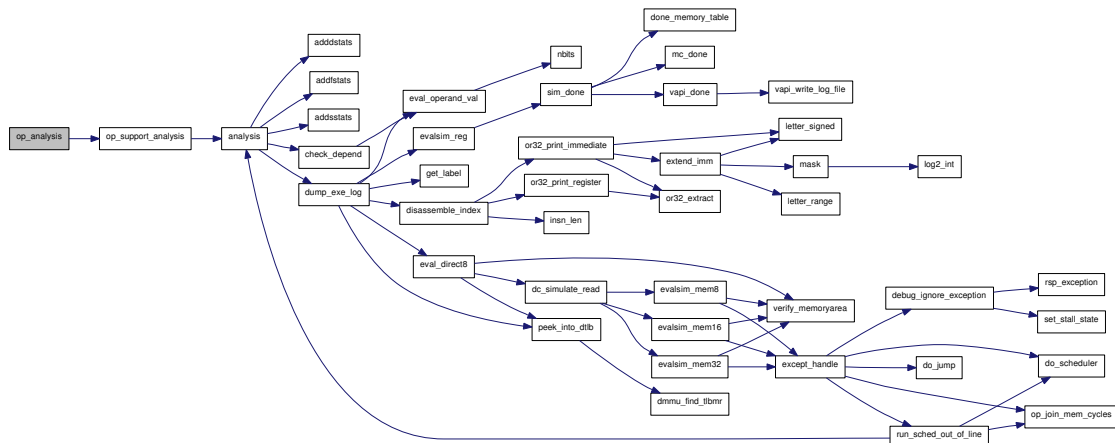


### 6.61.2.7 void enter\_dyn\_code (oraddr\_t addr, struct dyn\_page \* dp)

### 6.61.2.8 \_\_or\_dynop void op\_add\_pc (void)

### 6.61.2.9 \_\_or\_dynop void op\_analysis (void)

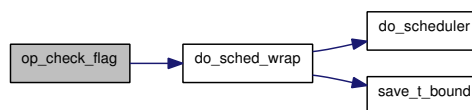
Here is the call graph for this function:



### 6.61.2.10 \_\_or\_dynop void op\_check\_delay\_slot (void)

### 6.61.2.11 \_\_or\_dynop void op\_check\_flag (void)

Here is the call graph for this function:

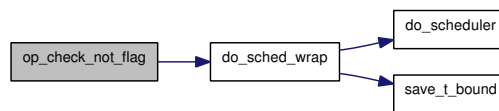




**6.61.2.12** `__or_dynop void op_check_flag_delay (void)`

**6.61.2.13** `__or_dynop void op_check_not_flag (void)`

Here is the call graph for this function:



**6.61.2.14** `__or_dynop void op_check_not_flag_delay (void)`

**6.61.2.15** `__or_dynop void op_clear_delay_insn (void)`

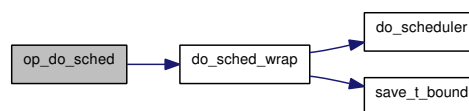
**6.61.2.16** `__or_dynop void op_clear_flag (void)`

**6.61.2.17** `__or_dynop void op_clear_pc_delay (void)`

**6.61.2.18** `__or_dynop void op_do_jump_delay (void)`

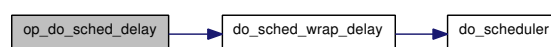
**6.61.2.19** `__or_dynop void op_do_sched (void)`

Here is the call graph for this function:



**6.61.2.20** `__or_dynop void op_do_sched_delay (void)`

Here is the call graph for this function:





- 6.61.2.21 `__or_dynop void op_illegal (void)`
- 6.61.2.22 `__or_dynop void op_illegal_delay (void)`
- 6.61.2.23 `__or_dynop void op_jump_imm (void)`
- 6.61.2.24 `__or_dynop void op_join_mem_cycles (void)`
- 6.61.2.25 `__or_dynop void op_macc (void)`
- 6.61.2.26 `__or_dynop void op_move_gpr10_pc_delay (void)`
- 6.61.2.27 `__or_dynop void op_move_gpr11_pc_delay (void)`
- 6.61.2.28 `__or_dynop void op_move_gpr12_pc_delay (void)`
- 6.61.2.29 `__or_dynop void op_move_gpr13_pc_delay (void)`
- 6.61.2.30 `__or_dynop void op_move_gpr14_pc_delay (void)`
- 6.61.2.31 `__or_dynop void op_move_gpr15_pc_delay (void)`
- 6.61.2.32 `__or_dynop void op_move_gpr16_pc_delay (void)`
- 6.61.2.33 `__or_dynop void op_move_gpr17_pc_delay (void)`
- 6.61.2.34 `__or_dynop void op_move_gpr18_pc_delay (void)`
- 6.61.2.35 `__or_dynop void op_move_gpr19_pc_delay (void)`
- 6.61.2.36 `__or_dynop void op_move_gpr1_pc_delay (void)`
- 6.61.2.37 `__or_dynop void op_move_gpr20_pc_delay (void)`
- 6.61.2.38 `__or_dynop void op_move_gpr21_pc_delay (void)`
- 6.61.2.39 `__or_dynop void op_move_gpr22_pc_delay (void)`
- 6.61.2.40 `__or_dynop void op_move_gpr23_pc_delay (void)`
- 6.61.2.41 `__or_dynop void op_move_gpr24_pc_delay (void)`
- 6.61.2.42 `__or_dynop void op_move_gpr25_pc_delay (void)`
- 6.61.2.43 `__or_dynop void op_move_gpr26_pc_delay (void)`
- 6.61.2.44 `__or_dynop void op_move_gpr27_pc_delay (void)`
- 6.61.2.45 `__or_dynop void op_move_gpr28_pc_delay (void)`
- 6.61.2.46 `__or_dynop void op_move_gpr29_pc_delay (void)`
- 6.61.2.47 `__or_dynop void op_move_gpr2_pc_delay (void)`
- 6.61.2.48 `__or_dynop void op_move_gpr30_pc_delay (void)`

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- 6.61.2.49 `__or_dynop void op_move_gpr31_pc_delay (void)`

- 6.61.2.50 `__or_dynop void op_move_gpr3_pc_delay (void)`

- 6.61.2.51 `__or_dynop void op_move_gpr4_pc_delay (void)`



**6.61.2.64** `__or_dynop void op_prep_sys_delay (void)`

Here is the call graph for this function:

**6.61.2.65** `__or_dynop void op_prep_trap (void)`

Here is the call graph for this function:

**6.61.2.66** `__or_dynop void op_prep_trap_delay (void)`

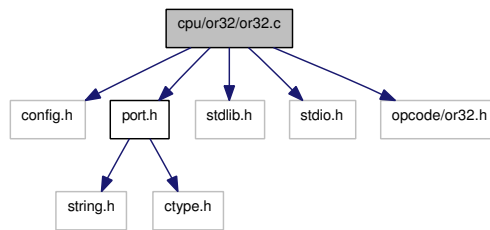
Here is the call graph for this function:

**6.61.2.67** `__or_dynop void op_set_delay_insn (void)`**6.61.2.68** `__or_dynop void op_set_flag (void)`**6.61.2.69** `__or_dynop void op_set_pc_delay_imm (void)`**6.61.2.70** `__or_dynop void op_set_pc_delay_pc (void)`**6.61.2.71** `__or_dynop void op_set_pc_pc_delay (void)`**6.61.2.72** `__or_dynop void op_store_insn_ea (void)`**6.61.2.73** `__or_dynop void op_store_link_addr_gpr (void)`**6.61.2.74** `static void prep_except (oraddr_t epcr_base) [inline, static]`**6.61.2.75** `static void save_t_bound (oraddr_t pc) [inline, static]`**6.61.3 Variable Documentation****6.61.3.1** `uorreg_t __op_param1`**6.61.3.2** `uorreg_t __op_param2`**6.61.3.3** `uorreg_t __op_param3`

## 6.62 cpu/or32/or32.c File Reference

```
#include "config.h"
#include "port.h"
#include <stdlib.h>
#include <stdio.h>
#include "opcode/or32.h"
```

Include dependency graph for or32.c:



### Defines

- #define [EFN](#) &l\_none
- #define [EF\(func\)](#) EFN
- #define [EFI](#) EFN
- #define [MAX\\_AUTOMATA\\_SIZE](#) (1200)
- #define [MAX\\_OP\\_TABLE\\_SIZE](#) (1200)
- #define [MAX\\_LEN](#) (8)
- #define [MIN\(x, y\)](#) ((x) < (y) ? (x) : (y))

### Functions

- int [insn\\_len](#) (int [insn\\_index](#))
- int [letter\\_signed](#) (char l)
- int [letter\\_range](#) (char l)
- int [insn\\_index](#) (char \*[insn](#))
- CONST char \* [insn\\_name](#) (int [index](#))
- void [l\\_none](#) ()
- unsigned long [insn\\_extract](#) (char [param\\_ch](#), char \*[enc\\_initial](#))
- static void [or32\\_debug](#) (int [level](#), const char \*[format](#),...)
- static unsigned long \* [cover\\_insn](#) (unsigned long \*[cur](#), int [pass](#), unsigned int [mask](#))
- static int [num\\_ones](#) (unsigned long [value](#))
- static struct [insn\\_op\\_struct](#) \* [parse\\_params](#) (CONST struct [or32\\_opcode](#) \*[opcode](#), struct [insn\\_op\\_struct](#) \*[cur](#))
- void [build\\_automata](#) ()
- void [destruct\\_automata](#) ()
- int [insn\\_decode](#) (unsigned int [insn](#))
- unsigned long [extend\\_imm](#) (unsigned long [imm](#), char l)
- unsigned long [or32\\_extract](#) (char [param\\_ch](#), char \*[enc\\_initial](#), unsigned long [insn](#))

- static char \* [or32\\_print\\_register](#) (char \*dest, char param\_ch, char \*encoding, unsigned long [insn](#))
- static char \* [or32\\_print\\_immediate](#) (char \*dest, char param\_ch, char \*encoding, unsigned long [insn](#))
- int [disassemble\\_insn](#) (unsigned long [insn](#))
- int [disassemble\\_index](#) (unsigned long [insn](#), int index)

## Variables

- CONST struct or32\_letter [or32\\_letters](#) []
- CONST struct or32\_opcode [or32\\_opcodes](#) []
- CONST int [num\\_opcodes](#)
- static int [range\\_cache](#) [256] = { 0 }
- unsigned long \* [automata](#)
- int [nuncovered](#)
- int [curpass](#) = 0
- struct temp\_insn\_struct \* [ti](#)
- struct insn\_op\_struct \* [op\\_data](#)
- struct insn\_op\_struct \*\* [op\\_start](#)
- static char [disassembled\\_str](#) [50]
- char \* [disassembled](#) = &[disassembled\\_str](#)[0]

## 6.62.1 Define Documentation

6.62.1.1 `#define EF(func) EFN`

6.62.1.2 `#define EFI EFN`

6.62.1.3 `#define EFN &l_none`

6.62.1.4 `#define MAX_AUTOMATA_SIZE (1200)`

6.62.1.5 `#define MAX_LEN (8)`

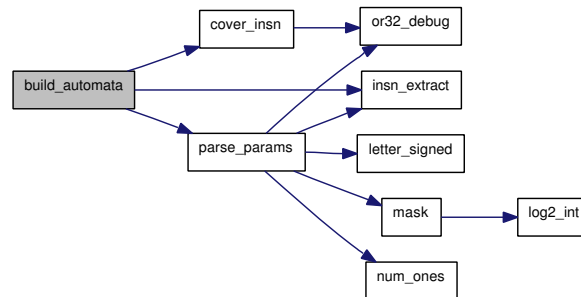
6.62.1.6 `#define MAX_OP_TABLE_SIZE (1200)`

6.62.1.7 `#define MIN(x, y) ((x) < (y) ? (x) : (y))`

## 6.62.2 Function Documentation

6.62.2.1 `void build_automata ()`

Here is the call graph for this function:



6.62.2.2 `static unsigned long* cover_insn (unsigned long * cur, int pass, unsigned int mask)`  
`[static]`

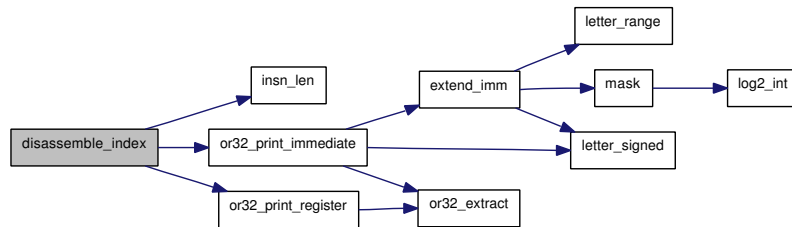
Here is the call graph for this function:



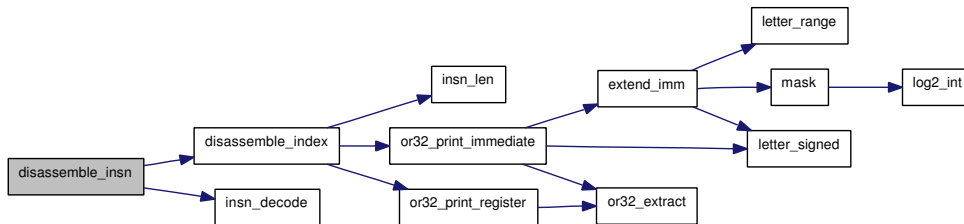


**6.62.2.3 void destruct\_automata ()****6.62.2.4 int disassemble\_index (unsigned long *insn*, int *index*)**

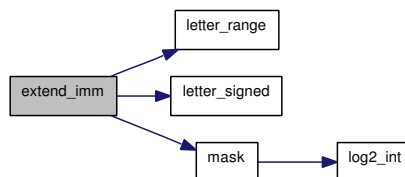
Here is the call graph for this function:

**6.62.2.5 int disassemble\_insn (unsigned long *insn*)**

Here is the call graph for this function:

**6.62.2.6 unsigned long extend\_imm (unsigned long *imm*, char *l*)**

Here is the call graph for this function:



6.62.2.7 int `insn_decode` (unsigned int *insn*)

6.62.2.8 unsigned long `insn_extract` (char *param\_ch*, char \* *enc\_initial*)

6.62.2.9 int `insn_index` (char \* *insn*)

6.62.2.10 int `insn_len` (int *insn\_index*)

6.62.2.11 CONST char\* `insn_name` (int *index*)

6.62.2.12 void `l_none` ()

6.62.2.13 int `letter_range` (char *l*)

6.62.2.14 int `letter_signed` (char *l*)

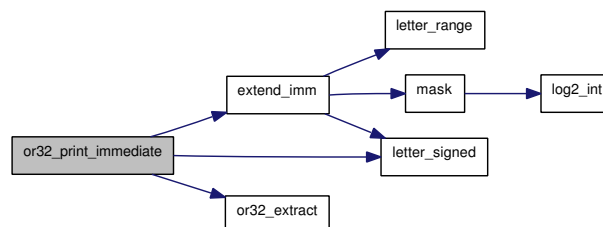
6.62.2.15 static int `num_ones` (unsigned long *value*) [static]

6.62.2.16 static void `or32_debug` (int *level*, const char \* *format*, ...) [static]

6.62.2.17 unsigned long `or32_extract` (char *param\_ch*, char \* *enc\_initial*, unsigned long *insn*)

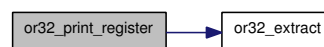
6.62.2.18 static char\* `or32_print_immediate` (char \* *dest*, char *param\_ch*, char \* *encoding*, unsigned long *insn*) [static]

Here is the call graph for this function:



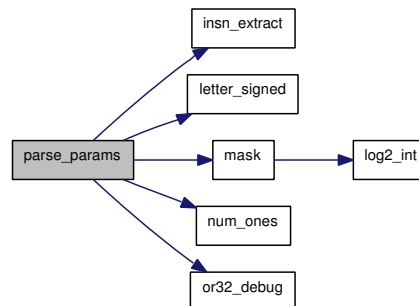
6.62.2.19 static char\* `or32_print_register` (char \* *dest*, char *param\_ch*, char \* *encoding*, unsigned long *insn*) [static]

Here is the call graph for this function:



**6.62.2.20** `static struct insn_op_struct* parse_params (CONST struct or32_opcode * opcode, struct insn_op_struct * cur)` [static, read]

Here is the call graph for this function:



## 6.62.3 Variable Documentation

**6.62.3.1** `unsigned long* automata`

**6.62.3.2** `int curpass = 0`

**6.62.3.3** `char* disassembled = &disassembled_str[0]`

**6.62.3.4** `char disassembled_str[50]` [static]

**6.62.3.5** `CONST int num_opcodes`

**Initial value:**

```
((sizeof (or32_opcodes)) / (sizeof (struct or32_opcode))) - 1
```

**6.62.3.6** `int nuncovered`

**6.62.3.7** `struct insn_op_struct* op_data`

**6.62.3.8** `struct insn_op_struct ** op_start`

**6.62.3.9** `CONST struct or32_letter or32_letters[ ]`

**Initial value:**

```
{
  {'A', NUM_UNSIGNED},
  {'B', NUM_UNSIGNED},
  {'D', NUM_UNSIGNED},
  {'I', NUM_SIGNED},
  {'K', NUM_UNSIGNED},
  {'L', NUM_UNSIGNED},
  {'N', NUM_SIGNED},
  {'O', NUM_UNSIGNED},
  {'\0', 0}
}
```

**6.62.3.10** `CONST struct or32_opcode or32_opcodes[ ]`

**6.62.3.11** `int range_cache[256] = { 0 } [static]`

**6.62.3.12** `struct temp_insn_struct* ti`

## 6.63 `cpu/or32/rec-i386.h` File Reference

### Functions

- static void \* [get\\_sp](#) (void)

### 6.63.1 Function Documentation

#### 6.63.1.1 `static void* get_sp (void)` `[static]`

## 6.64 `cpu/or32/sched-i386.h` File Reference

### Functions

- static void `set_sched_cycle` (`int32_t job_time`)

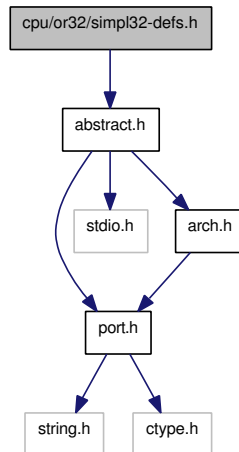
#### 6.64.1 Function Documentation

6.64.1.1 `static void set_sched_cycle (int32_t job_time)` `[static]`

## 6.65 cpu/or32/simpl32-defs.h File Reference

```
#include "abstract.h"
```

Include dependency graph for simpl32-defs.h:



### Functions

- void `l_invalid` PARAMS ((struct `iqueue_entry` \*))
- void `l_sfgeu` PARAMS ()(struct `iqueue_entry` \*)

### 6.65.1 Function Documentation

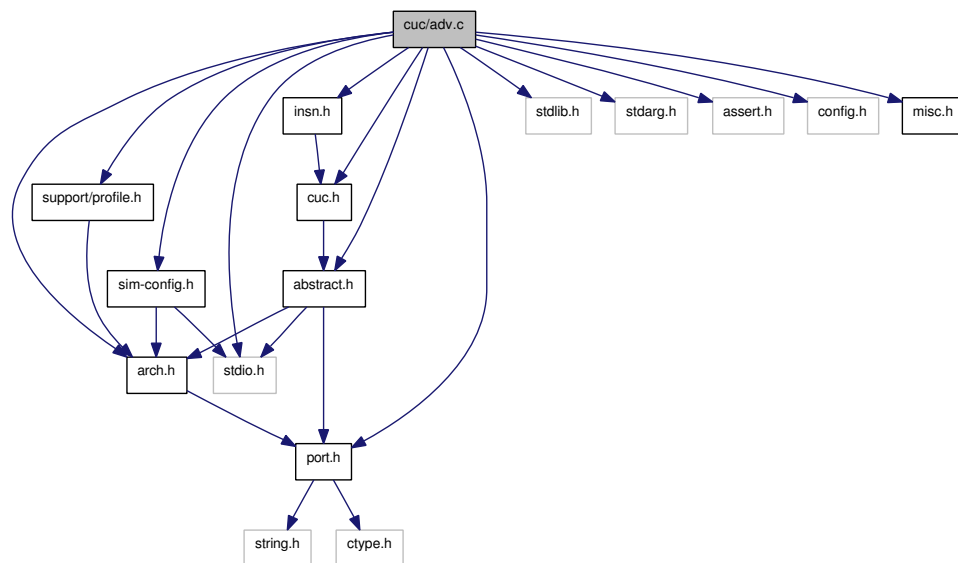
6.65.1.1 void `l_sfgeu` PARAMS ()

6.65.1.2 void `l_none` PARAMS ((struct `iqueue_entry` \*))

## 6.66 cuc/adv.c File Reference

```
#include <stdio.h>
#include <stdlib.h>
#include <stdarg.h>
#include <assert.h>
#include "config.h"
#include "port.h"
#include "arch.h"
#include "sim-config.h"
#include "abstract.h"
#include "cuc.h"
#include "insn.h"
#include "support/profile.h"
#include "misc.h"
```

Include dependency graph for adv.c:



## Functions

- static void [mark\\_successors](#) ([cuc\\_func](#) \*f, int b, int m, int stopb)
- static unsigned long [mask](#) (unsigned long c)
- void [insert\\_conditional\\_facts](#) ([cuc\\_func](#) \*f)
- static unsigned long [max\\_op](#) ([cuc\\_func](#) \*f, int ref, int o)
- static unsigned long [calc\\_max](#) ([cuc\\_func](#) \*f, int ref)
- void [detect\\_max\\_values](#) ([cuc\\_func](#) \*f)



## 6.66.1 Function Documentation

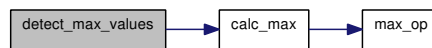
### 6.66.1.1 static unsigned long calc\_max (cuc\_func \*f, int ref) [static]

Here is the call graph for this function:



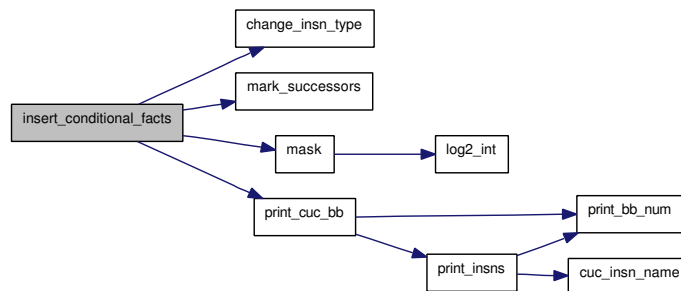
### 6.66.1.2 void detect\_max\_values (cuc\_func \*f)

Here is the call graph for this function:



### 6.66.1.3 void insert\_conditional\_facts (cuc\_func \*f)

Here is the call graph for this function:



### 6.66.1.4 static void mark\_successors (cuc\_func \*f, int b, int m, int stopb) [static]

### 6.66.1.5 static unsigned long mask (unsigned long c) [static]

Here is the call graph for this function:

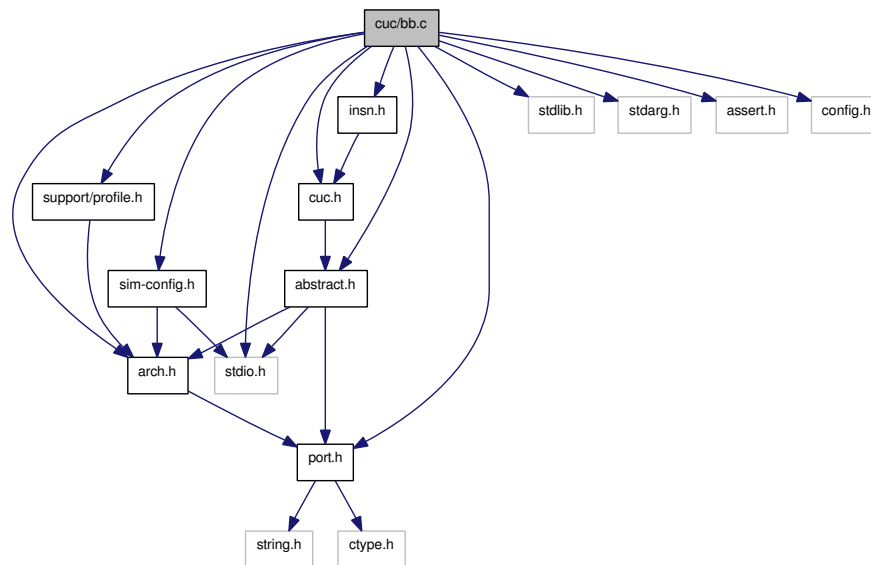


### 6.66.1.6 static unsigned long max\_op (cuc\_func \*f, int ref, int o) [static]

## 6.67 cuc/bb.c File Reference

```
#include <stdio.h>
#include <stdlib.h>
#include <stdarg.h>
#include <assert.h>
#include "config.h"
#include "port.h"
#include "arch.h"
#include "sim-config.h"
#include "abstract.h"
#include "cuc.h"
#include "insn.h"
#include "support/profile.h"
```

Include dependency graph for bb.c:



## Functions

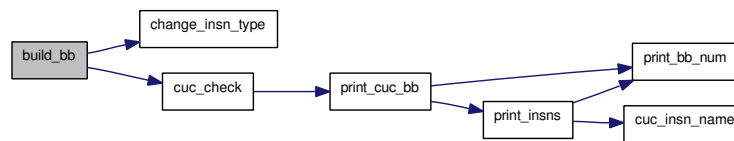
- void [print\\_bb\\_num](#) (int num)
- void [print\\_cuc\\_bb](#) (cuc\_func \*f, char \*s)
- void [cpy\\_bb](#) (cuc\_bb \*dest, cuc\_bb \*src)
- cuc\_func \* [dup\\_func](#) (cuc\_func \*f)
- void [free\\_func](#) (cuc\_func \*f)
- void [recalc\\_last\\_used\\_reg](#) (cuc\_func \*f, int b)
- void [detect\\_bb](#) (cuc\_func \*f)
- void [cuc\\_check](#) (cuc\_func \*f)

- void `build_bb` (`cuc_func *f`)
- static void `simplify_bb` (`cuc_func *f`, int pred, int s1, int s2, int neg)
- static void `join_bb` (`cuc_func *f`, int pred, int succ, int type)
- int `optimize_bb` (`cuc_func *f`)
- int `remove_dead_bb` (`cuc_func *f`)
- static void `reg_dep_rec` (`cuc_func *f`, int cur)
- void `reg_dep` (`cuc_func *f`)
- void `expand_bb` (`cuc_func *f`, int b)
- void `generate_bb_seq` (`cuc_func *f`, char \*mp\_filename, char \*bb\_filename)
- void `count_bb_seq` (`cuc_func *f`, int b, char \*bb\_filename, int \*counts, int preroll, int unroll)
- static void `relocate_bb` (`cuc_bb *bb`, int b, int back, int fwd)
- static `cuc_func *` `roll_loop` (`cuc_func *f`, int b, int ntimes, int type)
- `cuc_func *` `preunroll_loop` (`cuc_func *f`, int b, int preroll, int unroll, char \*bb\_filename)

## 6.67.1 Function Documentation

### 6.67.1.1 void `build_bb` (`cuc_func *f`)

Here is the call graph for this function:



### 6.67.1.2 void `count_bb_seq` (`cuc_func *f`, int *b*, char \* *bb\_filename*, int \* *counts*, int *preroll*, int *unroll*)

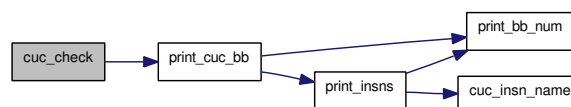
### 6.67.1.3 void `cpy_bb` (`cuc_bb *dest`, `cuc_bb *src`)

Here is the call graph for this function:



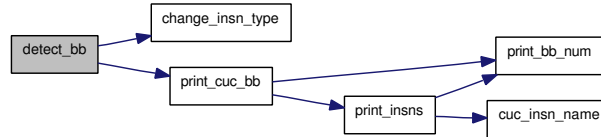
### 6.67.1.4 void `cuc_check` (`cuc_func *f`)

Here is the call graph for this function:



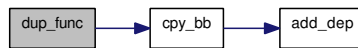
### 6.67.1.5 void detect\_bb (cuc\_func \*f)

Here is the call graph for this function:



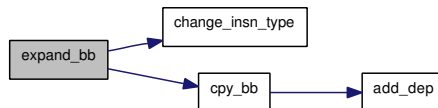
### 6.67.1.6 cuc\_func\* dup\_func (cuc\_func \*f)

Here is the call graph for this function:



### 6.67.1.7 void expand\_bb (cuc\_func \*f, int b)

Here is the call graph for this function:



### 6.67.1.8 void free\_func (cuc\_func \*f)

Here is the call graph for this function:



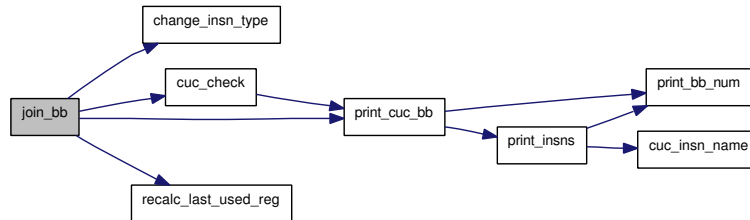
### 6.67.1.9 void generate\_bb\_seq (cuc\_func \*f, char \*mp\_filename, char \*bb\_filename)

Here is the call graph for this function:



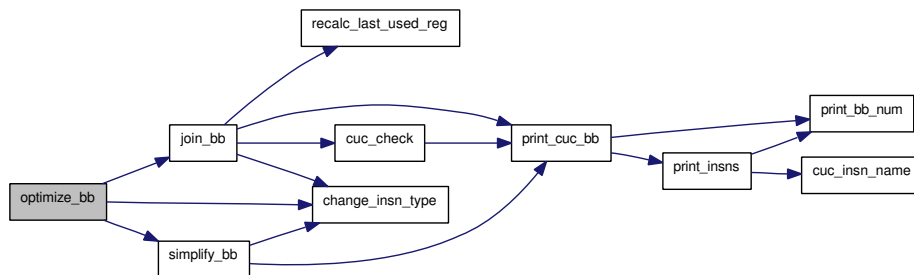
### 6.67.1.10 static void join\_bb (cuc\_func \*f, int pred, int succ, int type) [static]

Here is the call graph for this function:



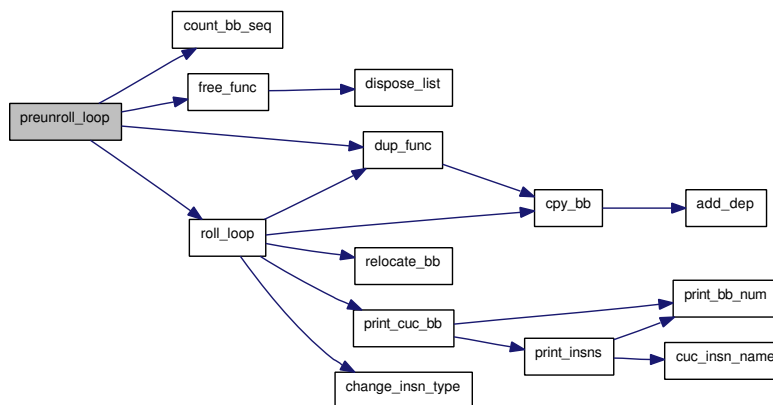
### 6.67.1.11 int optimize\_bb (cuc\_func \*f)

Here is the call graph for this function:



### 6.67.1.12 cuc\_func\* preunroll\_loop (cuc\_func \*f, int b, int preroll, int unroll, char \*bb\_filename)

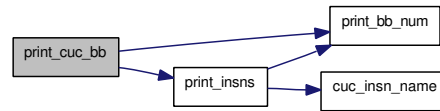
Here is the call graph for this function:



**6.67.1.13** void `print_bb_num` (int *num*)

**6.67.1.14** void `print_cuc_bb` (cuc\_func \**f*, char \**s*)

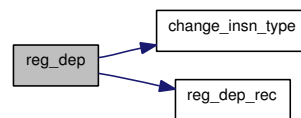
Here is the call graph for this function:



**6.67.1.15** void `recalc_last_used_reg` (cuc\_func \**f*, int *b*)

**6.67.1.16** void `reg_dep` (cuc\_func \**f*)

Here is the call graph for this function:



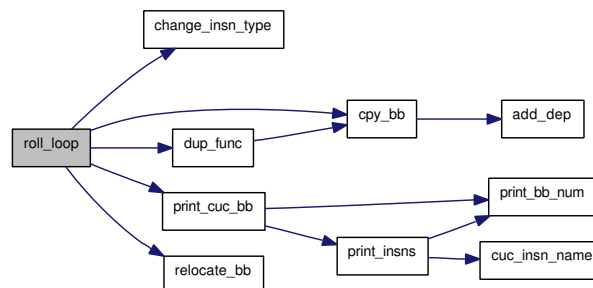
**6.67.1.17** static void `reg_dep_rec` (cuc\_func \**f*, int *cur*) [static]

**6.67.1.18** static void `relocate_bb` (cuc\_bb \**bb*, int *b*, int *back*, int  *fwd*) [static]

**6.67.1.19** int `remove_dead_bb` (cuc\_func \**f*)

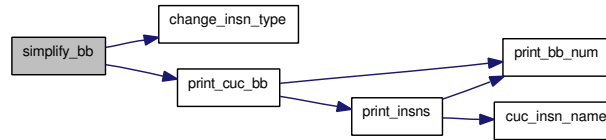
**6.67.1.20** static cuc\_func\* `roll_loop` (cuc\_func \**f*, int *b*, int *ntimes*, int *type*) [static]

Here is the call graph for this function:



**6.67.1.21** `static void simplify_bb (cuc_func *f, int pred, int s1, int s2, int neg)` [static]

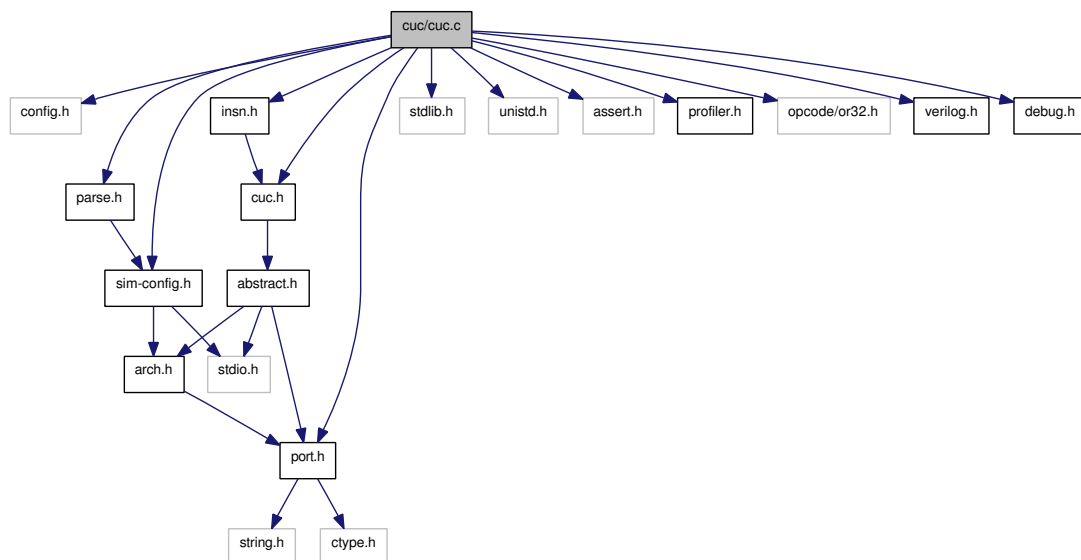
Here is the call graph for this function:



## 6.68 cuc/cuc.c File Reference

```
#include "config.h"
#include "port.h"
#include <stdlib.h>
#include <unistd.h>
#include <assert.h>
#include "cuc.h"
#include "sim-config.h"
#include "profiler.h"
#include "insn.h"
#include "opcode/or32.h"
#include "parse.h"
#include "verilog.h"
#include "debug.h"
```

Include dependency graph for cuc.c:



## Functions

- void [cuc\\_optimize](#) ([cuc\\_func](#) \*func)
- [cuc\\_timings](#) \*preunroll\_bb (char \*bb\_filename, [cuc\\_func](#) \*f, [cuc\\_timings](#) \*timings, int b, int i, int j)
- int [tim\\_comp](#) ([cuc\\_timings](#) \*a, [cuc\\_timings](#) \*b)
- [cuc\\_func](#) \* [analyse\\_function](#) (char \*module\_name, long orig\_time, unsigned long [start\\_addr](#), unsigned long [end\\_addr](#), int memory\_order, int num\_runs)
- char \* [gen\\_option](#) (char \*s, int bb\_no, int f\_opt)
- void [print\\_option](#) (int bb\_no, int f\_opt)



- static char \* [format\\_func\\_options](#) (char \*s, [cuc\\_func](#) \*f)
- static void [options\\_cmd](#) (int func\_no, [cuc\\_func](#) \*f)
- [cuc\\_func](#) \* [generate\\_function](#) ([cuc\\_func](#) \*rf, char \*name, char \*cut\_filename)
- int [calc\\_cycles](#) ([cuc\\_func](#) \*f)
- double [calc\\_size](#) ([cuc\\_func](#) \*f)
- unsigned long [extract\\_function](#) (char \*out\_fn, unsigned long start\_addr)
- static void [set\\_func\\_deps](#) ()
- void [main\\_cuc](#) (char \*filename)
- static void [cuc\\_memory\\_order](#) (union [param\\_val](#) val, void \*dat)
- static void [cuc\\_calling\\_conv](#) (union [param\\_val](#) val, void \*dat)
- static void [cuc\\_enable\\_bursts](#) (union [param\\_val](#) val, void \*dat)
- static void [cuc\\_no\\_multicycle](#) (union [param\\_val](#) val, void \*dat)
- static void [cuc\\_timings\\_fn](#) (union [param\\_val](#) val, void \*dat)
- void [reg\\_cuc\\_sec](#) ()

## Variables

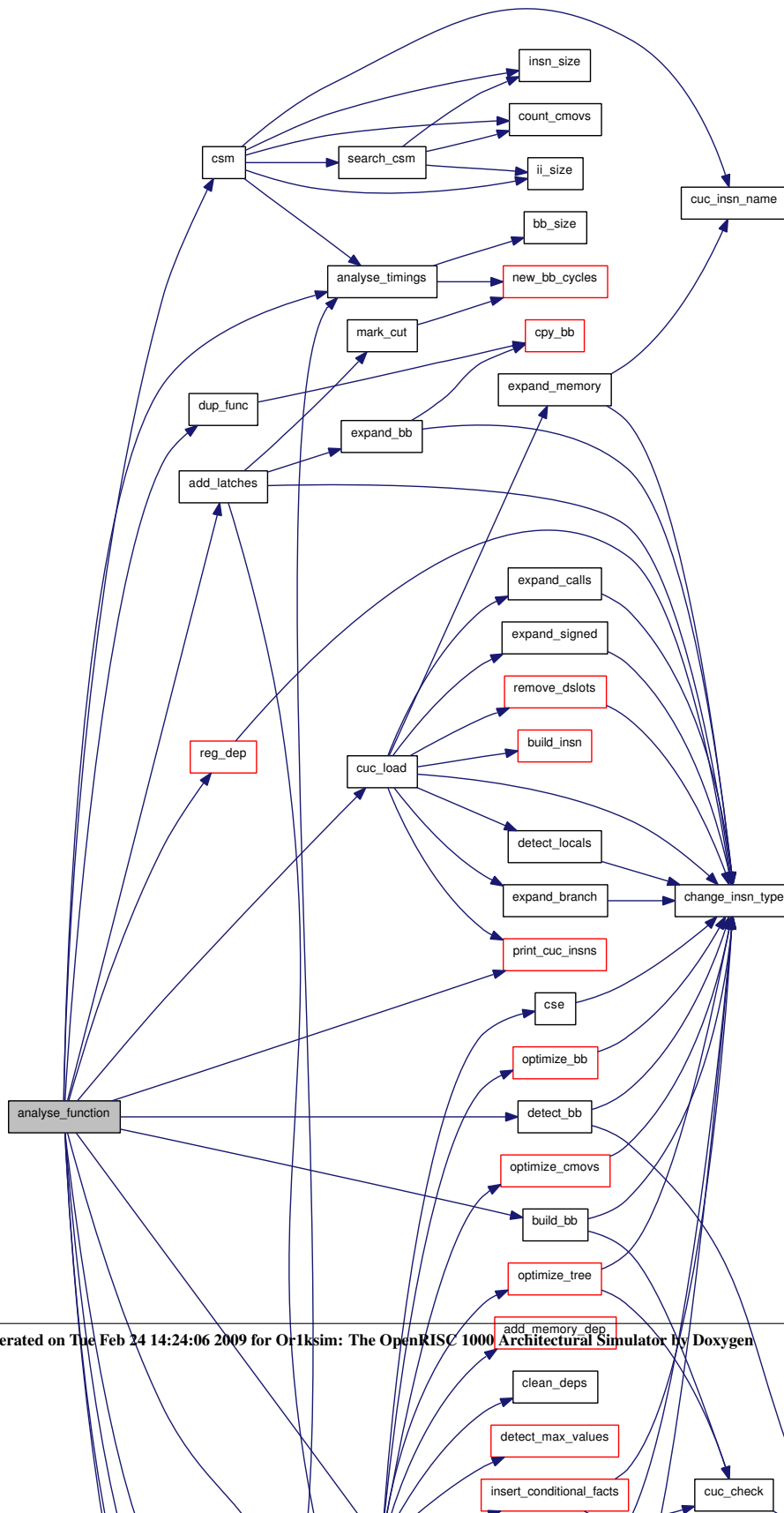
- FILE \* [flog](#)
- int [cuc\\_debug](#) = 0
- const int [caller\\_saved](#) [MAX\_REGS]
- static const char \* [option\\_char](#)
- static [cuc\\_func](#) \* [func](#) [MAX\_FUNCS]
- static int [func\\_v](#) [MAX\_FUNCS]



## 6.68.1 Function Documentation

### 6.68.1.1 cuc\_func\* analyse\_function (char \* module\_name, long orig\_time, unsigned long start\_addr, unsigned long end\_addr, int memory\_order, int num\_runs)

Here is the call graph for this function:



**6.68.1.2** `int calc_cycles (cuc_func *f)`

**6.68.1.3** `double calc_size (cuc_func *f)`

**6.68.1.4** `static void cuc_calling_conv (union param_val val, void *dat)` [static]

**6.68.1.5** `static void cuc_enable_bursts (union param_val val, void *dat)` [static]

**6.68.1.6** `static void cuc_memory_order (union param_val val, void *dat)` [static]

Set the memory order

Value must be one of none, weak, strong or exact. Invalid values are ignored with a warning.

**Parameters:**

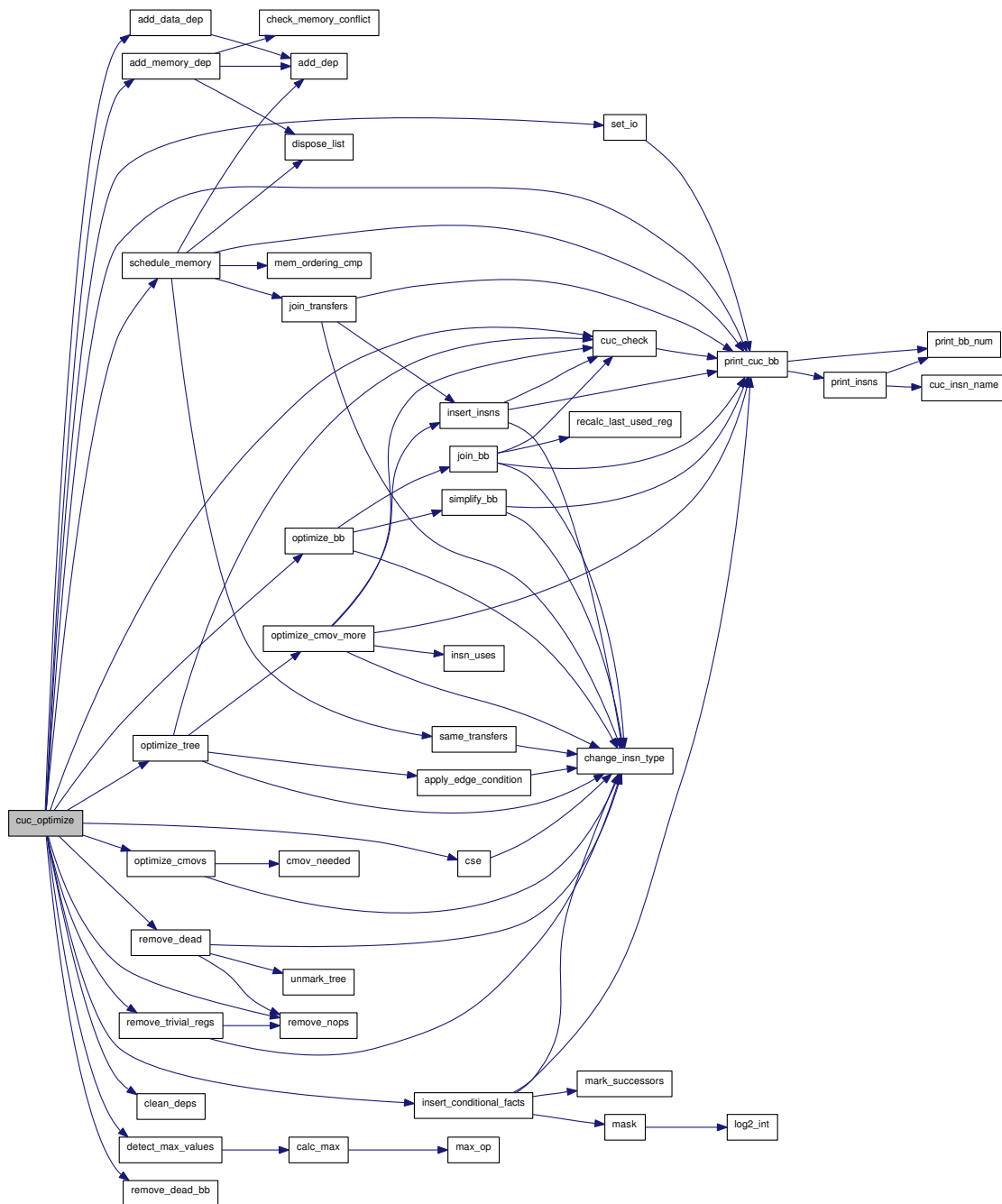
← *val* The value to use

← *dat* The [config](#) data structure (not used here)

**6.68.1.7** `static void cuc_no_multicycle (union param_val val, void * dat)` [static]

**6.68.1.8** `void cuc_optimize (cuc_func * func)`

Here is the call graph for this function:



### 6.68.1.9 static void cuc\_timings\_fn (union param\_val val, void \* dat) [static]

Set the timings file

Free any existing string.

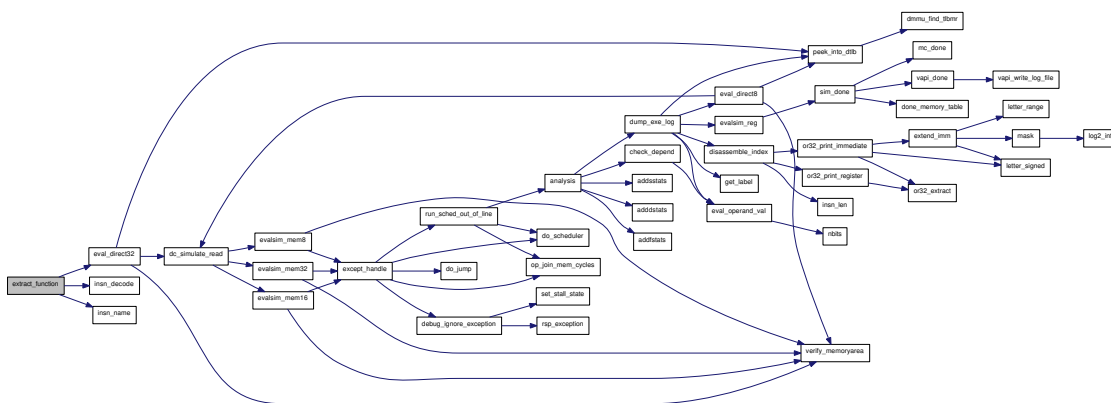
#### Parameters:

← *val* The value to use

← *dat* The [config](#) data structure (not used here)

### 6.68.1.10 unsigned long extract\_function (char \* out\_fn, unsigned long start\_addr)

Here is the call graph for this function:



### 6.68.1.11 static char\* format\_func\_options (char \* s, cuc\_func \* f) [static]

Here is the call graph for this function:





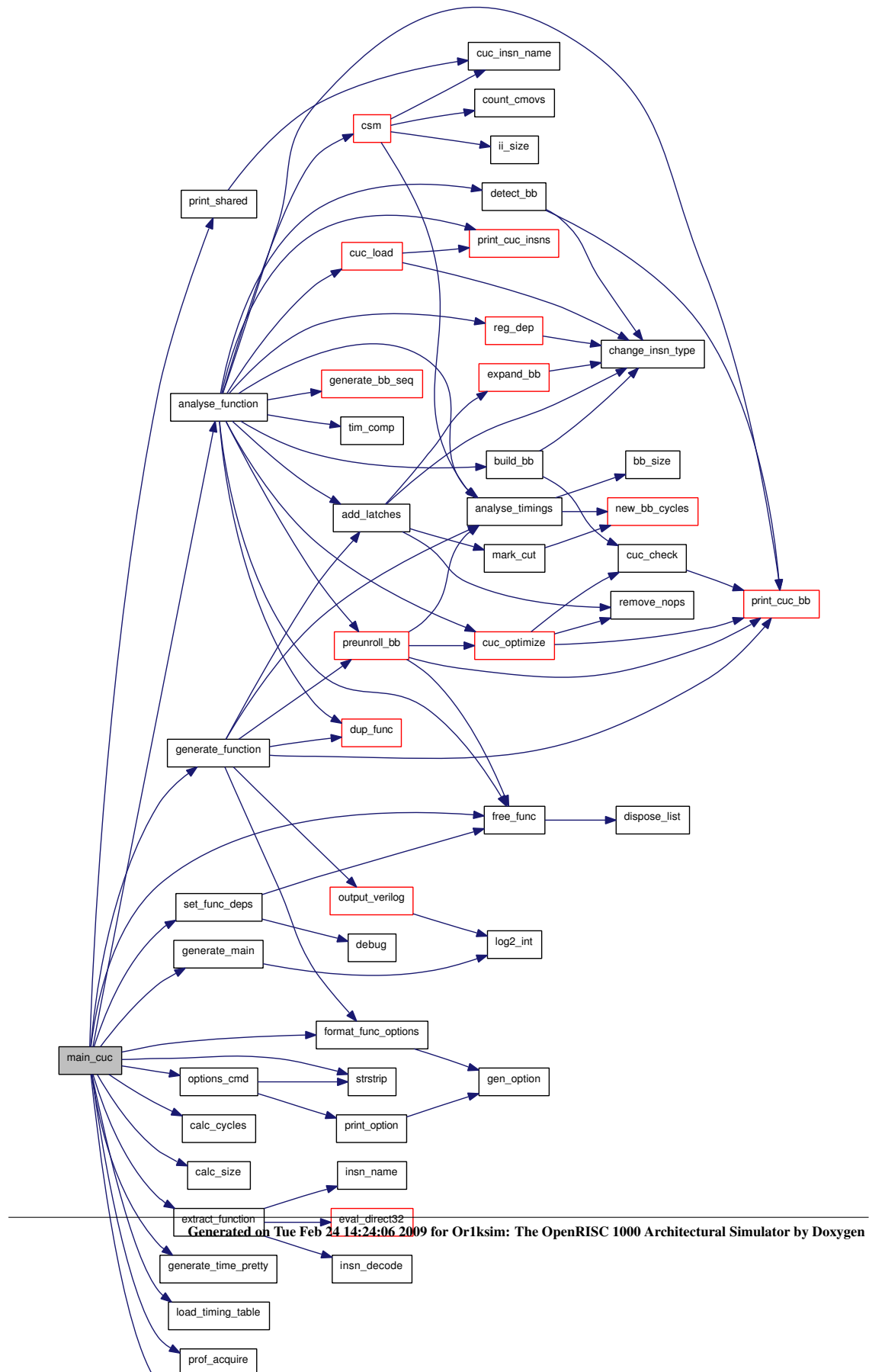






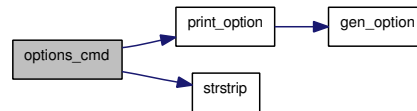
### 6.68.1.14 void main\_cuc (char \* filename)

Here is the call graph for this function:



**6.68.1.15** `static void options_cmd (int func_no, cuc_func *f)` [static]

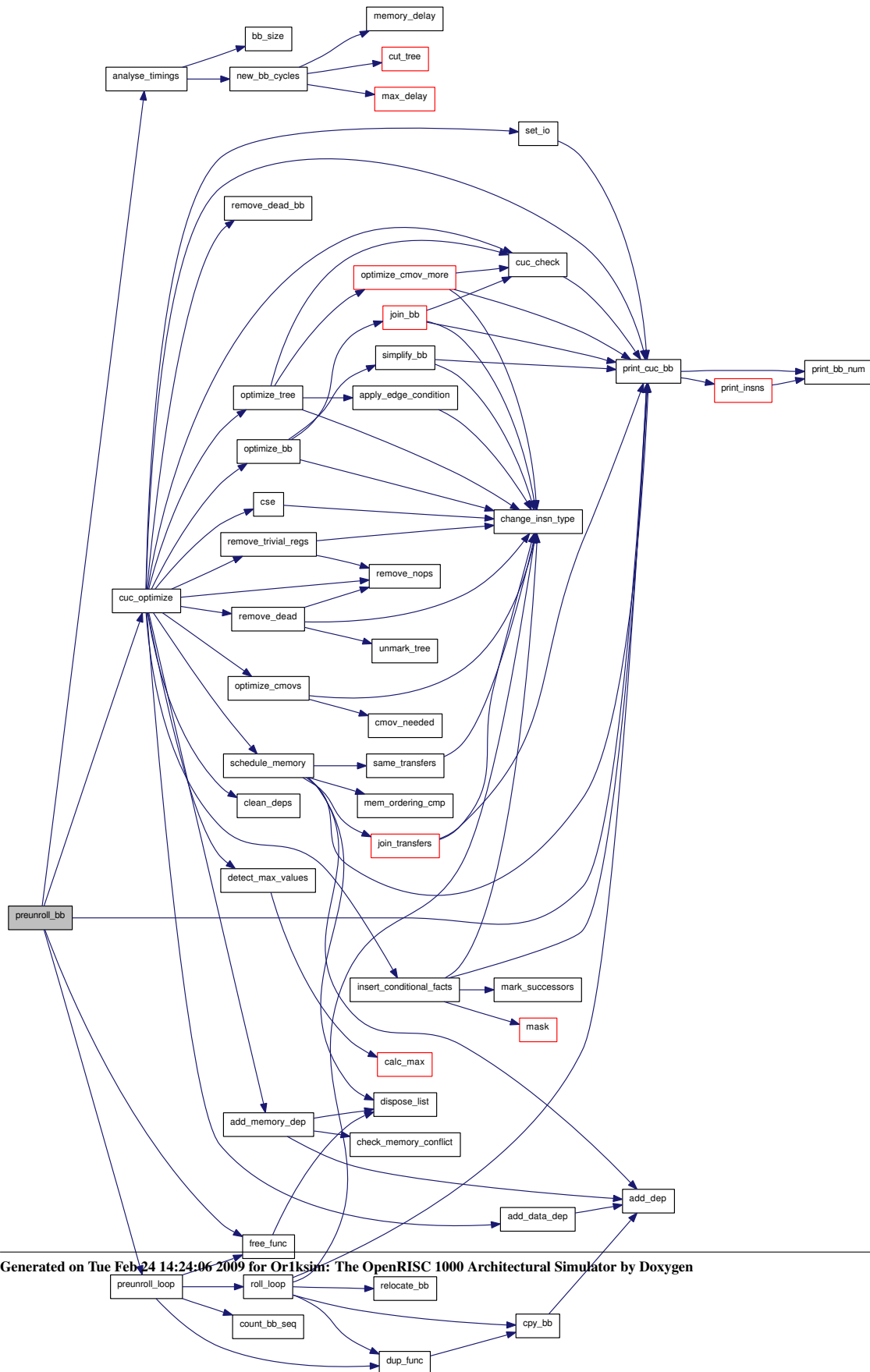
Here is the call graph for this function:





6.68.1.16 cuc\_timings\* preunroll\_bb (char \* bb\_filename, cuc\_func \* f, cuc\_timings \* timings, int b, int i, int j)

Here is the call graph for this function:



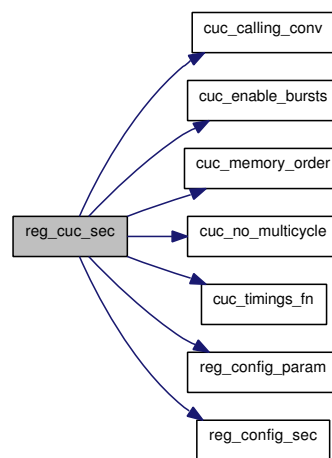
### 6.68.1.17 void print\_option (int *bb\_no*, int *f\_opt*)

Here is the call graph for this function:



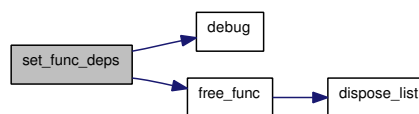
### 6.68.1.18 void reg\_cuc\_sec ()

Here is the call graph for this function:



### 6.68.1.19 static void set\_func\_deps () [static]

Here is the call graph for this function:



### 6.68.1.20 int tim\_comp (cuc\_timings \* *a*, cuc\_timings \* *b*)

## 6.68.2 Variable Documentation

### 6.68.2.1 const int caller\_saved[MAX\_REGS]

**Initial value:**

```

{
  0, 0, 0, 1, 1, 1, 1, 1,
  1, 1, 0, 0, 0, 1, 0, 1,

```

```
    0, 1, 0, 1, 0, 1, 0, 1,  
    0, 1, 0, 1, 0, 1, 0, 1,  
    1, 1  
}
```

**6.68.2.2** `int cuc_debug = 0`

**6.68.2.3** `FILE* flog`

**6.68.2.4** `cuc_func* func[MAX_FUNCS]` [static]

**6.68.2.5** `int func_v[MAX_FUNCS]` [static]

**6.68.2.6** `const char* option_char` [static]

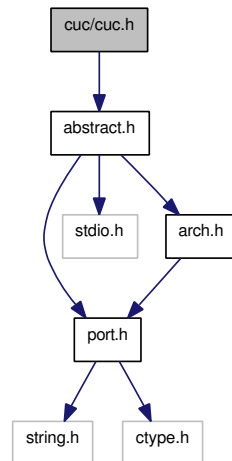
**Initial value:**

```
"?abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ"
```

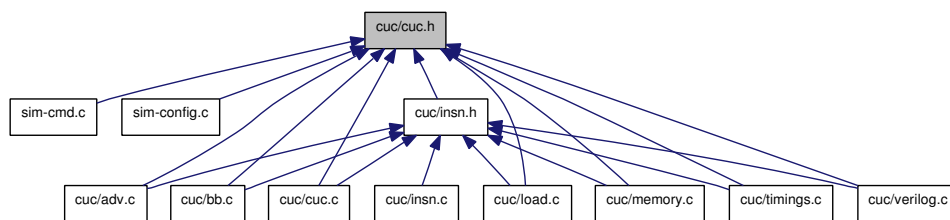
## 6.69 cuc/cuc.h File Reference

```
#include "abstract.h"
```

Include dependency graph for cuc.h:



This graph shows which files directly or indirectly include this file:



### Data Structures

- struct [\\_dep\\_list\\_t](#)
- struct [\\_csm\\_list](#)
- struct [cuc\\_shared\\_item](#)
- struct [cuc\\_timings](#)
- struct [cuc\\_insn](#)
- struct [cuc\\_bb](#)
- struct [\\_cuc\\_func](#)

### Defines

- #define [MAX\\_INSNS](#) 0x10000
- #define [MAX\\_BB](#) 0x1000
- #define [MAX\\_REGS](#) 34
- #define [FLAG\\_REG](#) (MAX\_REGS - 2)
- #define [LRBB\\_REG](#) (MAX\_REGS - 1)



- #define CUC\_MAX\_STACK 0x1000
- #define MAX\_PREROLL 32
- #define MAX\_UNROLL 32
- #define IT\_BRANCH 0x0001
- #define IT\_INDELAY 0x0002
- #define IT\_BBSTART 0x0004
- #define IT\_BBEND 0x0008
- #define IT\_OUTPUT 0x0010
- #define IT\_SIGNED 0x0020
- #define IT\_MEMORY 0x0040
- #define IT\_UNUSED 0x0080
- #define IT\_FLAG1 0x0100
- #define IT\_FLAG2 0x0200
- #define IT\_VOLATILE 0x0400
- #define IT\_MEMADD 0x0800
- #define IT\_COND 0x1000
- #define IT\_LATCHED 0x2000
- #define IT\_CUT 0x4000
- #define OPT\_NONE 0x00
- #define OPT\_CONST 0x01
- #define OPT\_REGISTER 0x02
- #define OPT\_REF 0x04
- #define OPT\_JUMP 0x08
- #define OPT\_DEST 0x10
- #define OPT\_BB 0x20
- #define OPT\_LRBB 0x40
- #define MT\_WIDTH 0x007
- #define MT\_BURST 0x008
- #define MT\_BURSTE 0x010
- #define MT\_CALL 0x020
- #define MT\_LOAD 0x040
- #define MT\_STORE 0x080
- #define MT\_SIGNED 0x100
- #define MO\_NONE 0
- #define MO\_WEAK 1
- #define MO\_STRONG 2
- #define MO\_EXACT 3
- #define BB\_INLOOP 0x01
- #define BB\_OPTIONAL 0x02
- #define BB\_DEAD 0x08
- #define BBID\_START MAX\_BB
- #define BBID\_END (MAX\_BB + 1)
- #define REF(bb, i) (((bb) \* MAX\_INSNS) + (i))
- #define REF\_BB(r) ((r) / MAX\_INSNS)
- #define REF\_I(r) ((r) % MAX\_INSNS)
- #define INSN(ref) bb[REF\_BB(ref)].insn[REF\_I(ref)]
- #define MIN(x, y) ((x) < (y) ? (x) : (y))
- #define MAX(x, y) ((x) > (y) ? (x) : (y))
- #define log(x...) { fprintf (flog, x); fflush (flog); }
- #define cucdebug(x, s...) { if ((x) <= cuc\_debug) PRINTF (s); }
- #define CUC\_WIDTH\_ITERATIONS 256

## Typedefs

- typedef struct `_dep_list_t` `dep_list`
- typedef struct `_csm_list` `cuc_shared_list`
- typedef struct `_cuc_func` `cuc_func`

## Functions

- int `cuc_load` (char \*in\_fn)
- void `negate_conditional` (cuc\_insn \*ii)
- void `generate_bb_seq` (cuc\_func \*f, char \*mp\_filename, char \*bb\_filename)
- void `print_insns` (int bb, cuc\_insn \*insns, int size, int verbose)
- void `print_bb_num` (int num)
- void `print_cuc_bb` (cuc\_func \*func, char \*s)
- cuc\_func \* `dup_func` (cuc\_func \*f)
- void `free_func` (cuc\_func \*f)
- void `csm` (cuc\_func \*f)
- void `csm_gen` (cuc\_func \*f, cuc\_func \*rf, cuc\_shared\_item \*shared, int nshared)
- void `detect_bb` (cuc\_func \*func)
- int `optimize_bb` (cuc\_func \*func)
- int `optimize_cmovs` (cuc\_func \*func)
- int `optimize_tree` (cuc\_func \*func)
- int `remove_nops` (cuc\_func \*func)
- int `remove_dead` (cuc\_func \*func)
- int `remove_trivial_regs` (cuc\_func \*f)
- void `set_io` (cuc\_func \*func)
- int `remove_dead_bb` (cuc\_func \*func)
- int `cse` (cuc\_func \*f)
- void `reg_dep` (cuc\_func \*func)
- void `mark_cut` (cuc\_func \*f)
- cuc\_func \* `preunroll_loop` (cuc\_func \*func, int b, int preroll, int unroll, char \*bb\_filename)
- void `clean_deps` (cuc\_func \*func)
- int `schedule_memory` (cuc\_func \*func, int otype)
- void `recalc_cnts` (cuc\_func \*f, char \*bb\_filename)
- void `analyse_timings` (cuc\_func \*func, cuc\_timings \*timings)
- void `insert_conditional_facts` (cuc\_func \*func)
- void `detect_max_values` (cuc\_func \*f)
- void `insert_insns` (cuc\_func \*f, int ref, int n)
- void `cuc_check` (cuc\_func \*f)
- void `add_memory_dep` (cuc\_func \*f, int otype)
- void `print_cuc_insns` (char \*s, int verbose)
- void `build_bb` (cuc\_func \*f)
- void `add_latches` (cuc\_func \*f)
- void `expand_bb` (cuc\_func \*f, int b)
- void `add_dep` (dep\_list \*\*list, int dep)
- void `dispose_list` (dep\_list \*\*list)
- void `main_cuc` (char \*filename)
- void `add_data_dep` (cuc\_func \*f)
- void `reg_cuc_sec` ()

## Variables

- int [cuc\\_debug](#)
  
- const int [caller\\_saved](#) [MAX\_REGS]
  
- [cuc\\_insn](#) [insn](#) [MAX\_INSNS]
  
- int [num\\_insn](#)
  
- int [reloc](#) [MAX\_INSNS]
  
- FILE \* [flog](#)



## 6.69.1 Define Documentation

6.69.1.1 `#define BB_DEAD 0x08`

6.69.1.2 `#define BB_INLOOP 0x01`

6.69.1.3 `#define BB_OPTIONAL 0x02`

6.69.1.4 `#define BBID_END (MAX_BB + 1)`

6.69.1.5 `#define BBID_START MAX_BB`

6.69.1.6 `#define CUC_MAX_STACK 0x1000`

6.69.1.7 `#define CUC_WIDTH_ITERATIONS 256`

6.69.1.8 `#define cucdebug(x, s...) {if ((x) <= cuc_debug) PRINTF (s);}`

6.69.1.9 `#define FLAG_REG (MAX_REGS - 2)`

6.69.1.10 `#define INSN(ref) bb[REF_BB(ref)].insn[REF_I(ref)]`

6.69.1.11 `#define IT_BBEND 0x0008`

6.69.1.12 `#define IT_BBSTART 0x0004`

6.69.1.13 `#define IT_BRANCH 0x0001`

6.69.1.14 `#define IT_COND 0x1000`

6.69.1.15 `#define IT_CUT 0x4000`

6.69.1.16 `#define IT_FLAG1 0x0100`

6.69.1.17 `#define IT_FLAG2 0x0200`

6.69.1.18 `#define IT_INDELAY 0x0002`

6.69.1.19 `#define IT_LATCHED 0x2000`

6.69.1.20 `#define IT_MEMADD 0x0800`

6.69.1.21 `#define IT_MEMORY 0x0040`

6.69.1.22 `#define IT_OUTPUT 0x0010`

6.69.1.23 `#define IT_SIGNED 0x0020`

6.69.1.24 `#define IT_UNUSED 0x0080`

6.69.1.25 `#define IT_VOLATILE 0x0400`

6.69.1.26 `#define log(x...) {fprintf (flog, x); fflush (flog); }`

6.69.1.27 `#define LBB_REG (MAX_REGS - 1)`  
Generated on Tue Feb 24 14:42:30 2009 for OpenSim: The OpenRISC 1000 Architectural Simulator by Doxygen

6.69.1.28 `#define MAX(x, y) ((x) > (y) ? (x) : (y))`

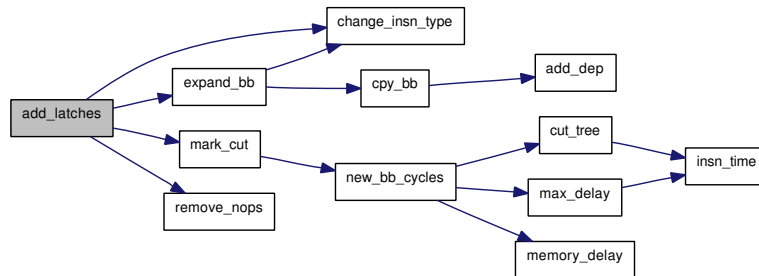
6.69.1.29 `#define MAX_BB 0x1000`

6.69.1.30 `#define MAX_INSNS 0x10000`

### 6.69.3.2 void add\_dep (dep\_list \*\* list, int dep)

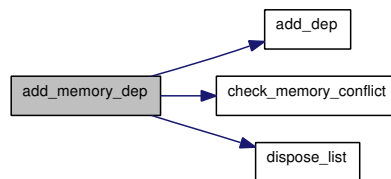
### 6.69.3.3 void add\_latches (cuc\_func \* f)

Here is the call graph for this function:



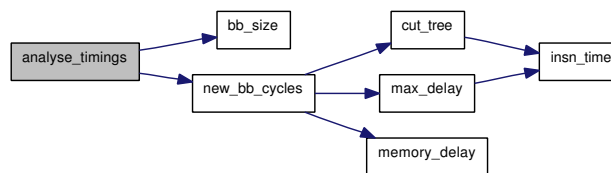
### 6.69.3.4 void add\_memory\_dep (cuc\_func \* f, int otype)

Here is the call graph for this function:



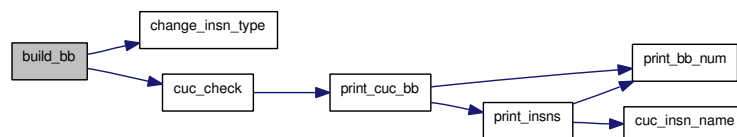
### 6.69.3.5 void analyse\_timings (cuc\_func \* func, cuc\_timings \* timings)

Here is the call graph for this function:



### 6.69.3.6 void build\_bb (cuc\_func \* f)

Here is the call graph for this function:

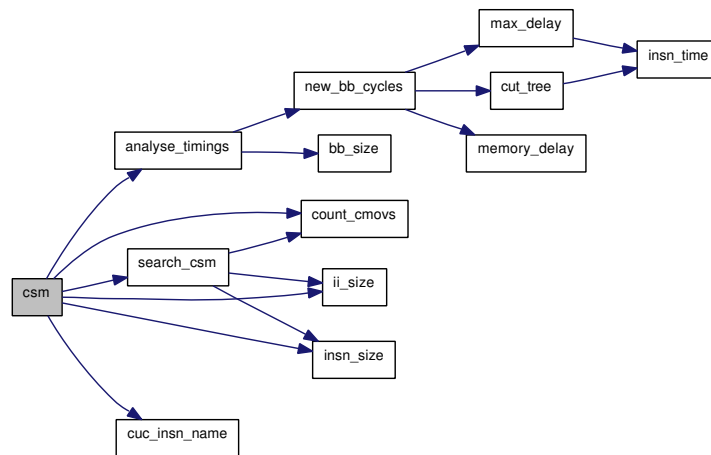


**6.69.3.7 void clean\_deps (cuc\_func \*func)****6.69.3.8 int cse (cuc\_func \*f)**

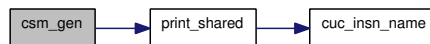
Here is the call graph for this function:

**6.69.3.9 void csm (cuc\_func \*f)**

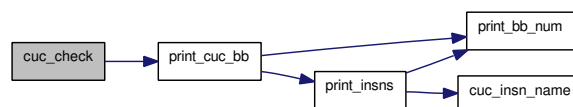
Here is the call graph for this function:

**6.69.3.10 void csm\_gen (cuc\_func \*f, cuc\_func \*rf, cuc\_shared\_item \*shared, int nshared)**

Here is the call graph for this function:

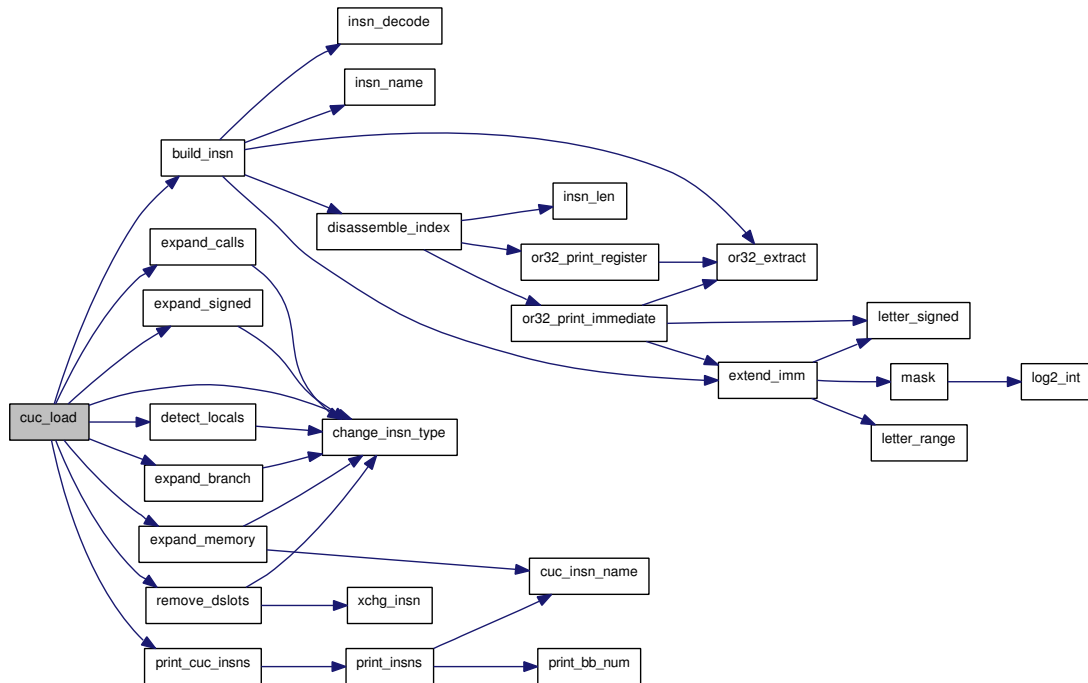
**6.69.3.11 void cuc\_check (cuc\_func \*f)**

Here is the call graph for this function:



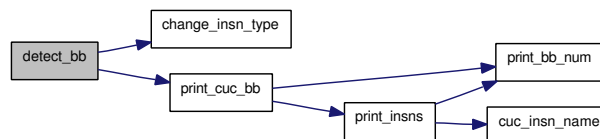
### 6.69.3.12 int cuc\_load (char \* in\_fn)

Here is the call graph for this function:



### 6.69.3.13 void detect\_bb (cuc\_func \* func)

Here is the call graph for this function:



### 6.69.3.14 void detect\_max\_values (cuc\_func \* f)

Here is the call graph for this function:

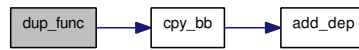




**6.69.3.15** void dispose\_list (dep\_list \*\* list)

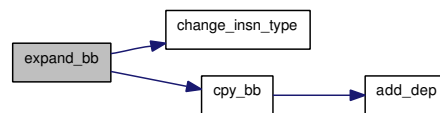
**6.69.3.16** cuc\_func\* dup\_func (cuc\_func \* f)

Here is the call graph for this function:



**6.69.3.17** void expand\_bb (cuc\_func \* f, int b)

Here is the call graph for this function:



**6.69.3.18** void free\_func (cuc\_func \* f)

Here is the call graph for this function:



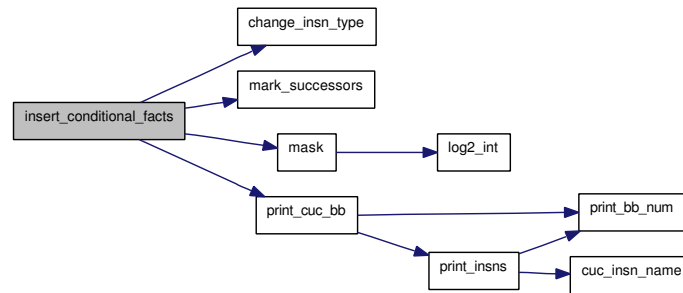
**6.69.3.19** void generate\_bb\_seq (cuc\_func \* f, char \* mp\_filename, char \* bb\_filename)

Here is the call graph for this function:



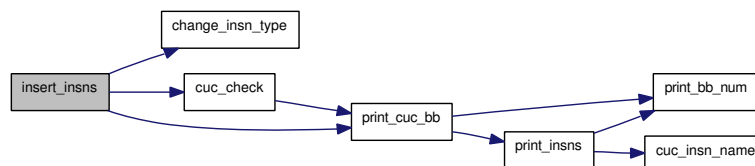
### 6.69.3.20 void insert\_conditional\_facts (cuc\_func \* func)

Here is the call graph for this function:



### 6.69.3.21 void insert\_insns (cuc\_func \* f, int ref, int n)

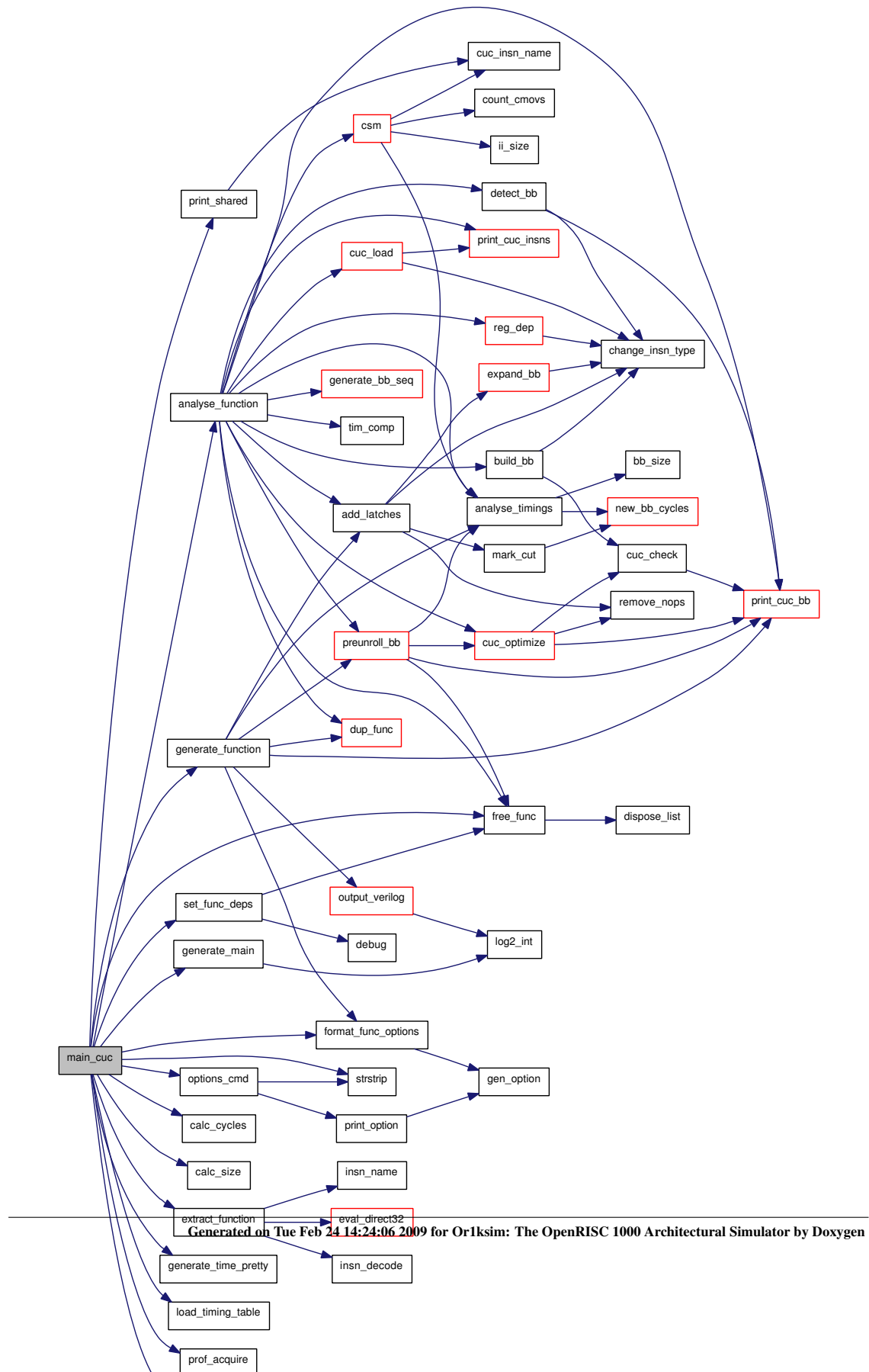
Here is the call graph for this function:





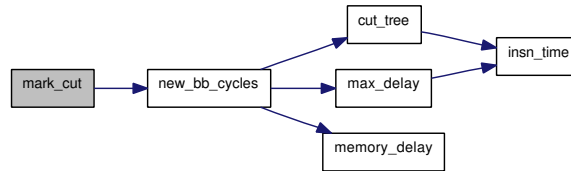
### 6.69.3.22 void main\_cuc (char \* filename)

Here is the call graph for this function:



**6.69.3.23 void mark\_cut (cuc\_func \* f)**

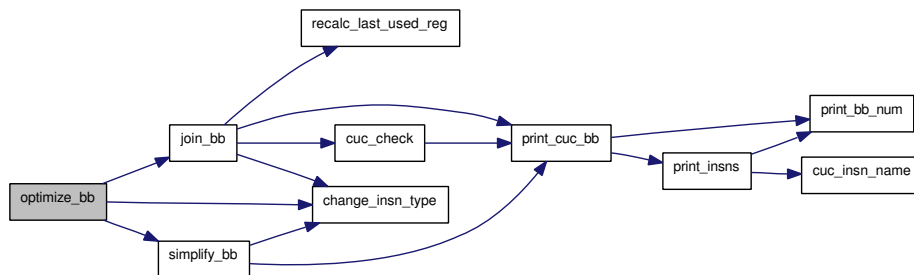
Here is the call graph for this function:

**6.69.3.24 void negate\_conditional (cuc\_insn \* ii)**

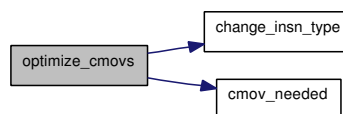
Here is the call graph for this function:

**6.69.3.25 int optimize\_bb (cuc\_func \* func)**

Here is the call graph for this function:

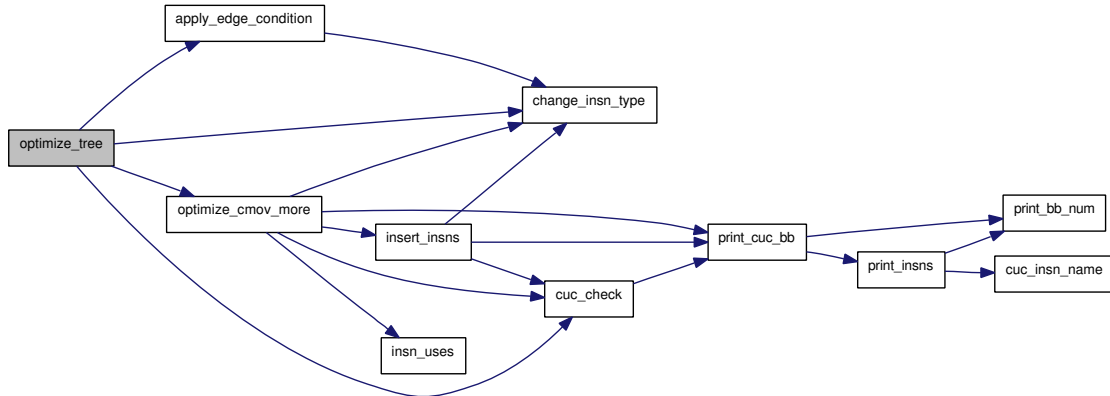
**6.69.3.26 int optimize\_cmovs (cuc\_func \* func)**

Here is the call graph for this function:



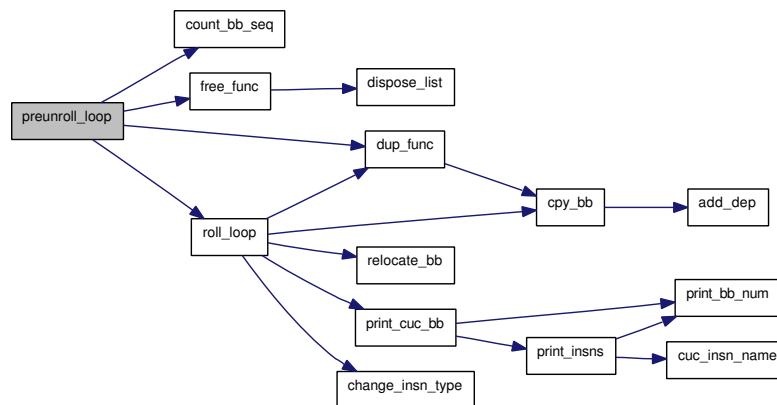
### 6.69.3.27 int optimize\_tree (cuc\_func \* func)

Here is the call graph for this function:



### 6.69.3.28 cuc\_func\* preunroll\_loop (cuc\_func \* func, int b, int preroll, int unroll, char \* bb\_filename)

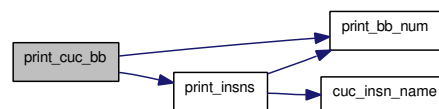
Here is the call graph for this function:



### 6.69.3.29 void print\_bb\_num (int num)

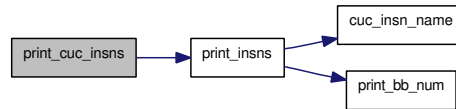
### 6.69.3.30 void print\_cuc\_bb (cuc\_func \* func, char \* s)

Here is the call graph for this function:

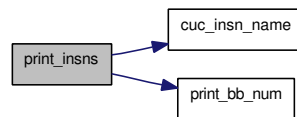


**6.69.3.31 void print\_cuc\_insns (char \* s, int verbose)**

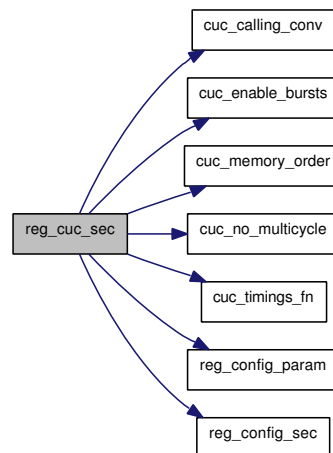
Here is the call graph for this function:

**6.69.3.32 void print\_insns (int bb, cuc\_insn \* insn, int size, int verbose)**

Here is the call graph for this function:

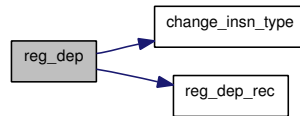
**6.69.3.33 void recalc\_cnts (cuc\_func \* f, char \* bb\_filename)****6.69.3.34 void reg\_cuc\_sec ()**

Here is the call graph for this function:

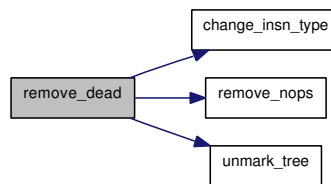


**6.69.3.35 void reg\_dep (cuc\_func \* *func*)**

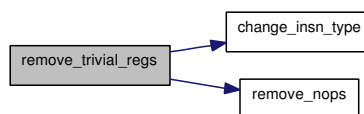
Here is the call graph for this function:

**6.69.3.36 int remove\_dead (cuc\_func \* *func*)**

Here is the call graph for this function:

**6.69.3.37 int remove\_dead\_bb (cuc\_func \* *func*)****6.69.3.38 int remove\_nops (cuc\_func \* *func*)****6.69.3.39 int remove\_trivial\_regs (cuc\_func \* *f*)**

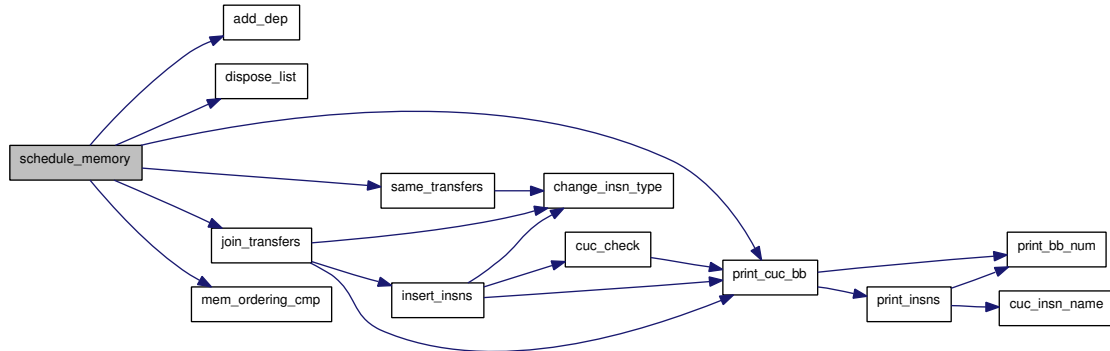
Here is the call graph for this function:





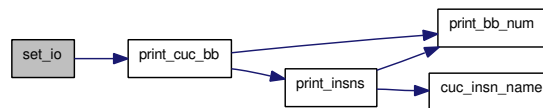
### 6.69.3.40 int schedule\_memory (cuc\_func \*func, int otype)

Here is the call graph for this function:



### 6.69.3.41 void set\_io (cuc\_func \*func)

Here is the call graph for this function:



## 6.69.4 Variable Documentation

6.69.4.1 const int caller\_saved[MAX\_REGS]

6.69.4.2 int cuc\_debug

6.69.4.3 FILE\* flog

6.69.4.4 cuc\_insn insn[MAX\_INSNS]

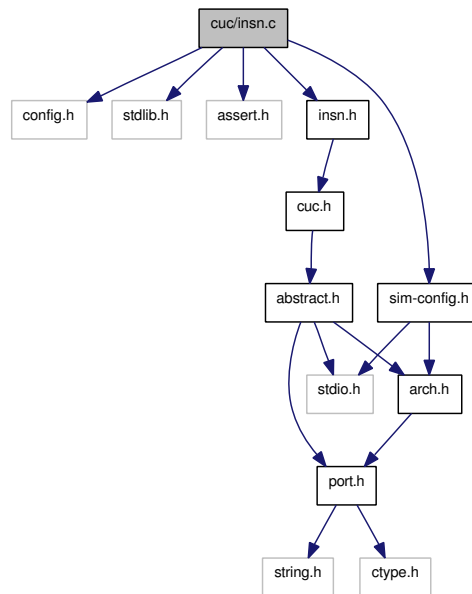
6.69.4.5 int num\_insn

6.69.4.6 int reloc[MAX\_INSNS]

## 6.70 cuc/insn.c File Reference

```
#include "config.h"
#include <stdlib.h>
#include <assert.h>
#include "insn.h"
#include "sim-config.h"
```

Include dependency graph for insn.c:



## Functions

- void [change\\_insn\\_type](#) (cuc\_insn \*i, int index)
- const char \* [cuc\\_insn\\_name](#) (cuc\_insn \*ii)
- void [print\\_insns](#) (int bb, cuc\_insn \*insn, int ninsn, int verbose)
- void [add\\_dep](#) (dep\_list \*\*list, int dep)
- void [dispose\\_list](#) (dep\_list \*\*list)
- void [add\\_data\\_dep](#) (cuc\_func \*f)
- void [insert\\_insns](#) (cuc\_func \*f, int ref, int n)
- int [apply\\_edge\\_condition](#) (cuc\_insn \*ii)
- static int [cmov\\_needed](#) (cuc\_func \*f, int ref)
- int [optimize\\_cmovs](#) (cuc\_func \*f)
- static int [insn\\_uses](#) (cuc\_func \*f, int ref)
- static int [optimize\\_cmov\\_more](#) (cuc\_func \*f, int ref)
- int [optimize\\_tree](#) (cuc\_func \*f)
- int [remove\\_nops](#) (cuc\_func \*f)
- static void [unmark\\_tree](#) (cuc\_func \*f, int ref)
- int [remove\\_dead](#) (cuc\_func \*f)
- int [remove\\_trivial\\_regs](#) (cuc\_func \*f)

- void `set_io` (`cuc_func` \*f)
- void `add_latches` (`cuc_func` \*f)
- int `cse` (`cuc_func` \*f)
- static int `count_cmovs` (`cuc_insn` \*ii, int match)
- static void `search_csm` (int iter, `cuc_func` \*f, `cuc_shared_list` \*list)
- void `csm` (`cuc_func` \*f)
- void `print_shared` (`cuc_func` \*rf, `cuc_shared_item` \*shared, int nshared)
- void `csm_gen` (`cuc_func` \*f, `cuc_func` \*rf, `cuc_shared_item` \*shared, int nshared)

## Variables

- const `cuc_known_insn` `known` [II\_LAST+1]
- static unsigned long `tmp_op`
- static unsigned long `tmp_opt`
- static `cuc_shared_list` \* `main_list`
- static int \* `iteration`

### 6.70.1 Function Documentation

#### 6.70.1.1 void `add_data_dep` (`cuc_func` \*f)

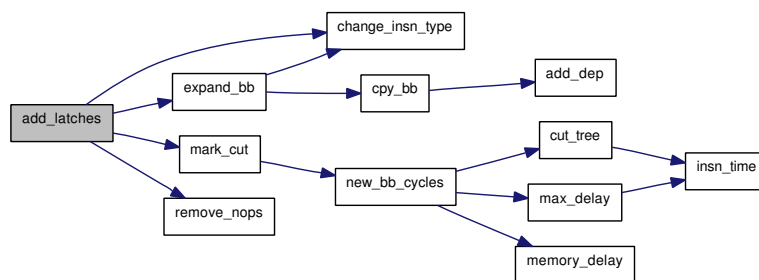
Here is the call graph for this function:



#### 6.70.1.2 void `add_dep` (`dep_list` \*\*list, int dep)

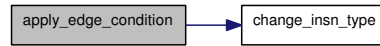
#### 6.70.1.3 void `add_latches` (`cuc_func` \*f)

Here is the call graph for this function:



#### 6.70.1.4 int apply\_edge\_condition (cuc\_insn \* ii)

Here is the call graph for this function:



#### 6.70.1.5 void change\_insn\_type (cuc\_insn \* i, int index)

#### 6.70.1.6 static int cmov\_needed (cuc\_func \* f, int ref) [static]

#### 6.70.1.7 static int count\_cmovs (cuc\_insn \* ii, int match) [static]

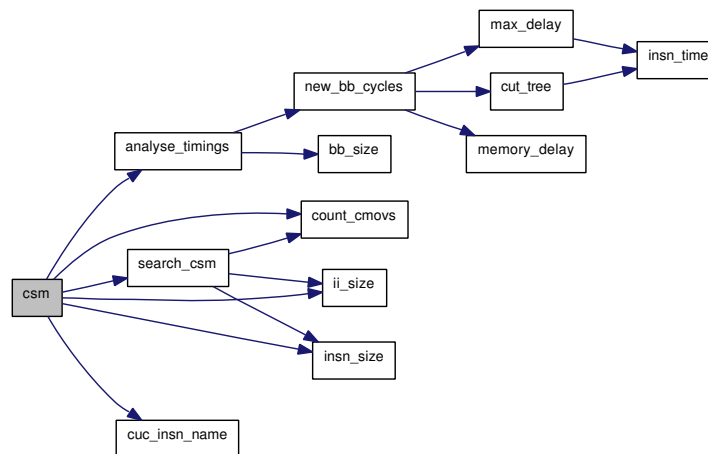
#### 6.70.1.8 int cse (cuc\_func \* f)

Here is the call graph for this function:



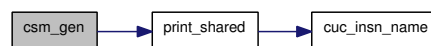
#### 6.70.1.9 void csm (cuc\_func \* f)

Here is the call graph for this function:



#### 6.70.1.10 void csm\_gen (cuc\_func \* f, cuc\_func \* rf, cuc\_shared\_item \* shared, int nshared)

Here is the call graph for this function:

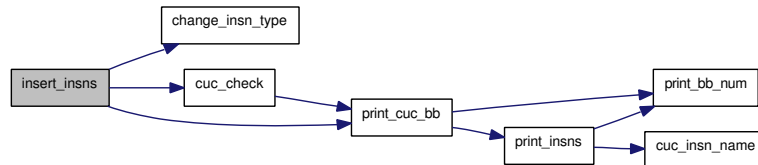


**6.70.1.11** `const char* cuc_insn_name (cuc_insn * ii)`

**6.70.1.12** `void dispose_list (dep_list ** list)`

**6.70.1.13** `void insert_insns (cuc_func * f, int ref, int n)`

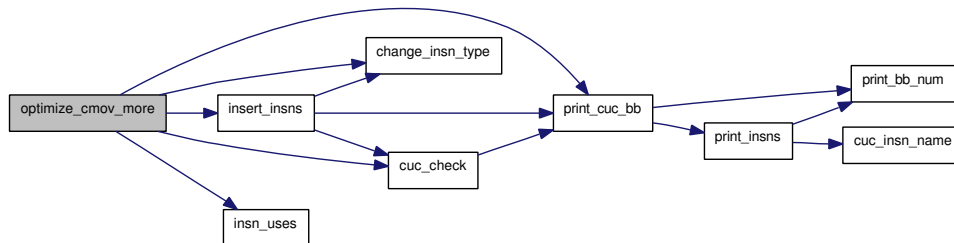
Here is the call graph for this function:



**6.70.1.14** `static int insn_uses (cuc_func * f, int ref)` [static]

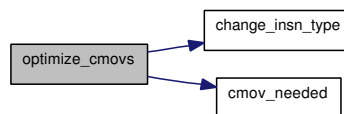
**6.70.1.15** `static int optimize_cmov_more (cuc_func * f, int ref)` [static]

Here is the call graph for this function:



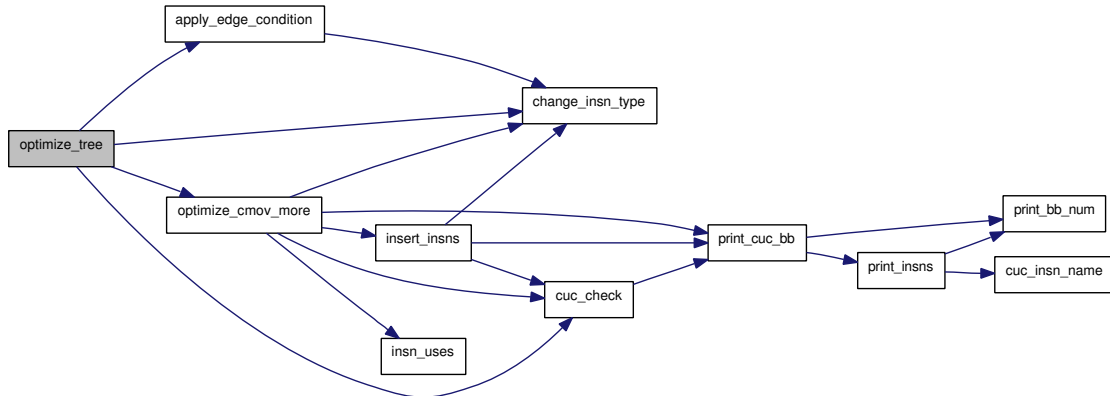
**6.70.1.16** `int optimize_cmovs (cuc_func * f)`

Here is the call graph for this function:



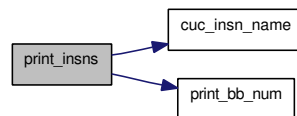
### 6.70.1.17 int optimize\_tree (cuc\_func \* f)

Here is the call graph for this function:



### 6.70.1.18 void print\_insns (int bb, cuc\_insn \* insn, int ninsn, int verbose)

Here is the call graph for this function:



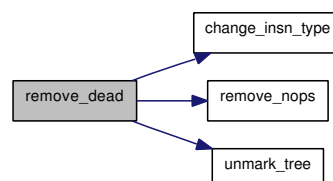
### 6.70.1.19 void print\_shared (cuc\_func \* rf, cuc\_shared\_item \* shared, int nshared)

Here is the call graph for this function:



### 6.70.1.20 int remove\_dead (cuc\_func \* f)

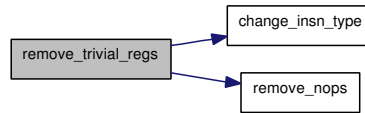
Here is the call graph for this function:



**6.70.1.21** `int remove_nops (cuc_func *f)`

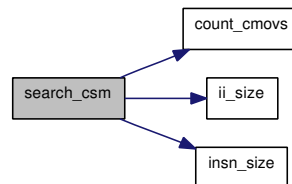
**6.70.1.22** `int remove_trivial_regs (cuc_func *f)`

Here is the call graph for this function:



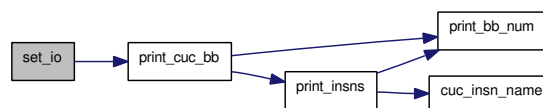
**6.70.1.23** `static void search_csm (int iter, cuc_func *f, cuc_shared_list *list)` [static]

Here is the call graph for this function:



**6.70.1.24** `void set_io (cuc_func *f)`

Here is the call graph for this function:



**6.70.1.25** `static void unmark_tree (cuc_func *f, int ref)` [static]

## 6.70.2 Variable Documentation

**6.70.2.1** `int* iteration` [static]

**6.70.2.2** `const cuc_known_insn known[II_LAST+1]`

**6.70.2.3** `cuc_shared_list* main_list` [static]

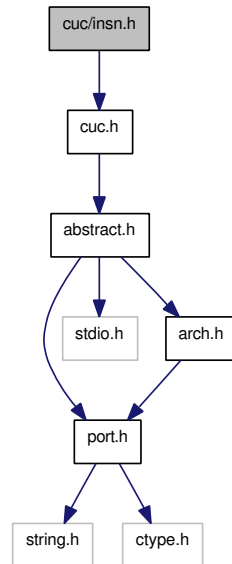
**6.70.2.4** `unsigned long tmp_op` [static]

**6.70.2.5** `unsigned long tmp_opt` [static]

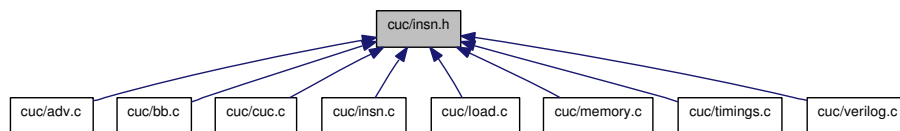
## 6.71 cuc/insn.h File Reference

```
#include "cuc.h"
```

Include dependency graph for insn.h:



This graph shows which files directly or indirectly include this file:



### Data Structures

- struct [cuc\\_known\\_insn](#)
- struct [cuc\\_timing\\_table](#)
- struct [cuc\\_conv](#)

### Defines

- #define [II\\_ADD](#) 0
- #define [II\\_SUB](#) 1
- #define [II\\_AND](#) 2
- #define [II\\_OR](#) 3
- #define [II\\_XOR](#) 4
- #define [II\\_MUL](#) 5
- #define [II\\_SRL](#) 6
- #define [II\\_SLL](#) 7
- #define [II\\_SRA](#) 8



- #define [II\\_LB](#) 9
- #define [II\\_LH](#) 10
- #define [II\\_LW](#) 11
- #define [II\\_SB](#) 12
- #define [II\\_SH](#) 13
- #define [II\\_SW](#) 14
- #define [II\\_SFEQ](#) 15
- #define [II\\_SFNE](#) 16
- #define [II\\_SFLE](#) 17
- #define [II\\_SFLT](#) 18
- #define [II\\_SFGE](#) 19
- #define [II\\_SFGT](#) 20
- #define [II\\_BF](#) 21
- #define [II\\_LRBB](#) 22
- #define [II\\_CMOV](#) 23
- #define [II\\_REG](#) 24
- #define [II\\_NOP](#) 25
- #define [II\\_CALL](#) 26
- #define [II\\_LAST](#) 26
- #define [II\\_MASK](#) 0x0fff
- #define [II\\_MEM](#) 0x1000
- #define [II\\_SIGNED](#) 0x2000
- #define [II\\_IS\\_LOAD](#)(x) ((x) == II\_LB || (x) == II\_LH || (x) == II\_LW)
- #define [II\\_IS\\_STORE](#)(x) ((x) == II\_SB || (x) == II\_SH || (x) == II\_SW)
- #define [II\\_MEM\\_WIDTH](#)(x)

## Functions

- double [ii\\_size](#) (int index, int imm)
- double [insn\\_time](#) (cuc\_insn \*ii)
- double [insn\\_size](#) (cuc\_insn \*ii)
- void [change\\_insn\\_type](#) (cuc\_insn \*i, int index)
- const char \* [cuc\\_insn\\_name](#) (cuc\_insn \*ii)
- void [load\\_timing\\_table](#) (char \*filename)
- void [print\\_shared](#) (cuc\_func \*rf, cuc\_shared\_item \*shared, int nshared)

## Variables

- const [cuc\\_known\\_insn](#) known [II\_LAST+1]

## 6.71.1 Define Documentation

6.71.1.1 **#define II\_ADD 0**

6.71.1.2 **#define II\_AND 2**

6.71.1.3 **#define II\_BF 21**

6.71.1.4 **#define II\_CALL 26**

6.71.1.5 **#define II\_CMOV 23**

6.71.1.6 **#define II\_IS\_LOAD(x) ((x) == II\_LB || (x) == II\_LH || (x) == II\_LW)**

6.71.1.7 **#define II\_IS\_STORE(x) ((x) == II\_SB || (x) == II\_SH || (x) == II\_SW)**

6.71.1.8 **#define II\_LAST 26**

6.71.1.9 **#define II\_LB 9**

6.71.1.10 **#define II\_LH 10**

6.71.1.11 **#define II\_LRBB 22**

6.71.1.12 **#define II\_LW 11**

6.71.1.13 **#define II\_MASK 0x0fff**

6.71.1.14 **#define II\_MEM 0x1000**

6.71.1.15 **#define II\_MEM\_WIDTH(x)**

**Value:**

```
((x) == II_LB || (x) == II_SB) ? 1 : \  
    ((x) == II_LH || (x) == II_SH) ? 2 : \  
    ((x) == II_LW || (x) == II_SW) ? 4 : -1
```



6.71.1.16 `#define II_MUL 5`

6.71.1.17 `#define II_NOP 25`

6.71.1.18 `#define II_OR 3`

6.71.1.19 `#define II_REG 24`

6.71.1.20 `#define II_SB 12`

6.71.1.21 `#define II_SFEQ 15`

6.71.1.22 `#define II_SFGE 19`

6.71.1.23 `#define II_SFGT 20`

6.71.1.24 `#define II_SFLE 17`

6.71.1.25 `#define II_SFLT 18`

6.71.1.26 `#define II_SFNE 16`

6.71.1.27 `#define II_SH 13`

6.71.1.28 `#define II_SIGNED 0x2000`

6.71.1.29 `#define II_SLL 7`

6.71.1.30 `#define II_SRA 8`

6.71.1.31 `#define II_SRL 6`

6.71.1.32 `#define II_SUB 1`

6.71.1.33 `#define II_SW 14`

6.71.1.34 `#define II_XOR 4`

## 6.71.2 Function Documentation

6.71.2.1 `void change_insn_type (cuc_insn * i, int index)`

6.71.2.2 `const char* cuc_insn_name (cuc_insn * ii)`

6.71.2.3 `double ii_size (int index, int imm)`

6.71.2.4 `double insn_size (cuc_insn * ii)`

6.71.2.5 `double insn_time (cuc_insn * ii)`

6.71.2.6 `void load_timing_table (char * filename)`

6.71.2.7 `void print_shared (cuc_func * rf, cuc_shared_item * shared, int nshared)`

Here is the call graph for this function: Generated on 24 14:24:06 2009 for Or1ksim: The OpenRISC 1000 Architectural Simulator by Doxygen



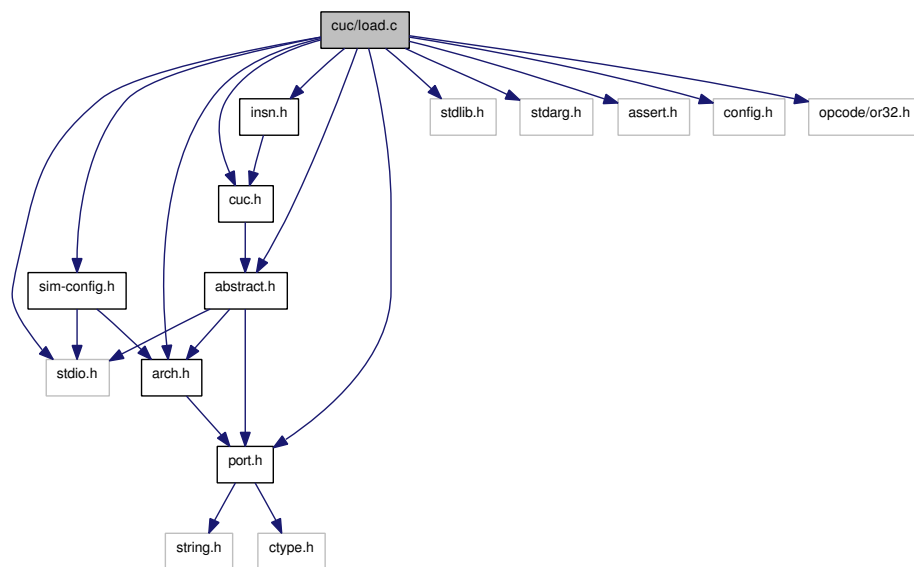
### 6.71.3 Variable Documentation

#### 6.71.3.1 `const cuc_known_insn known[II_LAST+1]`

## 6.72 cuc/load.c File Reference

```
#include <stdio.h>
#include <stdlib.h>
#include <stdarg.h>
#include <assert.h>
#include "config.h"
#include "port.h"
#include "arch.h"
#include "abstract.h"
#include "sim-config.h"
#include "cuc.h"
#include "opcode/or32.h"
#include "insn.h"
```

Include dependency graph for load.c:



## Functions

- void [print\\_cuc\\_insns](#) (char \*s, int verbose)
- void [xchg\\_insn](#) (int i, int j)
- void [negate\\_conditional](#) (cuc\_insn \*ii)
- void [remove\\_dslots](#) ()
- void [detect\\_locals](#) ()
- const char \* [build\\_insn](#) (unsigned long data, cuc\_insn \*insn)
- void [expand\\_branch](#) ()
- void [expand\\_memory](#) ()

- void [expand\\_signed](#) ()
- void [expand\\_calls](#) ()
- int [cuc\\_load](#) (char \*in\_fn)

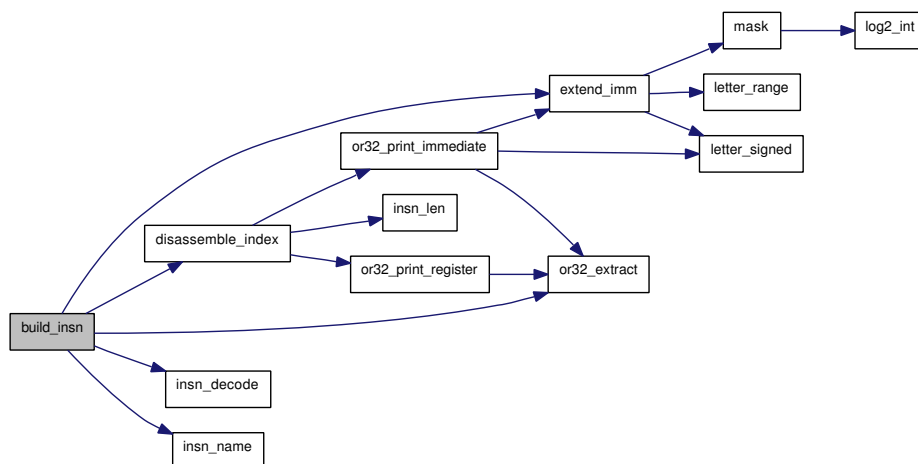
## Variables

- static const [cuc\\_conv](#) conv []
- [cuc\\_insn](#) insn [MAX\_INSNS]
- int [num\\_insn](#)
- int [reloc](#) [MAX\_INSNS]

### 6.72.1 Function Documentation

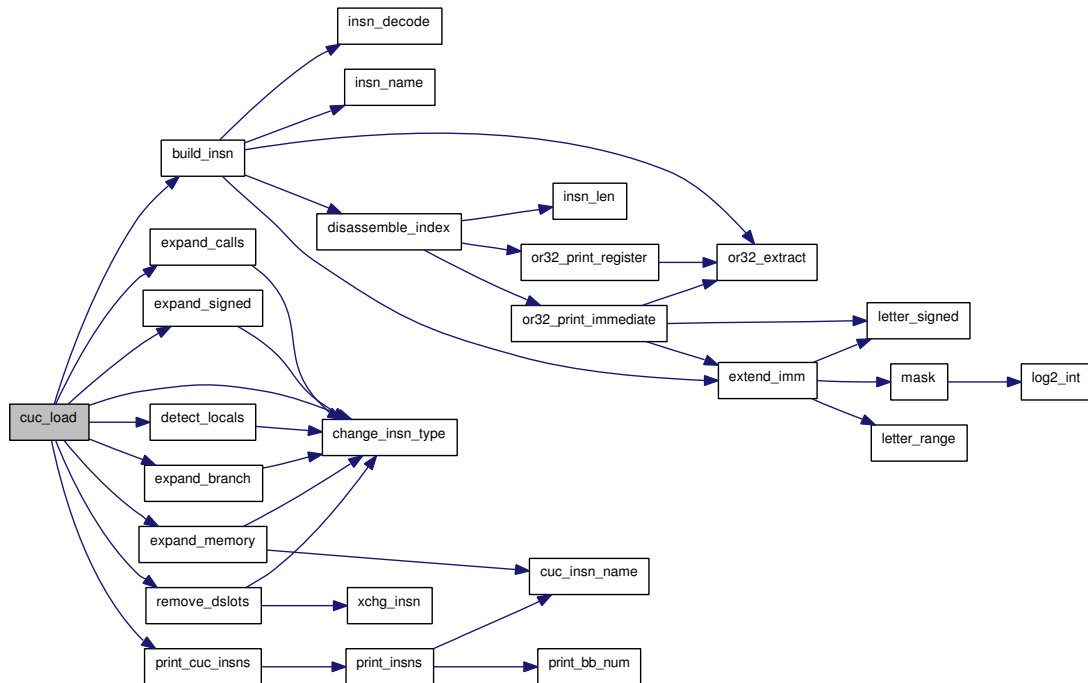
#### 6.72.1.1 const char\* [build\\_insn](#) (unsigned long *data*, cuc\_insn \* *insn*)

Here is the call graph for this function:



### 6.72.1.2 int cuc\_load (char \* in\_fn)

Here is the call graph for this function:



### 6.72.1.3 void detect\_locals ()

Here is the call graph for this function:



### 6.72.1.4 void expand\_branch ()

Here is the call graph for this function:



### 6.72.1.5 void expand\_calls ()

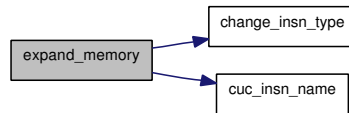
Here is the call graph for this function:





### 6.72.1.6 void expand\_memory ()

Here is the call graph for this function:



### 6.72.1.7 void expand\_signed ()

Here is the call graph for this function:



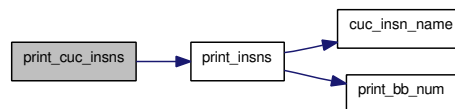
### 6.72.1.8 void negate\_conditional (cuc\_insn \* ii)

Here is the call graph for this function:



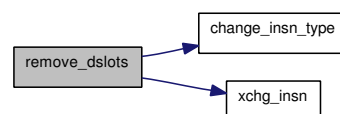
### 6.72.1.9 void print\_cuc\_insns (char \* s, int verbose)

Here is the call graph for this function:



### 6.72.1.10 void remove\_dslots ()

Here is the call graph for this function:



**6.72.1.11** void xchg\_insn (int *i*, int *j*)

## **6.72.2 Variable Documentation**

**6.72.2.1** const cuc\_conv conv[] [static]

**6.72.2.2** cuc\_insn insn[MAX\_INSNS]

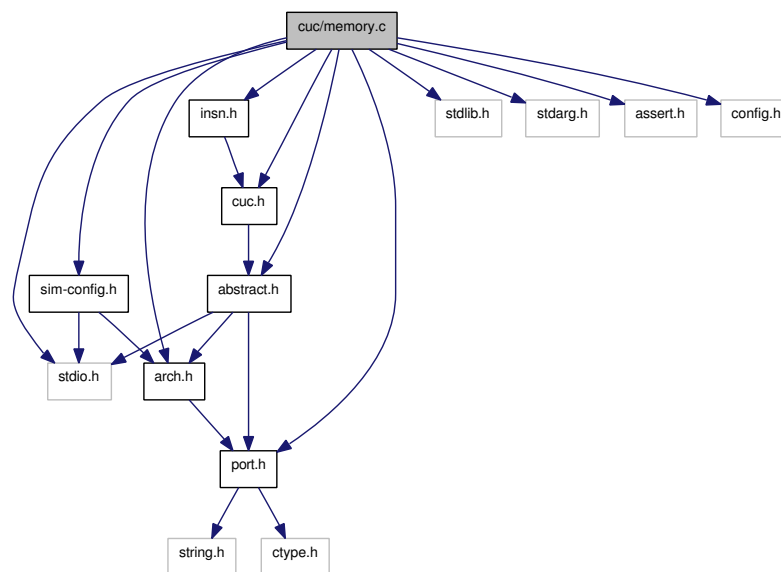
**6.72.2.3** int num\_insn

**6.72.2.4** int reloc[MAX\_INSNS]

## 6.73 cuc/memory.c File Reference

```
#include <stdio.h>
#include <stdlib.h>
#include <stdarg.h>
#include <assert.h>
#include "config.h"
#include "port.h"
#include "arch.h"
#include "abstract.h"
#include "sim-config.h"
#include "cuc.h"
#include "insn.h"
```

Include dependency graph for memory.c:



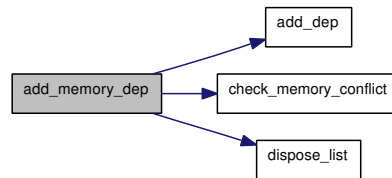
## Functions

- void `clean_deps` (`cuc_func *f`)
- static int `check_memory_conflict` (`cuc_func *f`, `cuc_insn *a`, `cuc_insn *b`, int otype)
- void `add_memory_dep` (`cuc_func *f`, int otype)
- static int `same_transfers` (`cuc_func *f`, int otype)
- static int `join_transfers` (`cuc_func *f`, int otype)
- int `mem_ordering_cmp` (`cuc_func *f`, `cuc_insn *a`, `cuc_insn *b`)
- int `schedule_memory` (`cuc_func *f`, int otype)

## 6.73.1 Function Documentation

### 6.73.1.1 void add\_memory\_dep (cuc\_func \*f, int otype)

Here is the call graph for this function:

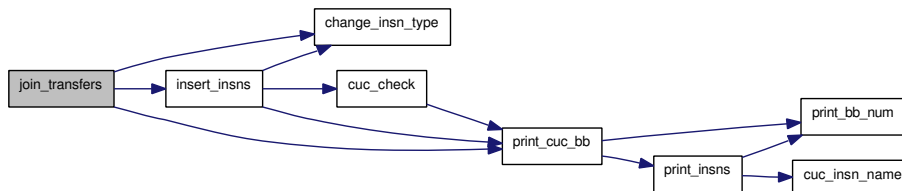


### 6.73.1.2 static int check\_memory\_conflict (cuc\_func \*f, cuc\_insn \*a, cuc\_insn \*b, int otype) [static]

### 6.73.1.3 void clean\_deps (cuc\_func \*f)

### 6.73.1.4 static int join\_transfers (cuc\_func \*f, int otype) [static]

Here is the call graph for this function:



### 6.73.1.5 int mem\_ordering\_cmp (cuc\_func \*f, cuc\_insn \*a, cuc\_insn \*b)

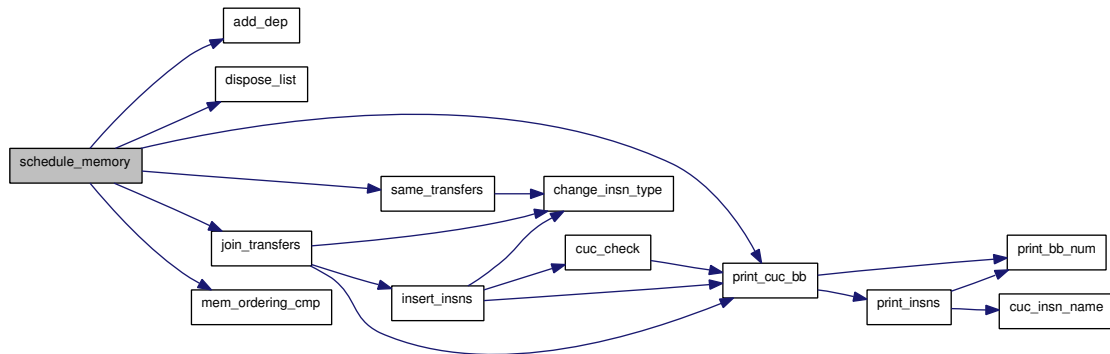
### 6.73.1.6 static int same\_transfers (cuc\_func \*f, int otype) [static]

Here is the call graph for this function:



**6.73.1.7** `int schedule_memory (cuc_func *f, int otype)`

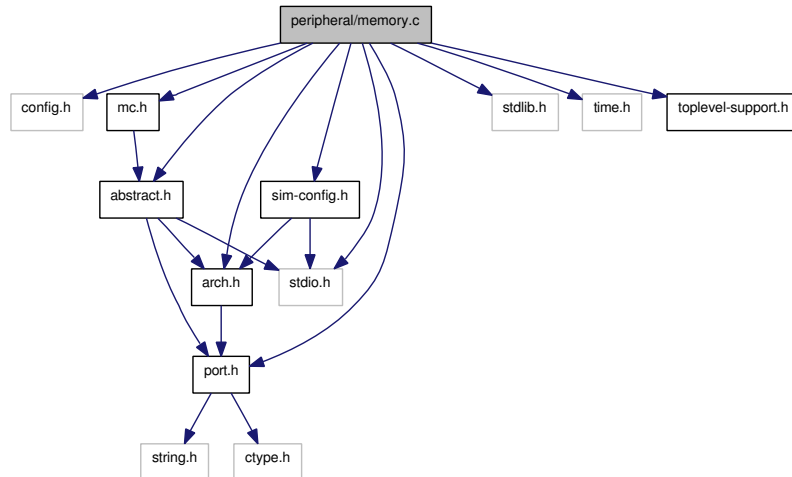
Here is the call graph for this function:



## 6.74 peripheral/memory.c File Reference

```
#include "config.h"
#include "port.h"
#include <stdlib.h>
#include <stdio.h>
#include <time.h>
#include "arch.h"
#include "sim-config.h"
#include "abstract.h"
#include "mc.h"
#include "toplevel-support.h"
```

Include dependency graph for memory.c:



### Data Structures

- struct [mem\\_config](#)

### Functions

- static uint32\_t [simmem\\_read32](#) (oraddr\_t addr, void \*dat)
- static uint16\_t [simmem\\_read16](#) (oraddr\_t addr, void \*dat)
- static uint8\_t [simmem\\_read8](#) (oraddr\_t addr, void \*dat)
- static void [simmem\\_write32](#) (oraddr\_t addr, uint32\_t value, void \*dat)
- static void [simmem\\_write16](#) (oraddr\_t addr, uint16\_t value, void \*dat)
- static void [simmem\\_write8](#) (oraddr\_t addr, uint8\_t value, void \*dat)
- static uint32\_t [simmem\\_read\\_zero32](#) (oraddr\_t addr, void \*dat)
- static uint16\_t [simmem\\_read\\_zero16](#) (oraddr\_t addr, void \*dat)
- static uint8\_t [simmem\\_read\\_zero8](#) (oraddr\_t addr, void \*dat)

- static void `simmem_write_null32` (`oraddr_t` `addr`, `uint32_t` `value`, `void *dat`)
- static void `simmem_write_null16` (`oraddr_t` `addr`, `uint16_t` `value`, `void *dat`)
- static void `simmem_write_null8` (`oraddr_t` `addr`, `uint8_t` `value`, `void *dat`)
- static void `mem_reset` (`void *dat`)
- static void `memory_random_seed` (`union param_val` `val`, `void *dat`)
- static void `memory_pattern` (`union param_val` `val`, `void *dat`)
- static void `memory_type` (`union param_val` `val`, `void *dat`)
- static void `memory_ce` (`union param_val` `val`, `void *dat`)
- static void `memory_mc` (`union param_val` `val`, `void *dat`)
- static void `memory_baseaddr` (`union param_val` `val`, `void *dat`)
- static void `memory_size` (`union param_val` `val`, `void *dat`)
- static void `memory_name` (`union param_val` `val`, `void *dat`)
- static void `memory_log` (`union param_val` `val`, `void *dat`)
- static void `memory_delayr` (`union param_val` `val`, `void *dat`)
- static void `memory_delayw` (`union param_val` `val`, `void *dat`)
- static void \* `memory_sec_start` ()
- static void `memory_sec_end` (`void *dat`)
- void `reg_memory_sec` (`void`)

### 6.74.1 Function Documentation

**6.74.1.1** static void `mem_reset` (`void * dat`) [static]

**6.74.1.2** static void `memory_baseaddr` (`union param_val val`, `void * dat`) [static]

**6.74.1.3** static void `memory_ce` (`union param_val val`, `void * dat`) [static]

**6.74.1.4** static void `memory_delayr` (`union param_val val`, `void * dat`) [static]

**6.74.1.5** static void `memory_delayw` (`union param_val val`, `void * dat`) [static]

**6.74.1.6** static void `memory_log` (`union param_val val`, `void * dat`) [static]

**6.74.1.7** static void `memory_mc` (`union param_val val`, `void * dat`) [static]

**6.74.1.8** static void `memory_name` (`union param_val val`, `void * dat`) [static]

**6.74.1.9** static void `memory_pattern` (`union param_val val`, `void * dat`) [static]

Set the memory pattern

Value must be up to 8 bits. Larger values are truncated with a warning.

#### Parameters:

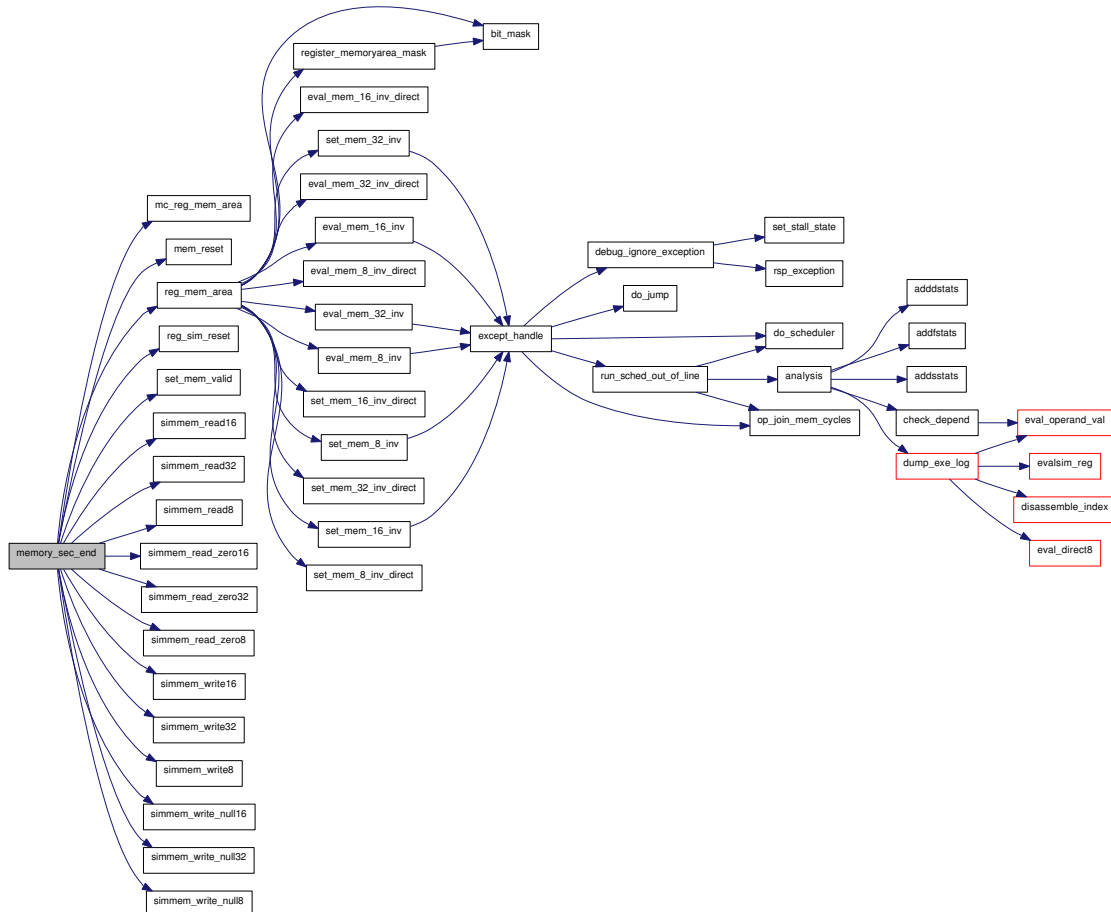
← *val* The value to use

← *dat* The `config` data structure

**6.74.1.10** `static void memory_random_seed (union param_val val, void * dat)` [static]

**6.74.1.11** `static void memory_sec_end (void * dat)` [static]

Here is the call graph for this function:



**6.74.1.12** `static void* memory_sec_start ()` [static]

Initialize a new block of memory configuration

ALL parameters are set explicitly to default values.

**Returns:**

The new memory configuration data structure

**6.74.1.13** `static void memory_size (union param_val val, void * dat)` [static]

**6.74.1.14** `static void memory_type (union param_val val, void * dat)` [static]

Set the memory type



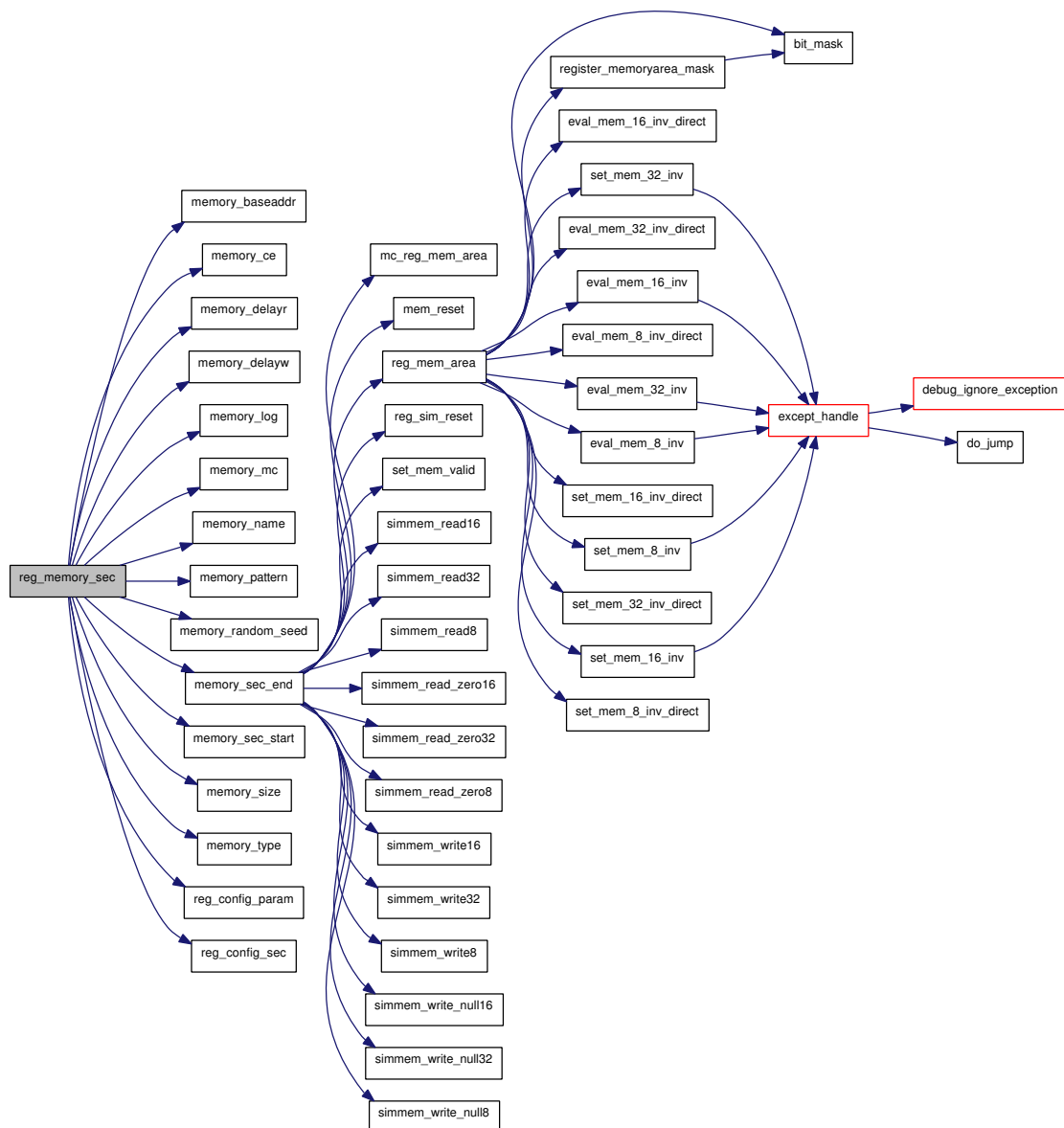
Value must be one of unknown, random, pattern or zero (case insensitive). Unrecognized values are ignored with a warning.

#### Parameters:

- ← *val* The value to use
- ← *dat* The `config` data structure

#### 6.74.1.15 void reg\_memory\_sec (void)

Here is the call graph for this function:

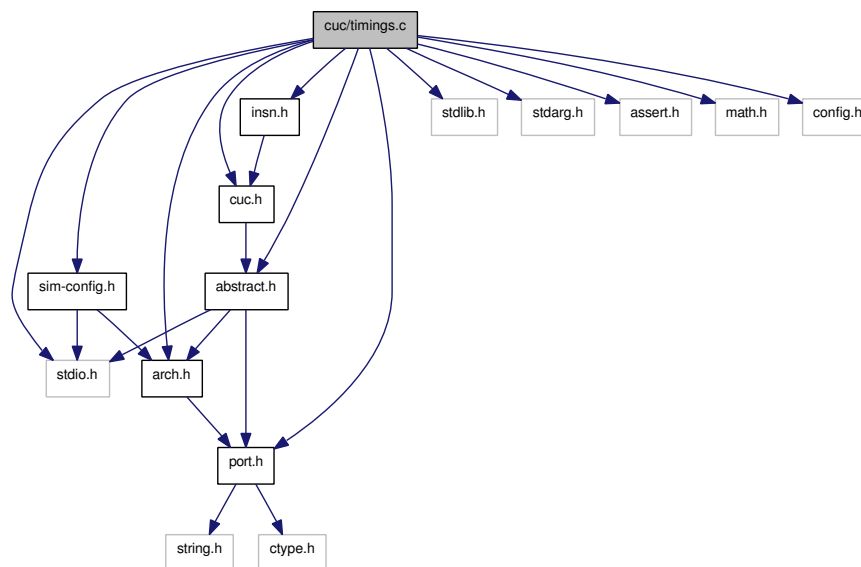


- 6.74.1.16 `static uint16_t simmem_read16 (oraddr_t addr, void * dat) [static]`
- 6.74.1.17 `static uint32_t simmem_read32 (oraddr_t addr, void * dat) [static]`
- 6.74.1.18 `static uint8_t simmem_read8 (oraddr_t addr, void * dat) [static]`
- 6.74.1.19 `static uint16_t simmem_read_zero16 (oraddr_t addr, void * dat) [static]`
- 6.74.1.20 `static uint32_t simmem_read_zero32 (oraddr_t addr, void * dat) [static]`
- 6.74.1.21 `static uint8_t simmem_read_zero8 (oraddr_t addr, void * dat) [static]`
- 6.74.1.22 `static void simmem_write16 (oraddr_t addr, uint16_t value, void * dat) [static]`
- 6.74.1.23 `static void simmem_write32 (oraddr_t addr, uint32_t value, void * dat) [static]`
- 6.74.1.24 `static void simmem_write8 (oraddr_t addr, uint8_t value, void * dat) [static]`
- 6.74.1.25 `static void simmem_write_null16 (oraddr_t addr, uint16_t value, void * dat)  
[static]`
- 6.74.1.26 `static void simmem_write_null32 (oraddr_t addr, uint32_t value, void * dat)  
[static]`
- 6.74.1.27 `static void simmem_write_null8 (oraddr_t addr, uint8_t value, void * dat) [static]`

## 6.75 cuc/timings.c File Reference

```
#include <stdio.h>
#include <stdlib.h>
#include <stdarg.h>
#include <assert.h>
#include <math.h>
#include "config.h"
#include "port.h"
#include "arch.h"
#include "abstract.h"
#include "sim-config.h"
#include "cuc.h"
#include "insn.h"
```

Include dependency graph for timings.c:



## Functions

- double [insn\\_time](#) ([cuc\\_insn](#) \*ii)
- double [insn\\_size](#) ([cuc\\_insn](#) \*ii)
- double [ii\\_size](#) (int index, int imm)
- static double [max\\_delay](#) ([cuc\\_func](#) \*f, int b)
- static int [memory\\_delay](#) ([cuc\\_func](#) \*f, int b)
- void [cut\\_tree](#) ([cuc\\_func](#) \*f, int b, double sd)
- static int [new\\_bb\\_cycles](#) ([cuc\\_func](#) \*f, int b, int cut)
- void [mark\\_cut](#) ([cuc\\_func](#) \*f)

- static double `bb_size` (`cuc_bb *bb`)
- void `recalc_cnts` (`cuc_func *f`, `char *bb_filename`)
- void `analyse_timings` (`cuc_func *f`, `cuc_timings *timings`)
- void `load_timing_table` (`char *filename`)

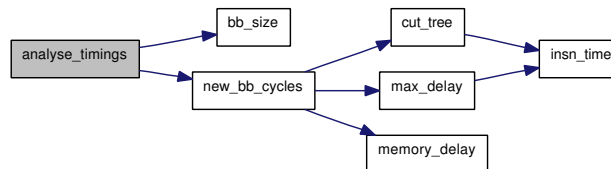
## Variables

- static `cuc_timing_table * timing_table`
- static double `max_bb_delay`

## 6.75.1 Function Documentation

### 6.75.1.1 void `analyse_timings` (`cuc_func *f`, `cuc_timings *timings`)

Here is the call graph for this function:



### 6.75.1.2 static double `bb_size` (`cuc_bb *bb`) [static]

### 6.75.1.3 void `cut_tree` (`cuc_func *f`, `int b`, `double sd`)

Here is the call graph for this function:



**6.75.1.4** `double ii_size (int index, int imm)`

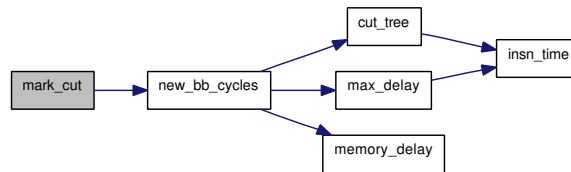
**6.75.1.5** `double insn_size (cuc_insn * ii)`

**6.75.1.6** `double insn_time (cuc_insn * ii)`

**6.75.1.7** `void load_timing_table (char * filename)`

**6.75.1.8** `void mark_cut (cuc_func * f)`

Here is the call graph for this function:



**6.75.1.9** `static double max_delay (cuc_func * f, int b)` `[static]`

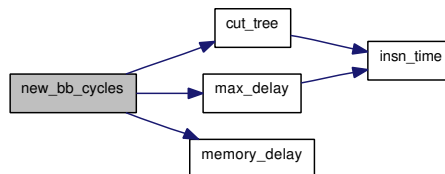
Here is the call graph for this function:



**6.75.1.10** `static int memory_delay (cuc_func * f, int b)` `[static]`

**6.75.1.11** `static int new_bb_cycles (cuc_func * f, int b, int cut)` `[static]`

Here is the call graph for this function:



**6.75.1.12** `void recalc_cnts (cuc_func * f, char * bb_filename)`

## 6.75.2 Variable Documentation

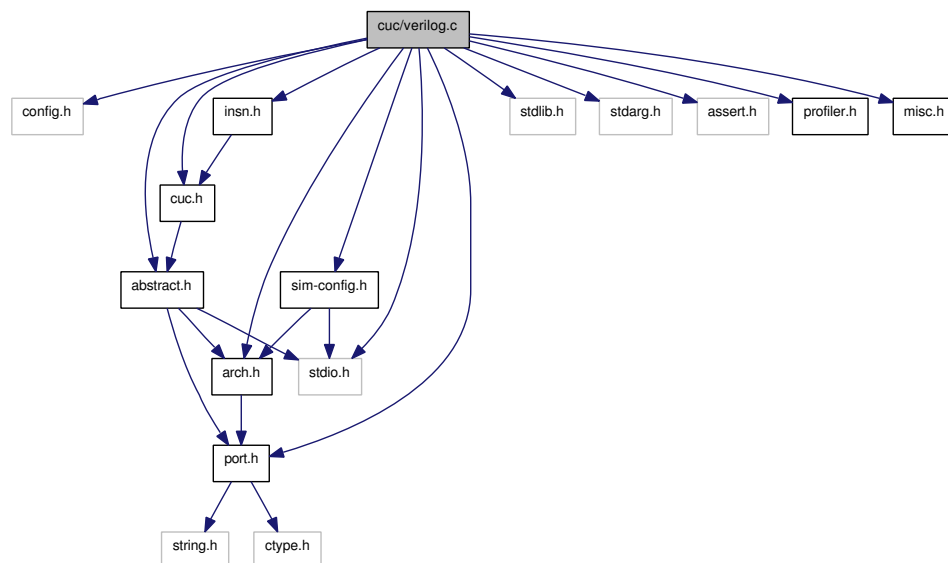
**6.75.2.1** `double max_bb_delay` `[static]`

**6.75.2.2** `cuc_timing_table* timing_table` `[static]`

## 6.76 cuc/verilog.c File Reference

```
#include "config.h"
#include "port.h"
#include <stdio.h>
#include <stdlib.h>
#include <stdarg.h>
#include <assert.h>
#include "arch.h"
#include "abstract.h"
#include "cuc.h"
#include "insn.h"
#include "profiler.h"
#include "sim-config.h"
#include "misc.h"
```

Include dependency graph for verilog.c:



### Defines

- #define [GEN\(x...\)](#) fprintf (fo, x)

### Functions

- static int [find\\_lsc\\_index](#) (cuc\_func \*f, int ref)
- static void [print\\_deps](#) (FILE \*fo, cuc\_func \*f, int b, dep\_list \*t, int registered)
- static char \* [print\\_op\\_v](#) (cuc\_func \*f, char \*s, int ref, int j)

- static void `print_insn_v` (FILE \*fo, cuc\_func \*f, int b, int i)
- static int `branch_index` (cuc\_bb \*bb)
- static void `print_turn_off_dep` (FILE \*fo, cuc\_func \*f, dep\_list \*dep)
- static int `func_index` (cuc\_func \*f, int ref)
- void `output_verilog` (cuc\_func \*f, char \*filename, char \*funcname)
- void `generate_main` (int nfuncs, cuc\_func \*\*f, char \*filename)

## 6.76.1 Define Documentation

6.76.1.1 `#define GEN(x...) fprintf (fo, x)`

## 6.76.2 Function Documentation

6.76.2.1 static int `branch_index` (cuc\_bb \*bb) [static]

6.76.2.2 static int `find_lsc_index` (cuc\_func \*f, int ref) [static]

6.76.2.3 static int `func_index` (cuc\_func \*f, int ref) [static]

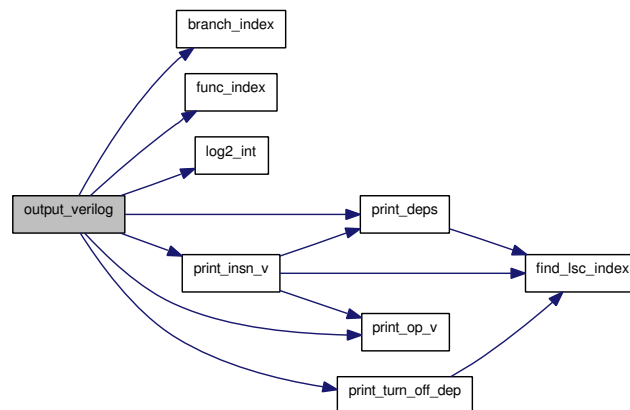
6.76.2.4 void `generate_main` (int nfuncs, cuc\_func \*\*f, char \*filename)

Here is the call graph for this function:



6.76.2.5 void `output_verilog` (cuc\_func \*f, char \*filename, char \*funcname)

Here is the call graph for this function:



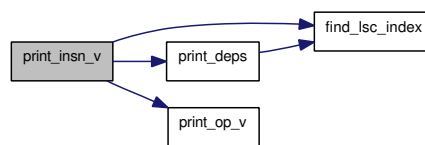
**6.76.2.6** `static void print_deps (FILE *fo, cuc_func *f, int b, dep_list *t, int registered)`  
[static]

Here is the call graph for this function:



**6.76.2.7** `static void print_insn_v (FILE *fo, cuc_func *f, int b, int i)` [static]

Here is the call graph for this function:



**6.76.2.8** `static char* print_op_v (cuc_func *f, char *s, int ref, int j)` [static]

**6.76.2.9** `static void print_turn_off_dep (FILE *fo, cuc_func *f, dep_list *dep)` [static]

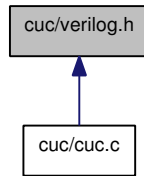
Here is the call graph for this function:





## 6.77 cuc/verilog.h File Reference

This graph shows which files directly or indirectly include this file:



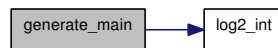
### Functions

- void [output\\_verilog](#) ([cuc\\_func](#) \*func, char \*filename, char \*funcname)
- void [generate\\_main](#) (int nfuncs, [cuc\\_func](#) \*\*f, char \*filename)

#### 6.77.1 Function Documentation

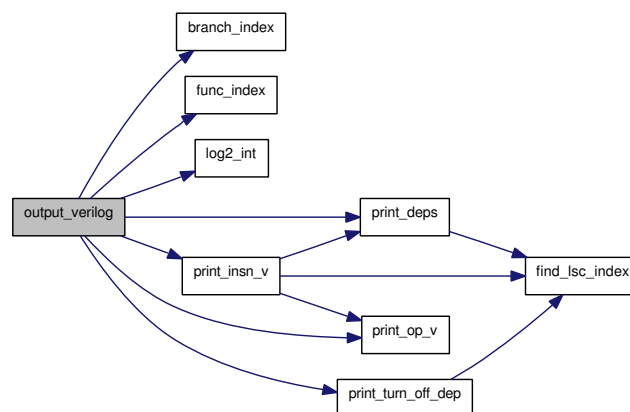
##### 6.77.1.1 void generate\_main (int nfuncs, cuc\_func \*\*f, char \*filename)

Here is the call graph for this function:



##### 6.77.1.2 void output\_verilog (cuc\_func \*func, char \*filename, char \*funcname)

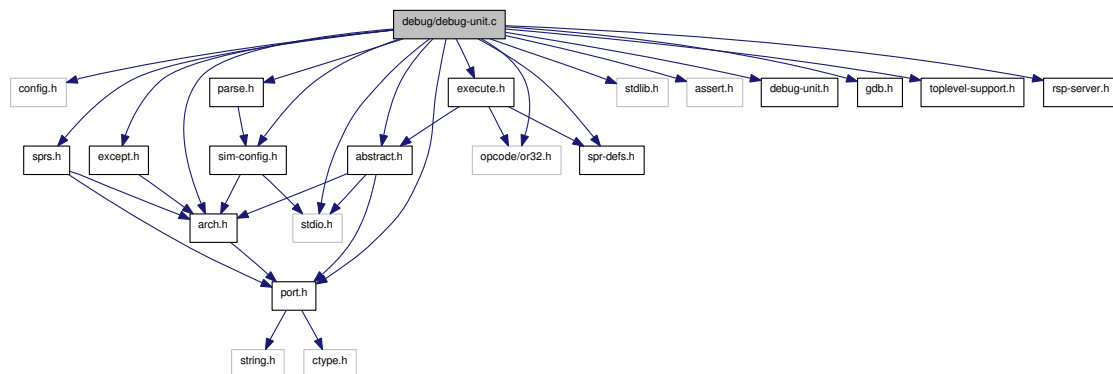
Here is the call graph for this function:



## 6.78 debug/debug-unit.c File Reference

```
#include "config.h"
#include "port.h"
#include <stdlib.h>
#include <stdio.h>
#include <assert.h>
#include "arch.h"
#include "debug-unit.h"
#include "sim-config.h"
#include "except.h"
#include "abstract.h"
#include "parse.h"
#include "gdb.h"
#include "opcode/or32.h"
#include "spr-defs.h"
#include "execute.h"
#include "sprs.h"
#include "toplevel-support.h"
#include "rsp-server.h"
```

Include dependency graph for debug-unit.c:



## Defines

- #define [RISCOP\\_STALL](#) 0x00000001
- #define [RISCOP\\_RESET](#) 0x00000002

## Enumerations

- enum `development_interface_address_space` { `DEVELOPINT_RISCOP` = 4, `DEVELOPINT_MAX` = 27 }

## Functions

- static int `calculate_watchpoints` (enum `debug_unit_action` action, unsigned long udata)
- static int `get_devint_reg` (unsigned int addr, unsigned long \*data)
- static int `set_devint_reg` (unsigned int addr, unsigned long data)
- static int `debug_set_mem` (`oraddr_t` address, `uorreg_t` data)
- static int `debug_get_mem` (`oraddr_t` address, `uorreg_t` \*data)
- void `du_reset` ()
- void `set_stall_state` (int state)
- int `check_debug_unit` (enum `debug_unit_action` action, unsigned long udata)
- int `debug_get_register` (`oraddr_t` address, `uorreg_t` \*data)
- int `debug_set_register` (`oraddr_t` address, `uorreg_t` data)
- int `debug_set_chain` (enum `debug_scan_chain_ids` chain)
- static int `get_devint_reg` (enum `development_interface_address_space` address, unsigned long \*data)
- static int `set_devint_reg` (enum `development_interface_address_space` address, unsigned long data)
- int `debug_ignore_exception` (unsigned long except)
- static void `debug_enabled` (union `param_val` val, void \*dat)
- static void `debug_gdb_enabled` (union `param_val` val, void \*dat)
- static void `debug_rsp_enabled` (union `param_val` val, void \*dat)
- static void `debug_server_port` (union `param_val` val, void \*dat)
- static void `debug_rsp_port` (union `param_val` val, void \*dat)
- static void `debug_vapi_id` (union `param_val` val, void \*dat)
- void `reg_debug_sec` ()

## Variables

- unsigned long `development` [`DEVELOPINT_MAX`+1]
- static enum `debug_scan_chain_ids` `current_scan_chain` = `JTAG_CHAIN_GLOBAL`
- static int `in_reset` = 0

### 6.78.1 Define Documentation

#### 6.78.1.1 #define RISCOP\_RESET 0x00000002

Reset processor (clears stall)

#### 6.78.1.2 #define RISCOP\_STALL 0x00000001

The fields for the RISCOP register in the development interface scan chain (`JTAG_CHAIN_DEVELOPMENT`). Stall processor

## 6.78.2 Enumeration Type Documentation

### 6.78.2.1 enum development\_interface\_address\_space

The various addresses in the development interface scan chain (JTAG\_CHAIN\_DEVELOPMENT). Only documents the ones we actually have

**Enumerator:**

*DEVELOPINT\_RISCOPE*  
*DEVELOPINT\_MAX*

## 6.78.3 Function Documentation

### 6.78.3.1 static int calculate\_watchpoints (enum debug\_unit\_action action, unsigned long udata) [static]

Forward declaration of static functions

Check whether we should stall the RISC or cause an exception.

Rewritten by JPB for current architecture.

**Parameters:**

- ← *action* The action to be checked
- ← *udata* The data to compare against (for some actions)

**Returns:**

Non-zero if this should generate a breakpoint

### 6.78.3.2 int check\_debug\_unit (enum debug\_unit\_action action, unsigned long udata)

Check for a breakpoint on this action

**Note:**

This does not include single-stepping - that will be picked up in the main loop AFTER the instruction has executed.

**Parameters:**

- ← *action* The action to be checked
- ← *udata* The data to compare against (for some actions)

**Returns:**

Non-zero if there was a breakpoint, 0 otherwise.

Here is the call graph for this function:





### 6.78.3.6 int debug\_get\_register (oraddr\_t address, uorreg\_t \* data)

Get a JTAG register

Action depends on which scan chain is currently active.

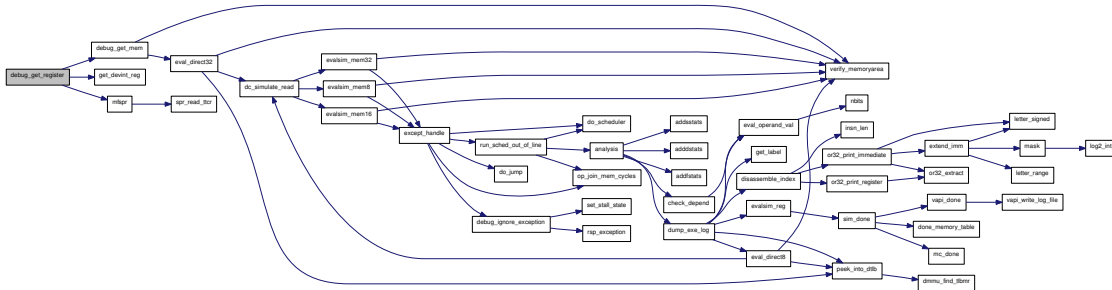
**Parameters:**

- ← *address* Address on the scan chain
- *data* Where to put the result of the read

**Returns:**

An error code (including ERR\_NONE) if there is no error

Here is the call graph for this function:



### 6.78.3.7 int debug\_ignore\_exception (unsigned long except)

See if an exception should be ignored

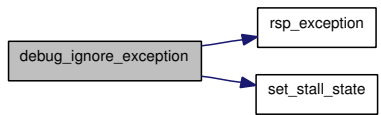
**Parameters:**

- ← *except* The exception to consider

**Returns:**

Non-zero if the exception should be ignored

Here is the call graph for this function:



### 6.78.3.8 static void debug\_rsp\_enabled (union param\_val val, void \* dat) [static]

Enable or disable Remote Serial Protocol GDB interface to the debug unit

This is the preferred interface. It may only be specified if the RSP interface is not specified. If both are specified, the RSP will be used.

**Parameters:**

- ← *val* The value to use
- ← *dat* The [config](#) data structure (not used here)

**6.78.3.9 static void debug\_rsp\_port (union param\_val val, void \* dat) [static]**

Set the Remote Serial Protocol GDB server port

This is for use with the RSP, which is now the preferred interface. Ensure the value chosen is valid. Note that 0 is permitted, meaning the connection should be to the "or1ksim-rsp" service, rather than a port.

Both this and the legacy port may be specified, but only one may be enabled (see [debug\\_gdb\\_enabled\(\)](#) and [debug\\_rsp\\_enabled\(\)](#)).

**Parameters:**

- ← *val* The value to use
- ← *dat* The [config](#) data structure (not used here)

**6.78.3.10 static void debug\_server\_port (union param\_val val, void \* dat) [static]**

Set the legacy GDB server port

This is for use with the OpenRISC Remote JTAG protocol (now deprecated). Ensure the value chosen is valid. Note that 0 is permitted, meaning the connection should be to the "or1ksim" service, rather than a port.

Both this and the RSP port may be specified, but only one may be enabled (see [debug\\_gdb\\_enabled\(\)](#) and [debug\\_rsp\\_enabled\(\)](#)).

**Parameters:**

- ← *val* The value to use
- ← *dat* The [config](#) data structure (not used here)

**6.78.3.11 int debug\_set\_chain (enum debug\_scan\_chain\_ids chain)**

Set the JTAG chain

Only permit chains we support. Currently TRACE is not implemented.

**Parameters:**

- ← *chain* Chain to be set as current

**Returns:**

An error code (including `ERR_NONE`) if there is no error

### 6.78.3.12 static int debug\_set\_mem (oraddr\_t address, uint32\_t data) [static]

Write to main bus

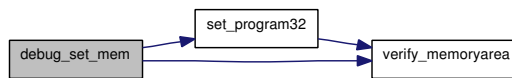
#### Parameters:

- ← *address* Address to write to
- *data* Data to write

#### Returns:

An error code (including ERR\_NONE) if there is no error

Here is the call graph for this function:



### 6.78.3.13 int debug\_set\_register (oraddr\_t address, uoreg\_t data)

Set a JTAG register

Action depends on which scan chain is currently active.

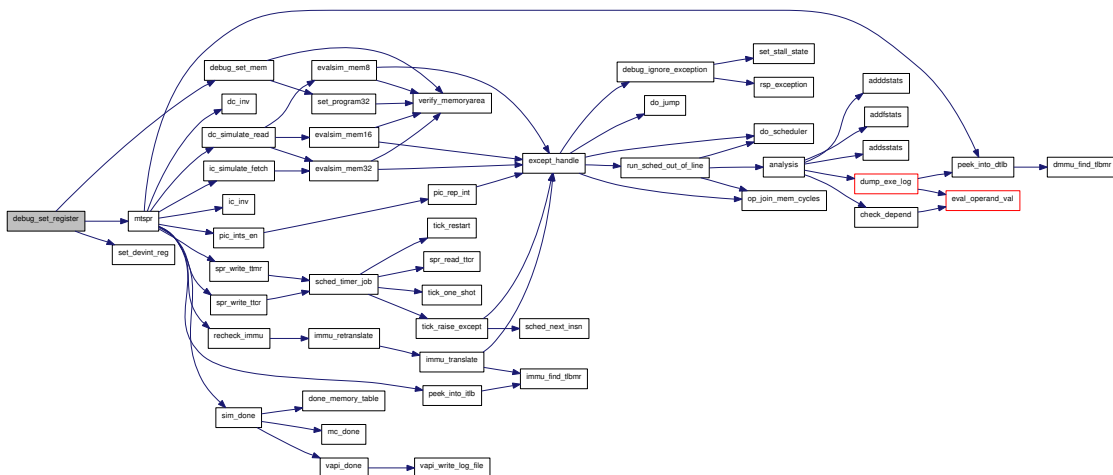
#### Parameters:

- ← *address* Address on the scan chain
- *data* Data to set

#### Returns:

An error code (including ERR\_NONE) if there is no error

Here is the call graph for this function:





**6.78.3.14** `static void debug_vapi_id (union param_val val, void * dat)` [static]

Set the VAPI ID for the debug unit

**Parameters:**

- ← *val* The value to use
- ← *dat* The `config` data structure (not used here)

**6.78.3.15** `void du_reset ()`

Reset the debug unit

Clear all development interface registers

Here is the call graph for this function:

**6.78.3.16** `static int get_devint_reg (enum development_interface_address_space address, unsigned long * data)` [static]

Get a development interface register

No side effects on get - just return the register

**Parameters:**

- ← *address* The register to get
- *data* Where to put the result

**Returns:**

An error code (including `ERR_NONE`) if there is no error

**6.78.3.17** `static int get_devint_reg (unsigned int addr, unsigned long * data)` [static]**6.78.3.18** `void reg_debug_sec ()`

Register the configuration functions for the debug unit



**6.78.3.20** `static int set_devint_reg (unsigned int addr, unsigned long data)` [static]

**6.78.3.21** `void set_stall_state (int state)`

Set the stall state of the processor

**Parameters:**

← *state* If non-zero stall the processor.

## 6.78.4 Variable Documentation

**6.78.4.1** `enum debug_scan_chain_ids current_scan_chain = JTAG_CHAIN_GLOBAL`  
[static]

The current scan chain being accessed

**6.78.4.2** `unsigned long development[DEVELOPINT_MAX+1]`

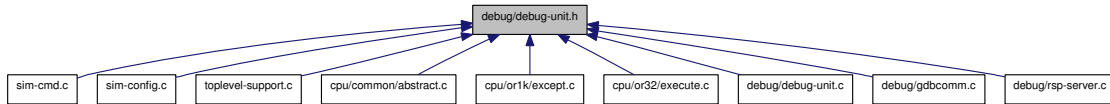
Data structure holding debug registers and their bits

**6.78.4.3** `int in_reset = 0` [static]

External STALL signal to debug interface

## 6.79 debug/debug-unit.h File Reference

This graph shows which files directly or indirectly include this file:



### Enumerations

- enum `debug_unit_action` {  
`DebugInstructionFetch = 1, DebugLoadAddress = 2, DebugStoreAddress = 3, DebugLoadData = 4, DebugStoreData = 5` }
- enum `debug_scan_chain_ids` {  
`JTAG_CHAIN_GLOBAL = 0, JTAG_CHAIN_DEBUG_UNIT = 1, JTAG_CHAIN_TRACE = 3, JTAG_CHAIN_DEVELOPMENT = 4, JTAG_CHAIN_WISHBONE = 5` }

### Functions

- void `du_reset` ()
- void `set_stall_state` (int state)
- int `check_debug_unit` (enum `debug_unit_action` action, unsigned long udata)
- int `debug_get_register` (oraddr\_t address, uorreg\_t \*data)
- int `debug_set_register` (oraddr\_t address, uorreg\_t data)
- int `debug_set_chain` (enum `debug_scan_chain_ids` chain)
- int `debug_ignore_exception` (unsigned long except)
- void `reg_debug_sec` ()

### 6.79.1 Enumeration Type Documentation

#### 6.79.1.1 enum debug\_scan\_chain\_ids

Enumeration of the various JTAG scan chains. Only those actually implemented are specified.

Enumerator:

*JTAG\_CHAIN\_GLOBAL*  
*JTAG\_CHAIN\_DEBUG\_UNIT*  
*JTAG\_CHAIN\_TRACE*  
*JTAG\_CHAIN\_DEVELOPMENT*  
*JTAG\_CHAIN\_WISHBONE*

### 6.79.1.2 enum debug\_unit\_action

The possible debug unit actions

**Enumerator:**

*DebugInstructionFetch*

*DebugLoadAddress*

*DebugStoreAddress*

*DebugLoadData*

*DebugStoreData*

### 6.79.2 Function Documentation

#### 6.79.2.1 int check\_debug\_unit (enum debug\_unit\_action *action*, unsigned long *udata*)

Check for a breakpoint on this action

**Note:**

This does not include single-stepping - that will be picked up in the main loop AFTER the instruction has executed.

**Parameters:**

← *action* The action to be checked

← *udata* The data to compare against (for some actions)

**Returns:**

Non-zero if there was a breakpoint, 0 otherwise.

Here is the call graph for this function:



#### 6.79.2.2 int debug\_get\_register (oraddr\_t *address*, uorreg\_t \* *data*)

Get a JTAG register

Action depends on which scan chain is currently active.

**Parameters:**

← *address* Address on the scan chain

→ *data* Where to put the result of the read

**Returns:**

An error code (including ERR\_NONE) if there is no error



**Parameters:**

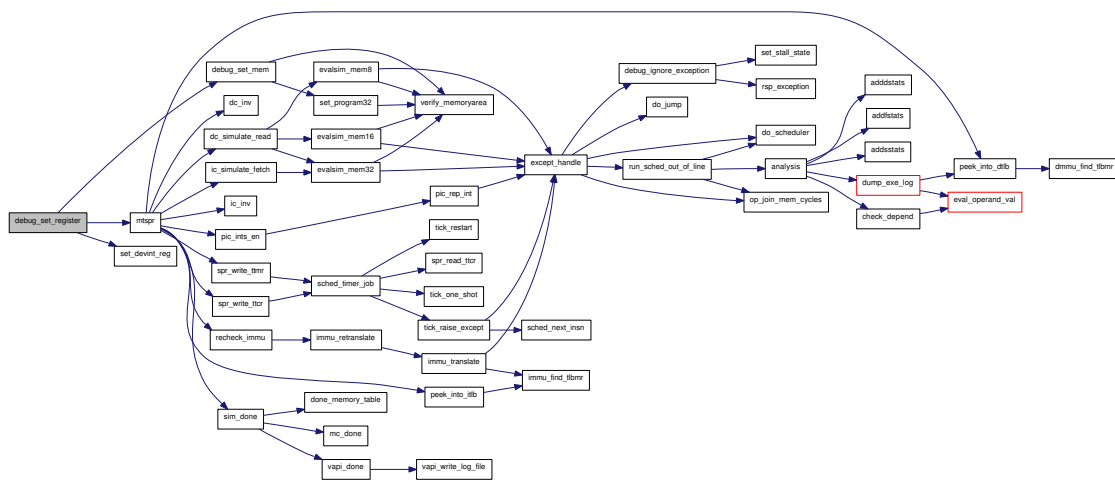
← *address* Address on the scan chain

→ *data* Data to set

**Returns:**

An error code (including ERR\_NONE) if there is no error

Here is the call graph for this function:

**6.79.2.6 void du\_reset ()**

Reset the debug unit

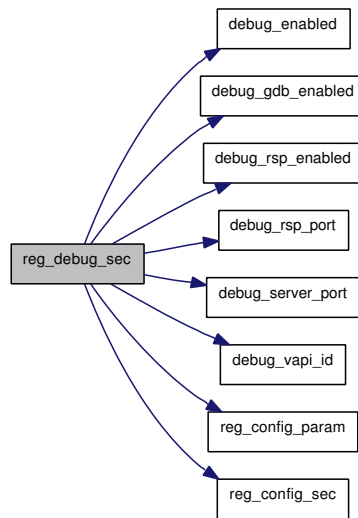
Clear all development interface registers

Here is the call graph for this function:

**6.79.2.7 void reg\_debug\_sec ()**

Register the configuration functions for the debug unit

Here is the call graph for this function:



#### 6.79.2.8 void set\_stall\_state (int state)

Set the stall state of the processor

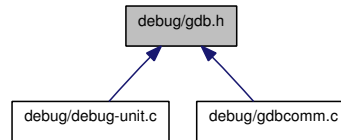
**Parameters:**

← *state* If non-zero stall the processor.



## 6.80 debug/gdb.h File Reference

This graph shows which files directly or indirectly include this file:



### Data Structures

- struct [jtr\\_read\\_message](#)
- struct [jtr\\_write\\_message](#)
- struct [jtr\\_read\\_block\\_message](#)
- struct [jtr\\_write\\_block\\_message](#)
- struct [jtr\\_chain\\_message](#)
- struct [jtr\\_failure\\_response](#)
- struct [jtr\\_read\\_response](#)
- struct [jtr\\_write\\_response](#)
- struct [jtr\\_read\\_block\\_response](#)
- struct [jtr\\_write\\_block\\_response](#)
- struct [jtr\\_chain\\_response](#)

### Enumerations

- enum [or1k\\_jtag\\_errors](#) {  
ERR\_NONE = 0, ERR\_CRC = -1, ERR\_MEM = -2, JTAG\_PROXY\_INVALID\_COMMAND = -3,  
JTAG\_PROXY\_SERVER\_TERMINATED = -4, JTAG\_PROXY\_NO\_CONNECTION = -5, JTAG\_PROXY\_PROTOCOL\_ERROR = -6, JTAG\_PROXY\_COMMAND\_NOT\_IMPLEMENTED = -7,  
JTAG\_PROXY\_INVALID\_CHAIN = -8, JTAG\_PROXY\_INVALID\_ADDRESS = -9, JTAG\_PROXY\_ACCESS\_EXCEPTION = -10, JTAG\_PROXY\_INVALID\_LENGTH = -11,  
JTAG\_PROXY\_OUT\_OF\_MEMORY = -12 }
- enum [or1k\\_jtag\\_proxy\\_protocol\\_commands](#) {  
OR1K\_JTAG\_COMMAND\_READ = 1, OR1K\_JTAG\_COMMAND\_WRITE = 2, OR1K\_JTAG\_COMMAND\_READ\_BLOCK = 3, OR1K\_JTAG\_COMMAND\_WRITE\_BLOCK = 4,  
OR1K\_JTAG\_COMMAND\_CHAIN = 5 }

### 6.80.1 Enumeration Type Documentation

#### 6.80.1.1 enum or1k\_jtag\_errors

Error codes for the OpenRISC 1000 JTAG debugging protocol

**Enumerator:**

*ERR\_NONE*

*ERR\_CRC*

*ERR\_MEM*  
*JTAG\_PROXY\_INVALID\_COMMAND*  
*JTAG\_PROXY\_SERVER\_TERMINATED*  
*JTAG\_PROXY\_NO\_CONNECTION*  
*JTAG\_PROXY\_PROTOCOL\_ERROR*  
*JTAG\_PROXY\_COMMAND\_NOT\_IMPLEMENTED*  
*JTAG\_PROXY\_INVALID\_CHAIN*  
*JTAG\_PROXY\_INVALID\_ADDRESS*  
*JTAG\_PROXY\_ACCESS\_EXCEPTION*  
*JTAG\_PROXY\_INVALID\_LENGTH*  
*JTAG\_PROXY\_OUT\_OF\_MEMORY*

#### 6.80.1.2 enum or1k\_jtag\_proxy\_protocol\_commands

The OR1K JTAG proxy protocol commands.

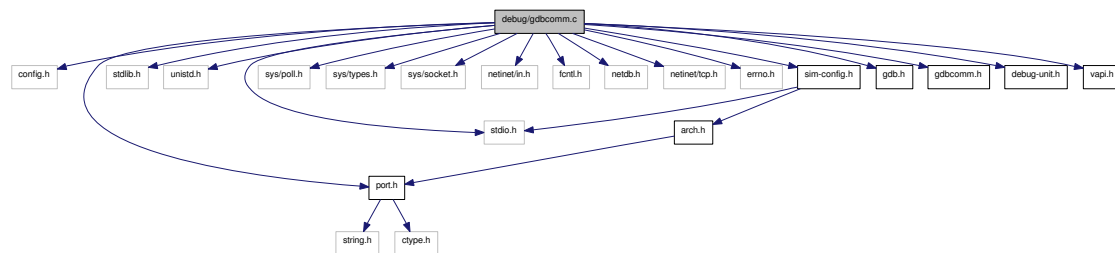
**Enumerator:**

*ORIK\_JTAG\_COMMAND\_READ*  
*ORIK\_JTAG\_COMMAND\_WRITE*  
*ORIK\_JTAG\_COMMAND\_READ\_BLOCK*  
*ORIK\_JTAG\_COMMAND\_WRITE\_BLOCK*  
*ORIK\_JTAG\_COMMAND\_CHAIN*

## 6.81 debug/gdbcomm.c File Reference

```
#include "config.h"
#include "port.h"
#include <stdlib.h>
#include <unistd.h>
#include <stdio.h>
#include <sys/poll.h>
#include <sys/types.h>
#include <sys/socket.h>
#include <netinet/in.h>
#include <fcntl.h>
#include <netdb.h>
#include <netinet/tcp.h>
#include <errno.h>
#include "sim-config.h"
#include "gdb.h"
#include "gdbcomm.h"
#include "debug-unit.h"
#include "vapi.h"
```

Include dependency graph for gdbcomm.c:



## Functions

- static void [jtag\\_request](#) ()
- static void [gdb\\_request](#) (void)
- static void [protocol\\_clean](#) (int, int32\_t)
- static int [get\\_server\\_socket](#) (const char \*name, const char \*proto, int port)
- static int [gdb\\_read](#) (void \*buf, int len)
- static int [gdb\\_write](#) (const void \*buf, int len)
- void [block\\_jtag](#) ()
- void [handle\\_server\\_socket](#) (enum boolean block)
- void [gdbcomm\\_init](#) ()

## Variables

- static unsigned int `server_ip` = 0
- static unsigned int `server_port` = 0
- static unsigned int `server_fd` = 0
- static unsigned int `gdb_fd` = 0
- static int `tcp_level` = 0

## 6.81.1 Function Documentation

### 6.81.1.1 void `block_jtag` ()

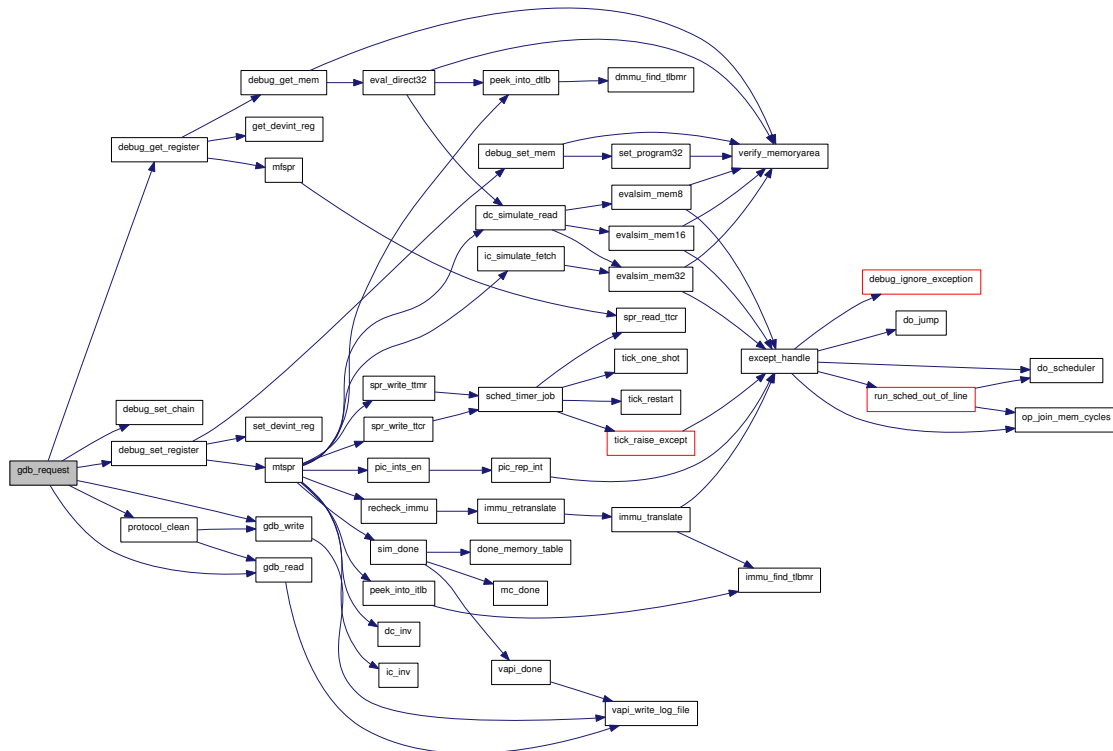
### 6.81.1.2 static int `gdb_read` (void \* *buf*, int *len*) [static]

Here is the call graph for this function:



### 6.81.1.3 static void `gdb_request` (void) [static]

Here is the call graph for this function:



#### 6.81.1.4 static int gdb\_write (const void \* buf, int len) [static]

Here is the call graph for this function:



#### 6.81.1.5 void gdbcomm\_init ()

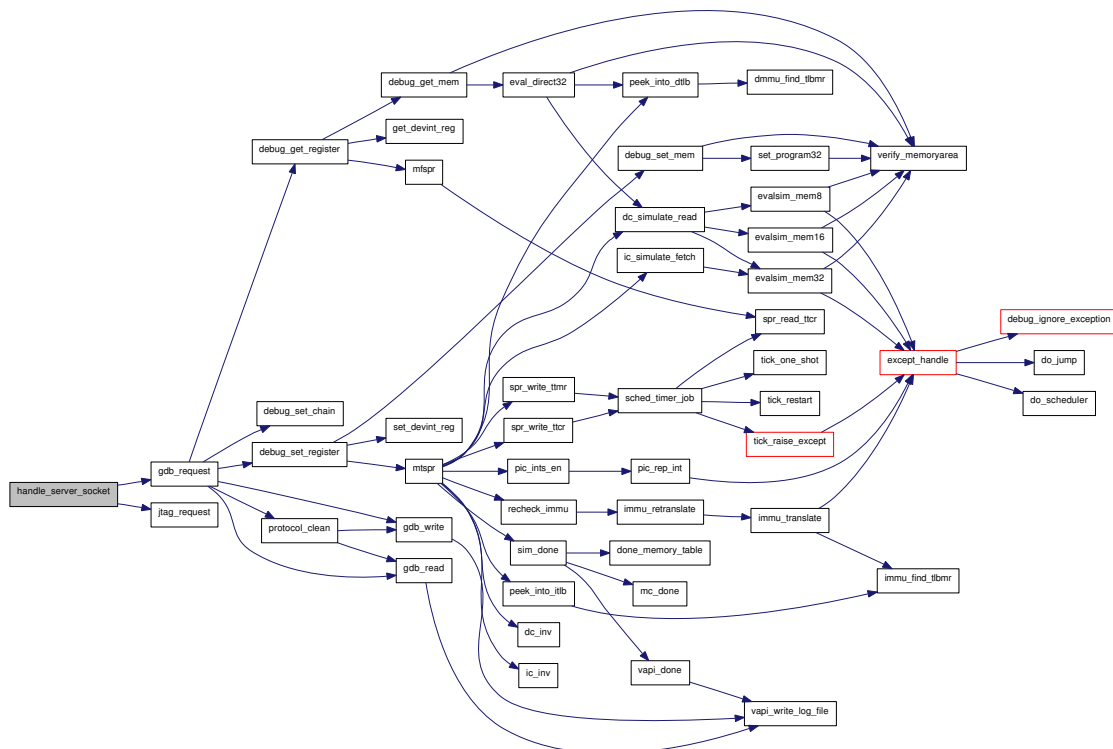
Here is the call graph for this function:



#### 6.81.1.6 static int get\_server\_socket (const char \* name, const char \* proto, int port) [static]

#### 6.81.1.7 void handle\_server\_socket (enum boolean block)

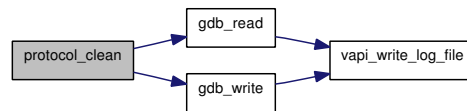
Here is the call graph for this function:



**6.81.1.8** `static void jtag_request (void)` [static]

**6.81.1.9** `static void protocol_clean (int length, int32_t err)` [static]

Here is the call graph for this function:



## 6.81.2 Variable Documentation

**6.81.2.1** `unsigned int gdb_fd = 0` [static]

**6.81.2.2** `unsigned int server_fd = 0` [static]

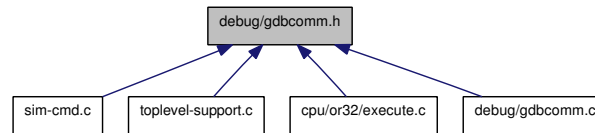
**6.81.2.3** `unsigned int server_ip = 0` [static]

**6.81.2.4** `unsigned int server_port = 0` [static]

**6.81.2.5** `int tcp_level = 0` [static]

## 6.82 debug/gdbcomm.h File Reference

This graph shows which files directly or indirectly include this file:



### Enumerations

- enum `boolean` { `FALSE` = 0, `TRUE` = 1 }

### Functions

- void `handle_server_socket` (enum `boolean`)
- void `block_jtag` ()
- void `gdbcomm_init` ()

### 6.82.1 Enumeration Type Documentation

#### 6.82.1.1 enum `boolean`

Enumerator:

*FALSE*

*TRUE*

### 6.82.2 Function Documentation

#### 6.82.2.1 void `block_jtag` ()

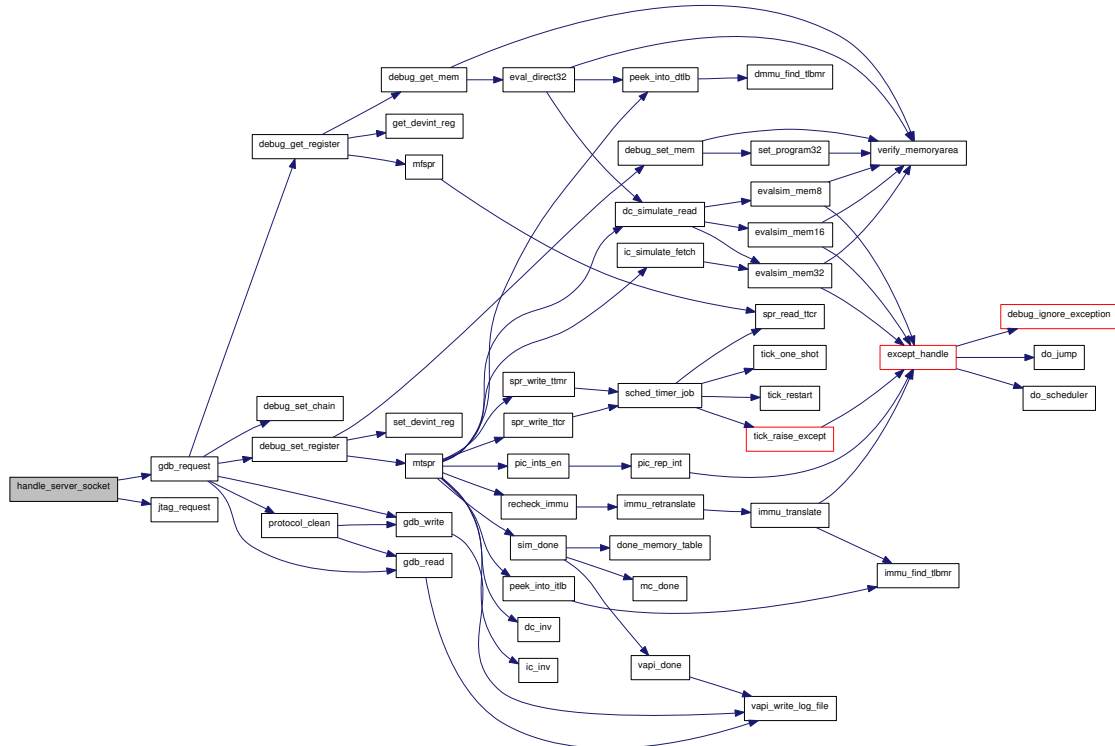
#### 6.82.2.2 void `gdbcomm_init` ()

Here is the call graph for this function:



### 6.82.2.3 void handle\_server\_socket (enum boolean)

Here is the call graph for this function:





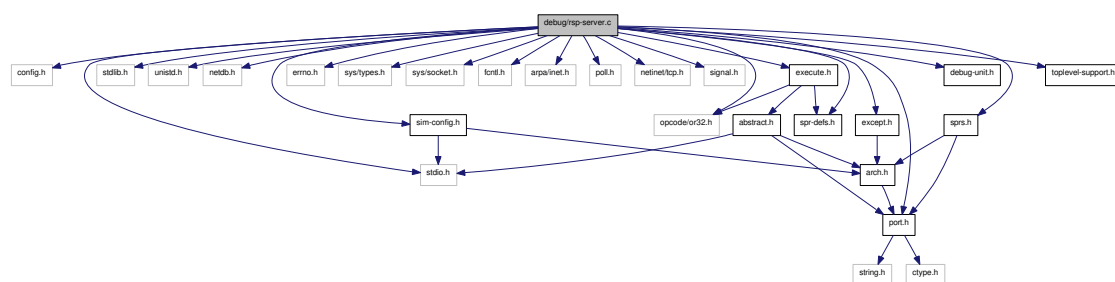
## 6.83 debug/rsp-server.c File Reference

```

#include "config.h"
#include "port.h"
#include <stdlib.h>
#include <unistd.h>
#include <netdb.h>
#include <stdio.h>
#include <errno.h>
#include <sys/types.h>
#include <sys/socket.h>
#include <fcntl.h>
#include <arpa/inet.h>
#include <poll.h>
#include <netinet/tcp.h>
#include <signal.h>
#include "sim-config.h"
#include "except.h"
#include "opcode/or32.h"
#include "spr-defs.h"
#include "execute.h"
#include "debug-unit.h"
#include "sprs.h"
#include "toplevel-support.h"

```

Include dependency graph for rsp-server.c:



## Data Structures

- struct [rsp\\_buf](#)
- struct [mp\\_entry](#)

## Defines

- #define `OR1KSIM_RSP_SERVICE` "or1ksim-rsp"
- #define `OR1KSIM_RSP_PROTOCOL` "tcp"
- #define `OR1KSIM_TID` 1
- #define `PPC_REGNUM` (MAX\_GPRS + 0)
- #define `NPC_REGNUM` (MAX\_GPRS + 1)
- #define `SR_REGNUM` (MAX\_GPRS + 2)
- #define `NUM_REGS` (MAX\_GPRS + 3)
- #define `OR1K_TRAP_INSTR` 0x21000001
- #define `GDB_BUF_MAX` ((NUM\_REGS) \* 8 + 1)
- #define `MP_HASH_SIZE` 1021

## Enumerations

- enum `target_signal` {  
`TARGET_SIGNAL_NONE` = 0, `TARGET_SIGNAL_INT` = 2, `TARGET_SIGNAL_ILL` = 4,  
`TARGET_SIGNAL_TRAP` = 5,  
`TARGET_SIGNAL_FPE` = 8, `TARGET_SIGNAL_BUS` = 10, `TARGET_SIGNAL_SEGV` = 11,  
`TARGET_SIGNAL_ALRM` = 14,  
`TARGET_SIGNAL_USR2` = 31, `TARGET_SIGNAL_PWR` = 32 }
- enum `mp_type` {  
`BP_MEMORY` = 0, `BP_HARDWARE` = 1, `WP_WRITE` = 2, `WP_READ` = 3,  
`WP_ACCESS` = 4 }

## Functions

- static void `rsp_get_client` ()
- static void `rsp_client_request` ()
- static void `rsp_client_close` ()
- static void `put_packet` (struct `rsp_buf` \*buf)
- static void `put_str_packet` (const char \*str)
- static struct `rsp_buf` \* `get_packet` ()
- static void `put_rsp_char` (char c)
- static int `get_rsp_char` ()
- static int `rsp_unescape` (char \*data, int len)
- static void `mp_hash_init` ()
- static void `mp_hash_add` (enum `mp_type` type, unsigned long int addr, unsigned long int instr)
- static struct `mp_entry` \* `mp_hash_lookup` (enum `mp_type` type, unsigned long int addr)
- static struct `mp_entry` \* `mp_hash_delete` (enum `mp_type` type, unsigned long int addr)
- static int `hex` (int c)
- static void `reg2hex` (unsigned long int val, char \*buf)
- static unsigned long int `hex2reg` (char \*buf)
- static void `ascii2hex` (char \*dest, char \*src)
- static void `hex2ascii` (char \*dest, char \*src)
- static void `set_npc` (unsigned long int addr)
- static void `rsp_report_exception` ()
- static void `rsp_continue` (struct `rsp_buf` \*buf)

- static void `rsp_continue_with_signal` (struct `rsp_buf` \*buf)
- static void `rsp_continue_generic` (unsigned long int addr, unsigned long int except)
- static void `rsp_read_all_regs` ()
- static void `rsp_write_all_regs` (struct `rsp_buf` \*buf)
- static void `rsp_read_mem` (struct `rsp_buf` \*buf)
- static void `rsp_write_mem` (struct `rsp_buf` \*buf)
- static void `rsp_read_reg` (struct `rsp_buf` \*buf)
- static void `rsp_write_reg` (struct `rsp_buf` \*buf)
- static void `rsp_query` (struct `rsp_buf` \*buf)
- static void `rsp_command` (struct `rsp_buf` \*buf)
- static void `rsp_set` (struct `rsp_buf` \*buf)
- static void `rsp_restart` ()
- static void `rsp_step` (struct `rsp_buf` \*buf)
- static void `rsp_step_with_signal` (struct `rsp_buf` \*buf)
- static void `rsp_step_generic` (unsigned long int addr, unsigned long int except)
- static void `rsp_vpkt` (struct `rsp_buf` \*buf)
- static void `rsp_write_mem_bin` (struct `rsp_buf` \*buf)
- static void `rsp_remove_matchpoint` (struct `rsp_buf` \*buf)
- static void `rsp_insert_matchpoint` (struct `rsp_buf` \*buf)
- void `rsp_init` ()
- void `handle_rsp` ()
- void `rsp_exception` (unsigned long int except)

## Variables

- static const char `hexchars` [] = "0123456789abcdef"
  - struct {
    - int `client_waiting`
    - int `proto_num`
    - int `client_fd`
    - int `sigval`
    - unsigned long int `start_addr`
    - struct `mp_entry` \* `mp_hash` [MP\_HASH\_SIZE]
- } `rsp`

### 6.83.1 Define Documentation

#### 6.83.1.1 #define GDB\_BUF\_MAX ((NUM\_REGS) \* 8 + 1)

The maximum number of characters in inbound/outbound buffers. The largest packets are the 'G' packet, which must hold the 'G' and all the registers with two hex digits per byte and the 'g' reply, which must hold all the registers, and (in our implementation) an end-of-string (0) character. Adding the EOS allows us to print out the packet as a string. So at least NUMREGBYTES\*2 + 1 (for the 'G' or the EOS) are needed for register packets

#### 6.83.1.2 #define MP\_HASH\_SIZE 1021

Size of the matchpoint hash table. Largest prime < 2<sup>10</sup>

**6.83.1.3 #define NPC\_REGNUM (MAX\_GPRS + 1)**

Next PC

**6.83.1.4 #define NUM\_REGS (MAX\_GRPS + 3)**

Total GDB registers

**6.83.1.5 #define OR1K\_TRAP\_INSTR 0x21000001**

Trap instruction for OR32

**6.83.1.6 #define OR1KSIM\_RSP\_PROTOCOL "tcp"**

Protocol used by Or1ksim

**6.83.1.7 #define OR1KSIM\_RSP\_SERVICE "or1ksim-rsp"**

Name of the Or1ksim RSP service

**6.83.1.8 #define OR1KSIM\_TID 1**

Thread ID used by Or1ksim

**6.83.1.9 #define PPC\_REGNUM (MAX\_GPRS + 0)**

Previous PC

**6.83.1.10 #define SR\_REGNUM (MAX\_GPRS + 2)**

Supervision Register

**6.83.2 Enumeration Type Documentation****6.83.2.1 enum mp\_type**

Enumeration of different types of matchpoint. These have explicit values matching the second digit of 'z' and 'Z' packets.

**Enumerator:**

*BP\_MEMORY*

*BP\_HARDWARE*

*WP\_WRITE*

*WP\_READ*

*WP\_ACCESS*

### 6.83.2.2 enum target\_signal

Definition of GDB target signals. Data taken from the GDB 6.8 source. Only those we use defined here.

Enumerator:

*TARGET\_SIGNAL\_NONE*  
*TARGET\_SIGNAL\_INT*  
*TARGET\_SIGNAL\_ILL*  
*TARGET\_SIGNAL\_TRAP*  
*TARGET\_SIGNAL\_FPE*  
*TARGET\_SIGNAL\_BUS*  
*TARGET\_SIGNAL\_SEGV*  
*TARGET\_SIGNAL\_ALRM*  
*TARGET\_SIGNAL\_USR2*  
*TARGET\_SIGNAL\_PWR*

### 6.83.3 Function Documentation

#### 6.83.3.1 static void ascii2hex (char \* dest, char \* src) [static]

Convert an ASCII character string to pairs of hex digits

Both source and destination are null terminated.

Parameters:

- *dest* Buffer to store the hex digit pairs (null terminated)
- ← *src* The ASCII string (null terminated)

#### 6.83.3.2 static struct rsp\_buf \* get\_packet () [static, read]

Get a packet from the GDB client

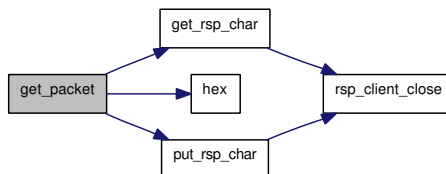
Modeled on the stub version supplied with GDB. The data is in a static buffer. The data should be copied elsewhere if it is to be preserved across a subsequent call to `get_packet()`.

Unlike the reference implementation, we don't deal with sequence numbers. GDB has never used them, and this implementation is only intended for use with GDB 6.8 or later. Sequence numbers were removed from the RSP standard at GDB 5.0.

Returns:

A pointer to the static buffer containing the data

Here is the call graph for this function:



### 6.83.3.3 static int get\_rsp\_char () [static]

Get a single character from the client socket

This should only be called if the client is open, but we check for safety.

#### Returns:

The character read, or -1 on failure

Here is the call graph for this function:



### 6.83.3.4 void handle\_rsp ()

Look for action on RSP

This function is called when the processor has stalled, which, except for initialization, must be due to an interrupt.

If we have no RSP client, we get one. We can make no progress until the client is available.

Then if the cause is an exception following a step or continue command, and the exception not been notified to GDB, a packet reporting the cause of the exception is sent.

The next client request is then processed.



**Returns:**

The value of the hex character, or -1 if the character is invalid.

**6.83.3.6 static void hex2ascii (char \* *dest*, char \* *src*) [static]**

Convert pairs of hex digits to an ASCII character string

Both source and destination are null terminated.

**Parameters:**

→ *dest* The ASCII string (null terminated)

← *src* Buffer holding the hex digit pairs (null terminated)

Here is the call graph for this function:

**6.83.3.7 static unsigned long int hex2reg (char \* *buf*) [static]**

Convert a hex digit string to a register value

The supplied 8 digit hex string is converted to a 32-bit value according the target endianism

**Parameters:**

← *buf* The buffer with the hex string

**Returns:**

The value to convert

Here is the call graph for this function:

**6.83.3.8 static void mp\_hash\_add (enum mp\_type *type*, unsigned long int *addr*, unsigned long int *instr*) [static]**

Add an entry to the matchpoint hash table

Add the entry if it wasn't already there. If it was there do nothing. The match just be on type and addr. The instr need not match, since if this is a duplicate insertion (perhaps due to a lost packet) they will be different.

**Parameters:**

← *type* The type of matchpoint

← *addr* The address of the matchpoint [in] *instr* The instruction to associate with the address



**6.83.3.9** `static struct mp_entry * mp_hash_delete (enum mp_type type, unsigned long int addr)`  
[static, read]

Delete an entry from the matchpoint hash table

If it is there the entry is deleted from the hash table. If it is not there, no action is taken. The match must be on type AND addr.

The usual fun and games tracking the previous entry, so we can delete things.

**Note:**

The deletion DOES NOT free the memory associated with the entry, since that is returned. The caller should free the memory when they have used the information.

**Parameters:**

- ← *type* The type of matchpoint
- ← *addr* The address of the matchpoint

**Returns:**

The entry deleted, or NULL if the entry was not found

**6.83.3.10** `static void mp_hash_init ()` [static]

Initialize the matchpoint hash table

This is an open hash table, so this function clears all the links to NULL.

**6.83.3.11** `static struct mp_entry * mp_hash_lookup (enum mp_type type, unsigned long int addr)`  
[static, read]

Look up an entry in the matchpoint hash table

The match must be on type AND addr.

**Parameters:**

- ← *type* The type of matchpoint
- ← *addr* The address of the matchpoint

**Returns:**

The entry deleted, or NULL if the entry was not found

**6.83.3.12** `static void put_packet (struct rsp_buf * buf)` [static]

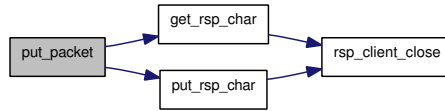
Send a packet to the GDB client

Modeled on the stub version supplied with GDB. Put out the data preceded by a '\$', followed by a '#' and a one byte checksum. '\$', '#', '\*' and '}' are escaped by preceding them with '}' and then XORing the character with 0x20.

**Parameters:**

← *buf* The data to send

Here is the call graph for this function:

**6.83.3.13 static void put\_rsp\_char (char c) [static]**

Put a single character out onto the client socket

This should only be called if the client is open, but we check for safety.

**Parameters:**

← *c* The character to put out

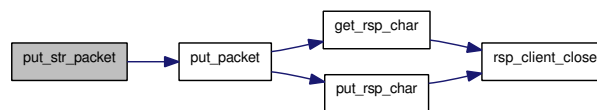
Here is the call graph for this function:

**6.83.3.14 static void put\_str\_packet (const char \* str) [static]**

Convenience to put a constant string packet

param[in] str The text of the packet

Here is the call graph for this function:

**6.83.3.15 static void reg2hex (unsigned long int val, char \* buf) [static]**

Convert a register to a hex digit string

The supplied 32-bit value is converted to an 8 digit hex string according the target endianism. It is null terminated for convenient printing.

**Parameters:**

← *val* The value to convert

→ *buf* The buffer for the text string

**6.83.3.16** `static void rsp_client_close ()` [static]

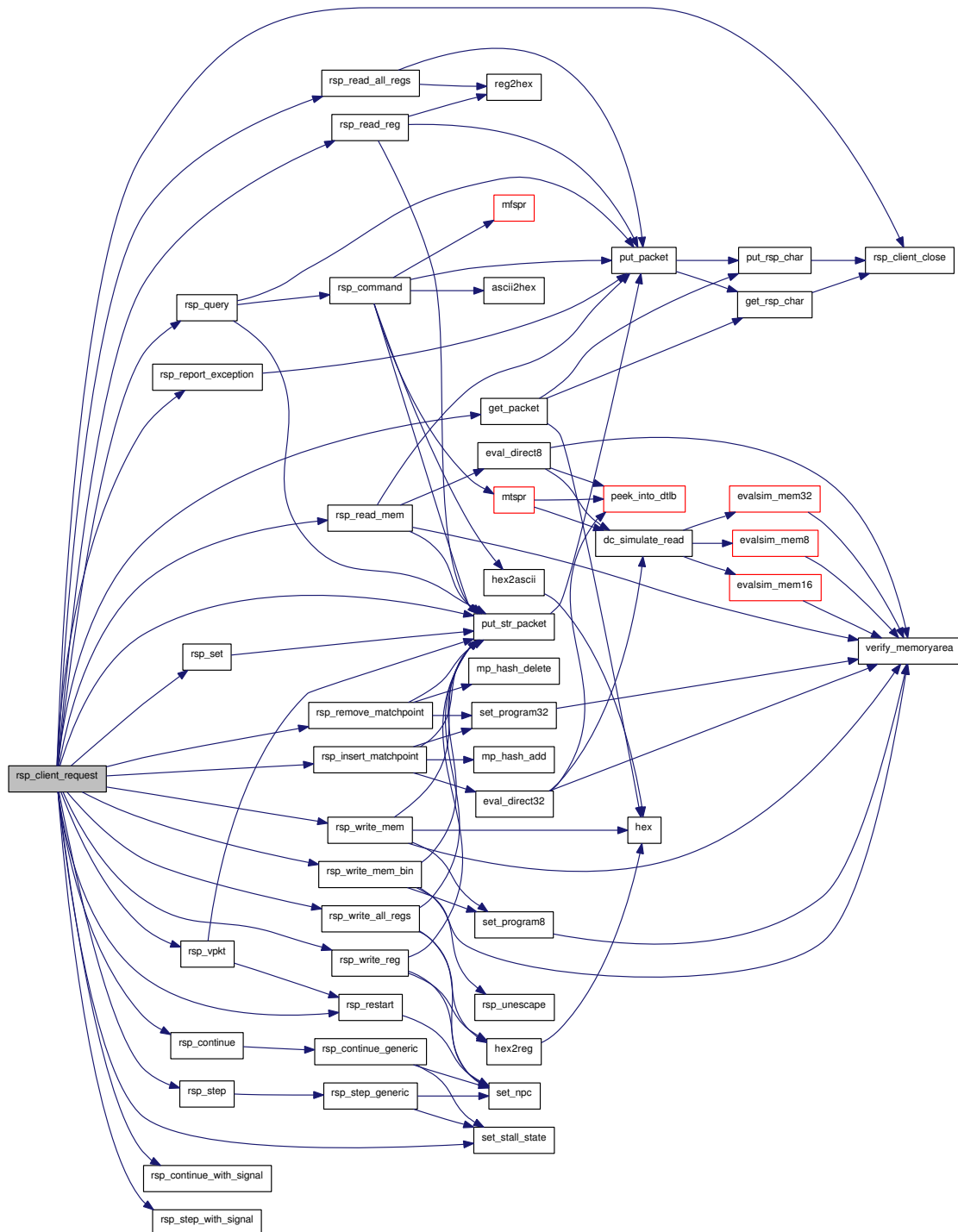
Close the connection to the client if it is open

**6.83.3.17** `static void rsp_client_request ()` [static]

Deal with a request from the GDB client session

In general, apart from the simplest requests, this function relies on other functions to implement the functionality.

Here is the call graph for this function:



### 6.83.3.18 static void rsp\_command (struct rsp\_buf \* buf) [static]

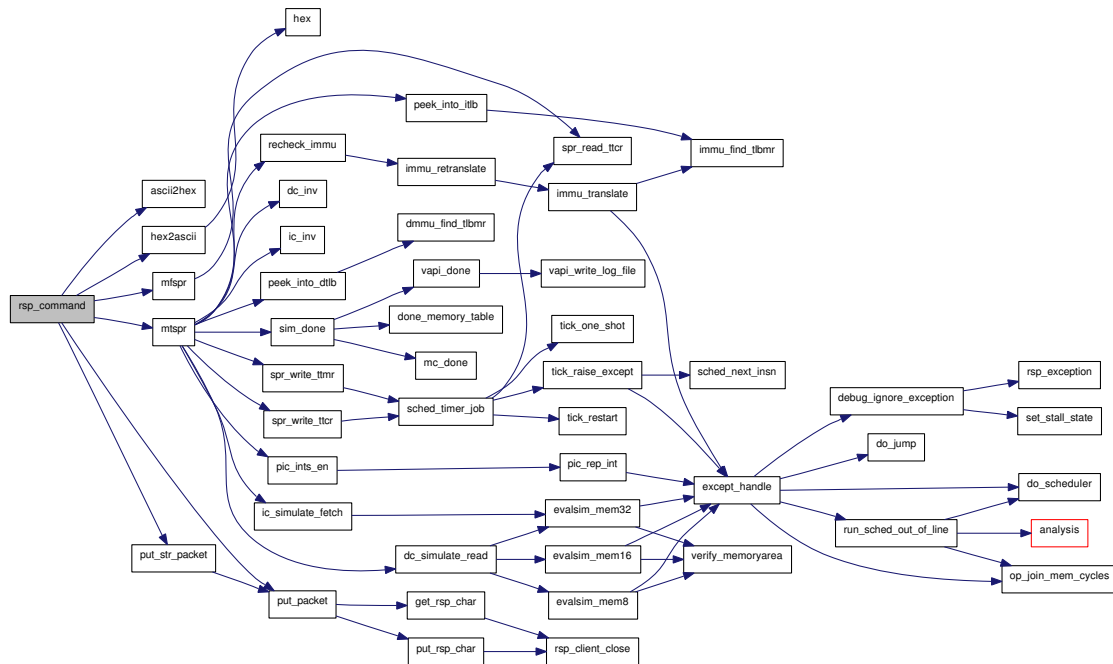
Handle a RSP qRcmd request

The actual command follows the "qRcmd," in ASCII encoded to hex

### Parameters:

← *buf* The request in full

Here is the call graph for this function:



### 6.83.3.19 static void rsp\_continue (struct rsp\_buf \* buf) [static]

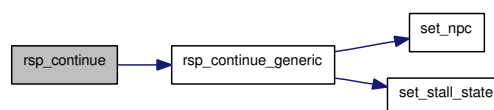
Handle a RSP continue request

Parse the command to see if there is an address. Uses the underlying generic continue function, with EXCEPT\_NONE.

### Parameters:

← *buf* The full continue packet

Here is the call graph for this function:



### 6.83.3.20 `static void rsp_continue_generic (unsigned long int addr, unsigned long int except)` `[static]`

Generic processing of a continue request

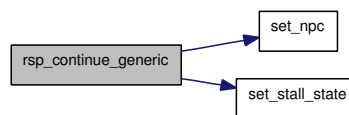
The signal may be EXCEPT\_NONE if there is no exception to be handled. Currently the exception is ignored.

The single step flag is cleared in the debug registers and then the processor is unstalled.

#### Parameters:

- ← *addr* Address from which to step
- ← *except* The exception to use (if any)

Here is the call graph for this function:



### 6.83.3.21 `static void rsp_continue_with_signal (struct rsp_buf * buf)` `[static]`

Handle a RSP continue with signal request

Currently null. Will use the underlying generic continue function.

#### Parameters:

- ← *buf* The full continue with signal packet

### 6.83.3.22 `void rsp_exception (unsigned long int except)`

Note an exception for future processing

The simulator has encountered an exception. Record it here, so that a future call to `handle_exception` will report it back to the client. The signal is supplied in Or1ksim form and recorded in GDB form.

We flag up a warning if an exception is already pending, and ignore the earlier exception.

#### Parameters:

- ← *except* The exception (Or1ksim form)

### 6.83.3.23 `static void rsp_get_client ()` `[static]`

Get a new client connection.

Blocks until the client connection is available.

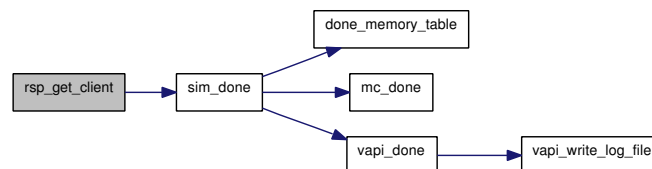
A lot of this code is copied from `remote_open` in `gdbserver remote-utils.c`.

This involves setting up a socket to listen on a socket for attempted connections from a single GDB instance (we couldn't be talking to multiple GDBs at once!).

The service is specified either as a port number in the Or1ksim configuration (parameter `rsp_port` in section `debug`, default 51000) or as a service name in the constant `OR1KSIM_RSP_SERVICE`.

The protocol used for communication is specified in `OR1KSIM_RSP_PROTOCOL`.

Here is the call graph for this function:



#### 6.83.3.24 void rsp\_init ()

Initialize the Remote Serial Protocol connection

Set up the central data structures.

Here is the call graph for this function:



#### 6.83.3.25 static void rsp\_insert\_matchpoint (struct rsp\_buf \* buf) [static]

Handle a RSP insert breakpoint or matchpoint request

For now only memory breakpoints are implemented, which are implemented by substituting a breakpoint at the specified address. The implementation must cope with the possibility of duplicate packets.

#### Todo

This doesn't work with icache/immu yet

#### Parameters:

← *buf* The command received





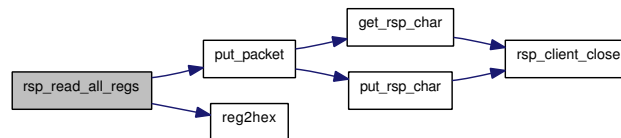
### 6.83.3.27 static void rsp\_read\_all\_regs () [static]

Handle a RSP read all registers request

The registers follow the GDB sequence for OR1K: GPR0 through GPR31, PPC (i.e. SPR PPC), NPC (i.e. SPR NPC) and SR (i.e. SPR SR). Each register is returned as a sequence of bytes in target endian order.

Each byte is packed as a pair of hex digits.

Here is the call graph for this function:



### 6.83.3.28 static void rsp\_read\_mem (struct rsp\_buf \* buf) [static]

Handle a RSP read memory (symbolic) request

Syntax is:

m<addr>,<length>:

The response is the bytes, lowest address first, encoded as pairs of hex digits.

The length given is the number of bytes to be read.

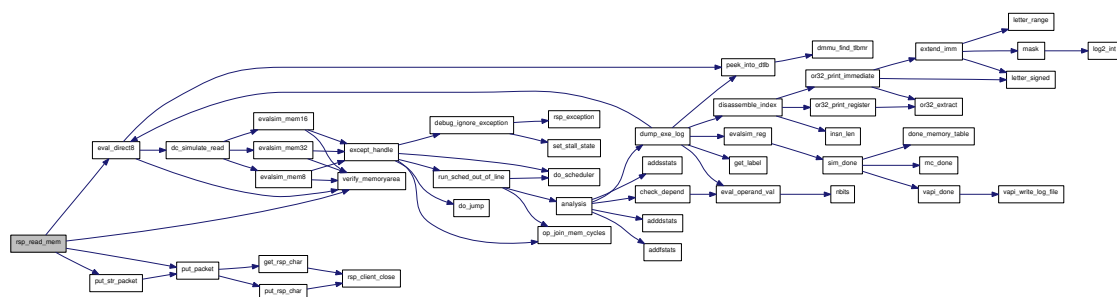
#### Note:

This function reuses buf, so trashes the original command.

#### Parameters:

← *buf* The command received

Here is the call graph for this function:



### 6.83.3.29 static void rsp\_read\_reg (struct rsp\_buf \* buf) [static]

Read a single register

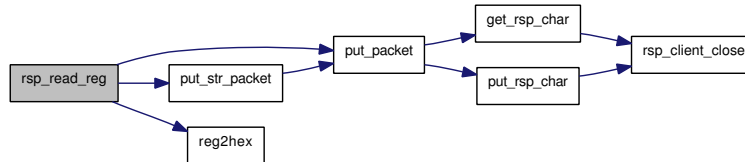
The registers follow the GDB sequence for OR1K: GPR0 through GPR31, PC (i.e. SPR NPC) and SR (i.e. SPR SR). The register is returned as a sequence of bytes in target endian order.

Each byte is packed as a pair of hex digits.

**Parameters:**

← *buf* The original packet request. Reused for the reply.

Here is the call graph for this function:



### 6.83.3.30 static void rsp\_remove\_matchpoint (struct rsp\_buf \* buf) [static]

Handle a RSP remove breakpoint or matchpoint request

For now only memory breakpoints are implemented, which are implemented by substituting a breakpoint at the specified address. The implementation must cope with the possibility of duplicate packets.

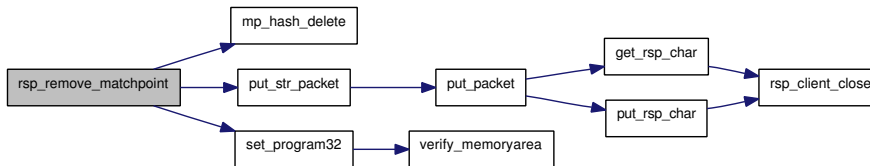
**Todo**

This doesn't work with icache/immu yet

**Parameters:**

← *buf* The command received

Here is the call graph for this function:

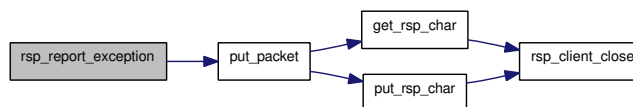


### 6.83.3.31 static void rsp\_report\_exception () [static]

Send a packet acknowledging an exception has occurred

This is only called if there is a client FD to talk to

Here is the call graph for this function:



**6.83.3.32** `static void rsp_restart ()` [static]

Handle a RSP restart request

For now we just put the program counter back to the one used with the last vRun request. There is no point in uninstalling the processor, since we'll never get control back.

Here is the call graph for this function:

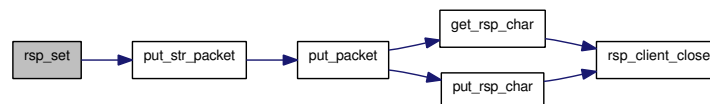
**6.83.3.33** `static void rsp_set (struct rsp_buf * buf)` [static]

Handle a RSP set request

**Parameters:**

← *buf* The request

Here is the call graph for this function:

**6.83.3.34** `static void rsp_step (struct rsp_buf * buf)` [static]

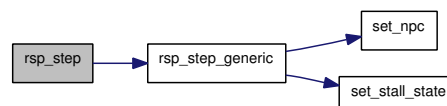
Handle a RSP step request

Parse the command to see if there is an address. Uses the underlying generic step function, with EXCEPT\_NONE.

**Parameters:**

← *buf* The full step packet

Here is the call graph for this function:

**6.83.3.35** `static void rsp_step_generic (unsigned long int addr, unsigned long int except)` [static]

Generic processing of a step request

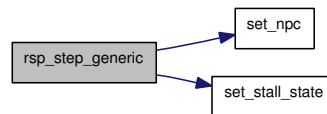
The signal may be EXCEPT\_NONE if there is no exception to be handled. Currently the exception is ignored.

The single step flag is set in the debug registers and then the processor is unstalled.

**Parameters:**

- ← *addr* Address from which to step
- ← *except* The exception to use (if any)

Here is the call graph for this function:



**6.83.3.36** `static void rsp_step_with_signal (struct rsp_buf * buf)` [static]

Handle a RSP step with signal request

Currently null. Will use the underlying generic step function.

**Parameters:**

- ← *buf* The full step with signal packet

**6.83.3.37** `static int rsp_unescape (char * data, int len)` [static]

"Unescape" RSP binary data

'#', '\$' and '}' are escaped by preceding them by '}' and oring with 0x20.

This function reverses that, modifying the data in place.

**Parameters:**

- ← *data* The array of bytes to convert [in] *len* The number of bytes to be converted

**Returns:**

- The number of bytes AFTER conversion

**6.83.3.38** `static void rsp_vpkt (struct rsp_buf * buf)` [static]

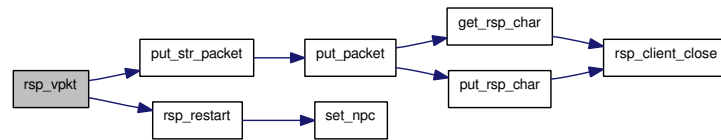
Handle a RSP 'v' packet

These are commands associated with executing the code on the target

**Parameters:**

- ← *buf* The request

Here is the call graph for this function:



### 6.83.3.39 static void rsp\_write\_all\_regs (struct rsp\_buf \* buf) [static]

Handle a RSP write all registers request

The registers follow the GDB sequence for OR1K: GPR0 through GPR31, PPC (i.e. SPR PPC), NPC (i.e. SPR NPC) and SR (i.e. SPR SR). Each register is supplied as a sequence of bytes in target endian order.

Each byte is packed as a pair of hex digits.

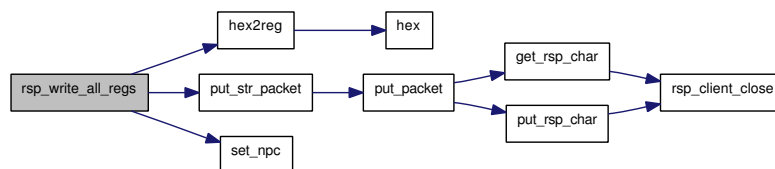
#### Todo

There is no error checking at present. Non-hex chars will generate a warning message, but there is no other check that the right amount of data is present. The result is always "OK".

#### Parameters:

← *buf* The original packet request.

Here is the call graph for this function:



### 6.83.3.40 static void rsp\_write\_mem (struct rsp\_buf \* buf) [static]

Handle a RSP write memory (symbolic) request

Syntax is:

m<addr>,<length>:<data>

The data is the bytes, lowest address first, encoded as pairs of hex digits.

The length given is the number of bytes to be written.

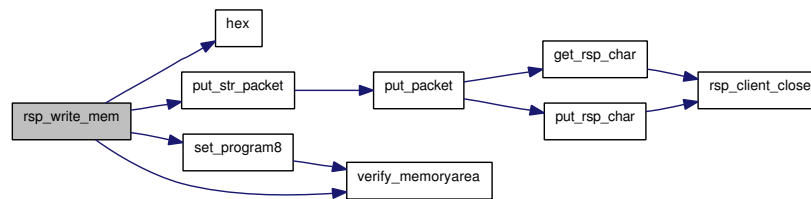
#### Note:

This function reuses buf, so trashes the original command.

#### Parameters:

← *buf* The command received

Here is the call graph for this function:



#### 6.83.3.41 static void rsp\_write\_mem\_bin (struct rsp\_buf \* buf) [static]

Handle a RSP write memory (binary) request

Syntax is:

X<addr>,<length>:

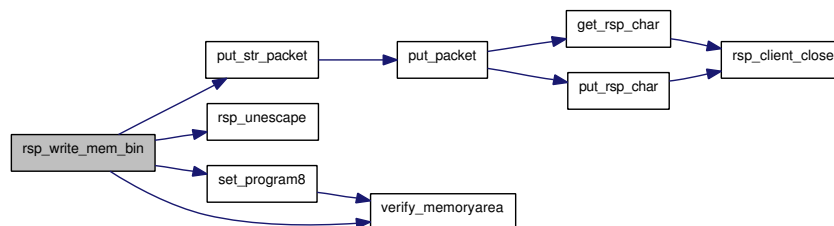
Followed by the specified number of bytes as raw binary. Response should be "OK" if all copied OK, E<nn> if error <nn> has occurred.

The length given is the number of bytes to be written. However the number of data bytes may be greater, since '#', '\$' and '}' are escaped by preceding them by '}' and oring with 0x20.

#### Parameters:

← *buf* The command received

Here is the call graph for this function:



#### 6.83.3.42 static void rsp\_write\_reg (struct rsp\_buf \* buf) [static]

Write a single register

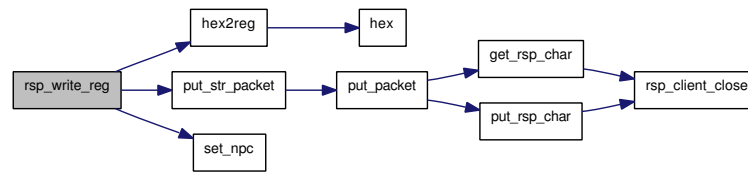
The registers follow the GDB sequence for OR1K: GPR0 through GPR31, PC (i.e. SPR NPC) and SR (i.e. SPR SR). The register is specified as a sequence of bytes in target endian order.

Each byte is packed as a pair of hex digits.

#### Parameters:

← *buf* The original packet request.

Here is the call graph for this function:



### 6.83.3.43 static void set\_npc (unsigned long int addr) [static]

Set the program counter

This sets the value in the NPC SPR. Not completely trivial, since this is actually cached in [cpu\\_state.pc](#). Any reset of the NPC also involves clearing the delay state and setting the pnext global.

Only actually do this if the requested address is different to the current NPC (avoids clearing the delay pipe).

#### Parameters:

← *addr* The address to use

## 6.83.4 Variable Documentation

### 6.83.4.1 int client\_fd

FD for talking to GDB

### 6.83.4.2 int client\_waiting

Is client waiting a response?

### 6.83.4.3 const char hexchars[] = "0123456789abcdef" [static]

String to map hex digits to chars

### 6.83.4.4 struct mp\_entry\* mp\_hash[MP\_HASH\_SIZE]

Matchpoint hash table

### 6.83.4.5 int proto\_num

Number of the protocol used

### 6.83.4.6 struct { ... } rsp [static]

Central data for the RSP connection

**6.83.4.7 int sigval**

GDB signal for any exception

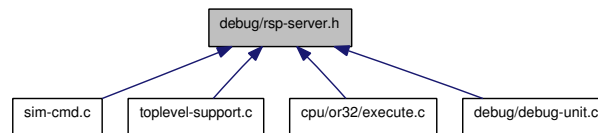
**6.83.4.8 unsigned long int start\_addr**

Start of last run



## 6.84 debug/rsp-server.h File Reference

This graph shows which files directly or indirectly include this file:



### Functions

- void [rsp\\_init](#) ()
- void [handle\\_rsp](#) ()
- void [rsp\\_exception](#) (unsigned long int except)

#### 6.84.1 Function Documentation

##### 6.84.1.1 void [handle\\_rsp](#) ()

Look for action on RSP

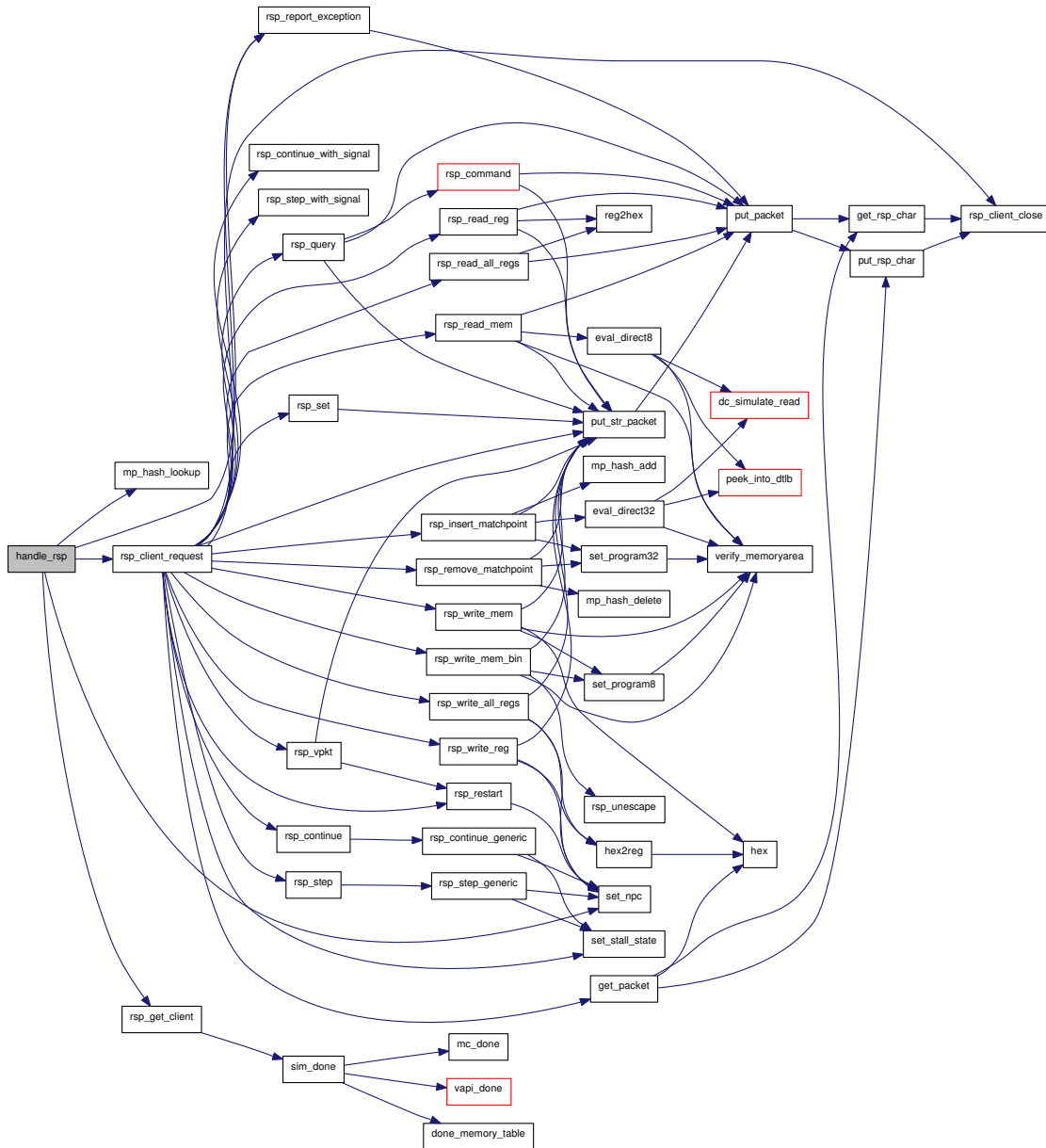
This function is called when the processor has stalled, which, except for initialization, must be due to an interrupt.

If we have no RSP client, we get one. We can make no progress until the client is available.

Then if the cause is an exception following a step or continue command, and the exception not been notified to GDB, a packet reporting the cause of the exception is sent.

The next client request is then processed.

Here is the call graph for this function:



### 6.84.1.2 void rsp\_exception (unsigned long int except)

Note an exception for future processing

The simulator has encountered an exception. Record it here, so that a future call to handle\_exception will report it back to the client. The signal is supplied in Or1ksim form and recorded in GDB form.

We flag up a warning if an exception is already pending, and ignore the earlier exception.

#### Parameters:

← *except* The exception (Or1ksim form)

### 6.84.1.3 void rsp\_init ()

Initialize the Remote Serial Protocol connection

Set up the central data structures.

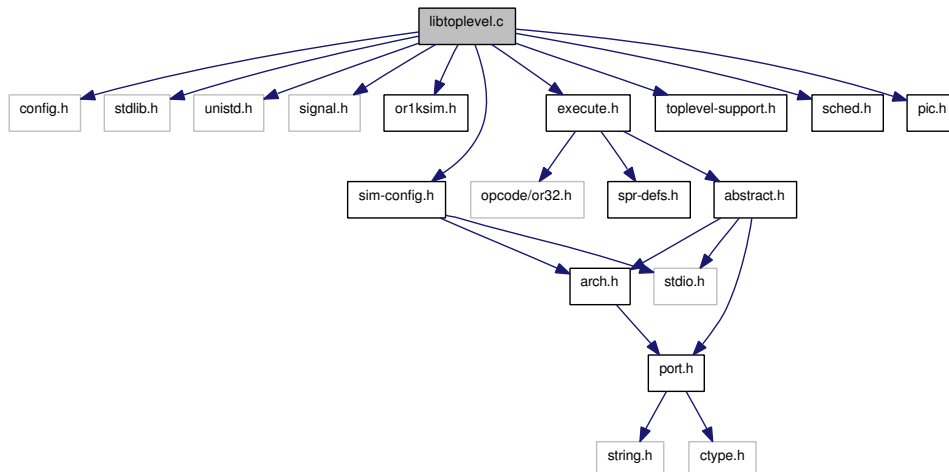
Here is the call graph for this function:



## 6.85 libtoplevel.c File Reference

```
#include "config.h"
#include <stdlib.h>
#include <unistd.h>
#include <signal.h>
#include "or1ksim.h"
#include "sim-config.h"
#include "toplevel-support.h"
#include "sched.h"
#include "execute.h"
#include "pic.h"
```

Include dependency graph for libtoplevel.c:



## Functions

- `int or1ksim_init` (const char \*config\_file, const char \*image\_file, void \*class\_ptr, unsigned long int(\*upr)(void \*class\_ptr, unsigned long int addr, unsigned long int mask), void(\*upw)(void \*class\_ptr, unsigned long int addr, unsigned long int mask, unsigned long int wdata))
- `int or1ksim_run` (double duration)
- `void or1ksim_reset_duration` (double duration)
- static double `internal_or1ksim_time` ()
- `void or1ksim_set_time_point` ()
- `double or1ksim_get_time_period` ()
- `int or1ksim_is_le` ()
- `unsigned long int or1ksim_clock_rate` ()
- `void or1ksim_interrupt` (int i)
- `void or1ksim_interrupt_set` (int i)
- `void or1ksim_interrupt_clear` (int i)

## 6.85.1 Function Documentation

### 6.85.1.1 static double internal\_or1ksim\_time () [static]

Return time executed so far

Internal utility to return the time executed so far. Note that this is a re-entrant routine.

#### Returns:

Time executed so far in seconds

### 6.85.1.2 unsigned long int or1ksim\_clock\_rate ()

Return the clock rate

Value is part of the configuration

#### Returns:

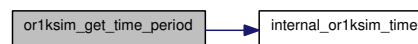
Clock rate in Hz.

### 6.85.1.3 double or1ksim\_get\_time\_period ()

Return the time since the time point was set

Get the value from the internal parameter

Here is the call graph for this function:



### 6.85.1.4 int or1ksim\_init (const char \* *config\_file*, const char \* *image\_file*, void \* *class\_ptr*, unsigned long int(\*) (void \* *class\_ptr*, unsigned long int *addr*, unsigned long int *mask*) *upr*, void(\*) (void \* *class\_ptr*, unsigned long int *addr*, unsigned long int *mask*, unsigned long int *wdata*) *upw*)

Initialize the simulator.

Allows specification of an (optional) [config](#) file and an image file. Builds up dummy argc/argv to pass to the existing argument parser.

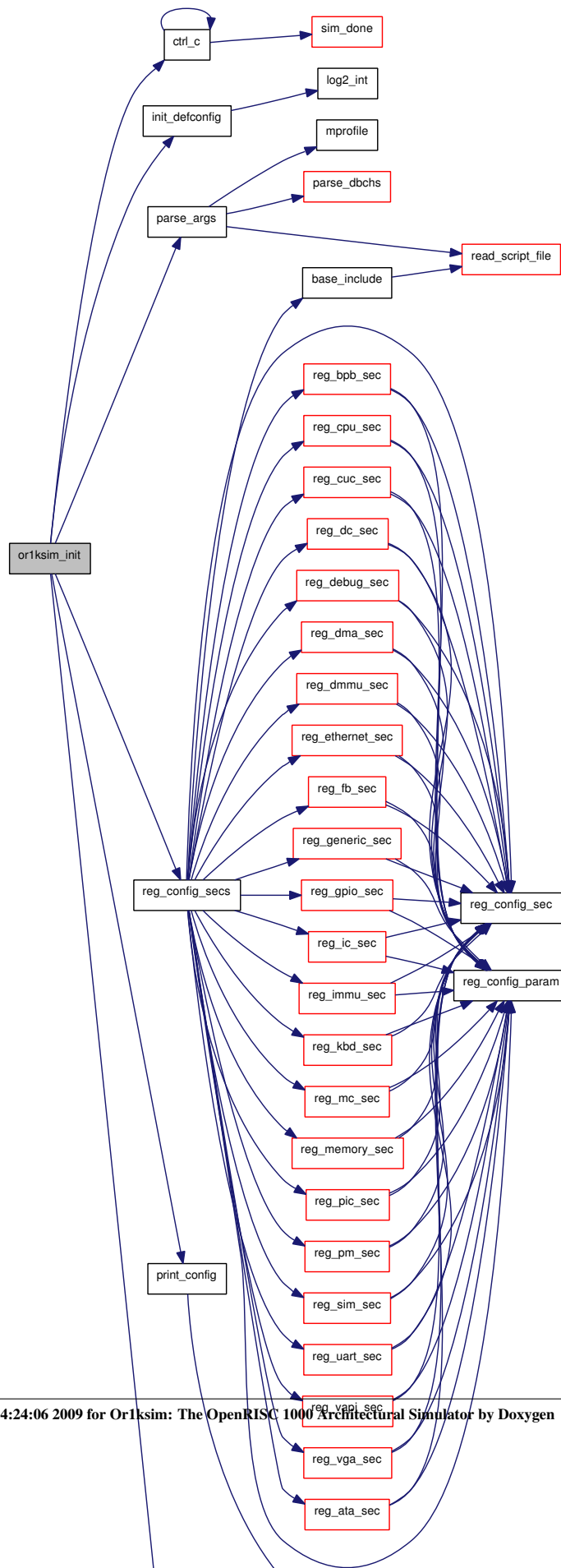
#### Parameters:

- ← *config\_file* Or1ksim configuration file name
- ← *image\_file* The program image to execute
- ← *class\_ptr* Pointer to a C++ class instance (for use when called by C++)
- ← *upr* Upcall routine for reads
- ← *upw* Upcall routine for writes

**Returns:**

0 on success and an error code on failure

Here is the call graph for this function:



**6.85.1.5 void or1ksim\_interrupt (int *i*)**

Trigger an edge triggered interrupt

This function is appropriate for edge triggered interrupts, which are taken and then immediately cleared.

**Note:**

There is no check that the specified interrupt number is reasonable (i.e.  $\leq 31$ ).

**Parameters:**

← *i* The interrupt number

**6.85.1.6 void or1ksim\_interrupt\_clear (int *i*)**

Clear a level triggered interrupt

This function is appropriate for level triggered interrupts, which must be explicitly set first in a separate call.

**Note:**

There is no check that the specified interrupt number is reasonable (i.e.  $\leq 31$ ).

**Parameters:**

← *i* The interrupt number to clear

**6.85.1.7 void or1ksim\_interrupt\_set (int *i*)**

Set a level triggered interrupt

This function is appropriate for level triggered interrupts, which must be explicitly cleared in a separate call.

**Note:**

There is no check that the specified interrupt number is reasonable (i.e.  $\leq 31$ ).

**Parameters:**

← *i* The interrupt number to set

**6.85.1.8 int or1ksim\_is\_le ()**

Return the endianism of the model

Note that this is a re-entrant routine.

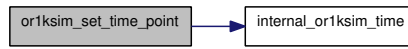
**Returns:**

1 if the model is little endian, 0 otherwise.





Here is the call graph for this function:



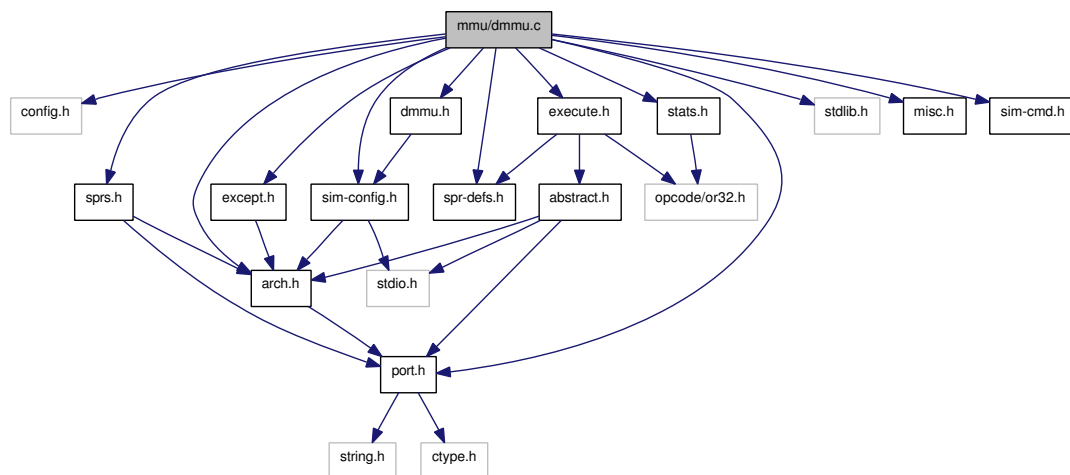
## **6.86 mainpage File Reference**

### **6.86.1 Detailed Description**

## 6.87 mmu/dmmu.c File Reference

```
#include "config.h"
#include "port.h"
#include <stdlib.h>
#include "dmmu.h"
#include "sim-config.h"
#include "arch.h"
#include "execute.h"
#include "spr-defs.h"
#include "stats.h"
#include "except.h"
#include "sprs.h"
#include "misc.h"
#include "sim-cmd.h"
```

Include dependency graph for dmmu.c:



## Functions

- static `uorreg_t * dmmu_find_tlbmr (oraddr_t virtaddr, uorreg_t **dtlbmr_lru, struct dmmu *dmmu)`
- `oraddr_t dmmu_translate (oraddr_t virtaddr, int write_access)`
- `oraddr_t peek_into_dtlb (oraddr_t virtaddr, int write_access, int through_dc)`
- static void `dtlb_status (void *dat)`
- static void `dmmu_enabled (union param_val val, void *dat)`
- static void `dmmu_nsets (union param_val val, void *dat)`
- static void `dmmu_nways (union param_val val, void *dat)`
- static void `dmmu_pagesize (union param_val val, void *dat)`
- static void `dmmu_entsize (union param_val val, void *dat)`
- static void `dmmu_ustates (union param_val val, void *dat)`

- static void [dmmu\\_missdelay](#) (union [param\\_val](#) val, void \*dat)
- static void [dmmu\\_hitdelay](#) (union [param\\_val](#) val, void \*dat)
- static void \* [dmmu\\_start\\_sec](#) ()
- static void [dmmu\\_end\\_sec](#) (void \*dat)
- void [reg\\_dmmu\\_sec](#) (void)

## Variables

- struct [dmmu](#) \* [dmmu\\_state](#)

## 6.87.1 Function Documentation

### 6.87.1.1 static void [dmmu\\_enabled](#) (union [param\\_val](#) val, void \* dat) [static]

Enable or disable the DMMU

Set the corresponding field in the UPR

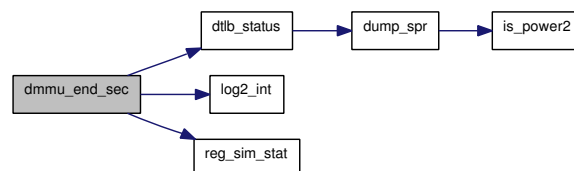
#### Parameters:

← *val* The value to use

← *dat* The [config](#) data structure

### 6.87.1.2 static void [dmmu\\_end\\_sec](#) (void \* dat) [static]

Here is the call graph for this function:



### 6.87.1.3 static void [dmmu\\_entsize](#) (union [param\\_val](#) val, void \* dat) [static]

Set the DMMU entry size

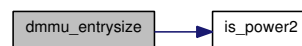
Value must be a power of 2. Ignore other values with a warning

#### Parameters:

← *val* The value to use

← *dat* The [config](#) data structure

Here is the call graph for this function:



**6.87.1.4** `static uorreg_t* dmmu_find_tlbmr (oraddr_t virtaddr, uorreg_t** dtlbmr_lru, struct dmmu * dmmu)` [static]

**6.87.1.5** `static void dmmu_hitdelay (union param_val val, void * dat)` [static]

**6.87.1.6** `static void dmmu_missdelay (union param_val val, void * dat)` [static]

**6.87.1.7** `static void dmmu_nsets (union param_val val, void * dat)` [static]

Set the number of DMMU sets

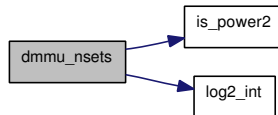
Value must be a power of 2  $\leq 256$ . Ignore any other values with a warning. Set the corresponding DMMU configuration flags.

**Parameters:**

← *val* The value to use

← *dat* The `config` data structure

Here is the call graph for this function:



**6.87.1.8** `static void dmmu_nways (union param_val val, void * dat)` [static]

Set the number of DMMU ways

Value must be in the range 1-4. Ignore other values with a warning. Set the corresponding DMMU configuration flags.

**Parameters:**

← *val* The value to use

← *dat* The `config` data structure

**6.87.1.9** `static void dmmu_pagesize (union param_val val, void * dat)` [static]

Set the DMMU page size

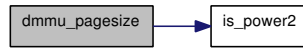
Value must be a power of 2. Ignore other values with a warning

**Parameters:**

← *val* The value to use

← *dat* The `config` data structure

Here is the call graph for this function:



### 6.87.1.10 static void\* dmmu\_start\_sec () [static]

Initialize a new DMMU configuration

ALL parameters are set explicitly to default values. Corresponding SPR flags are set as appropriate.

#### Returns:

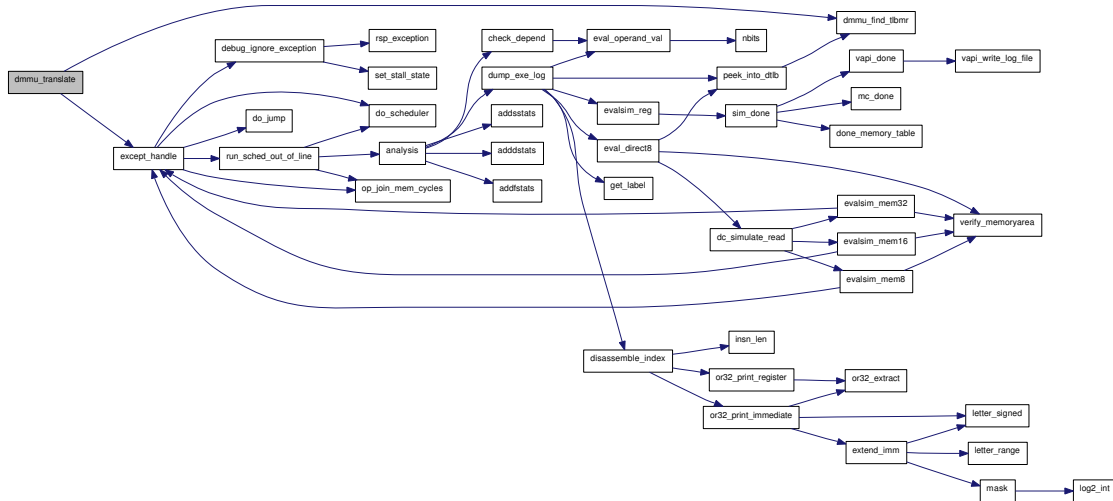
The new memory configuration data structure

Here is the call graph for this function:



### 6.87.1.11 oraddr\_t dmmu\_translate (oraddr\_t virtaddr, int write\_access)

Here is the call graph for this function:



### 6.87.1.12 static void dmmu\_ustates (union param\_val val, void \* dat) [static]

Set the number of DMMU usage states

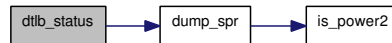
Value must be 2, 3 or 4. Ignore other values with a warning

**Parameters:**

- ← *val* The value to use
- ← *dat* The `config` data structure

**6.87.1.13 static void dtlb\_status (void \* dat) [static]**

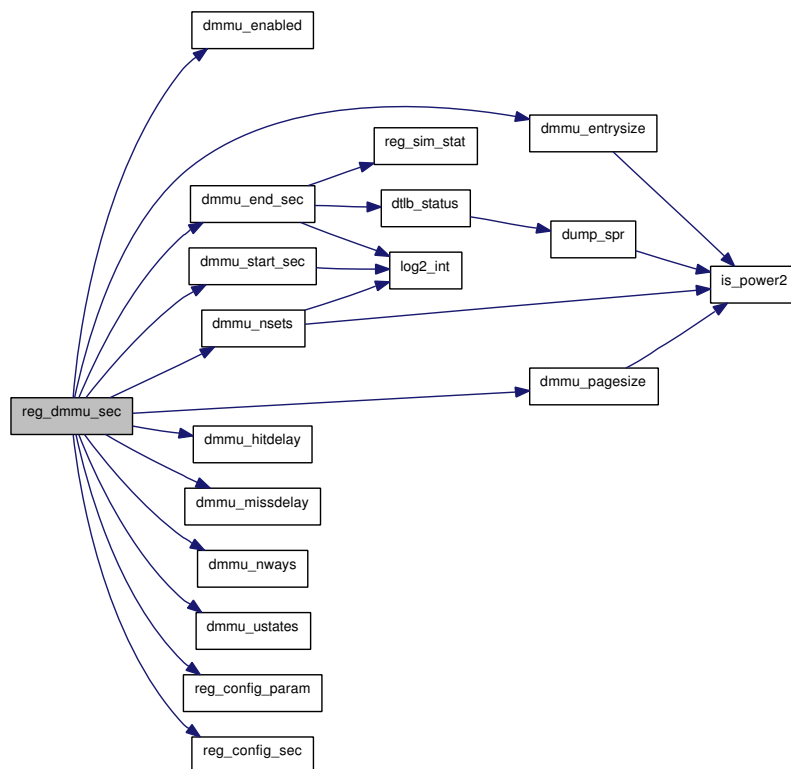
Here is the call graph for this function:

**6.87.1.14 oraddr\_t peek\_into\_dtlb (oraddr\_t virtaddr, int write\_access, int through\_dc)**

Here is the call graph for this function:

**6.87.1.15 void reg\_dmmu\_sec (void)**

Here is the call graph for this function:





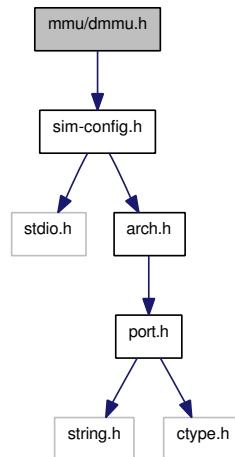
## 6.87.2 Variable Documentation

### 6.87.2.1 struct dmmu\* dmmu\_state

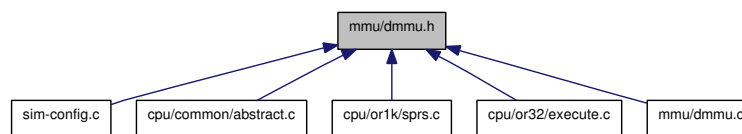
## 6.88 mmu/dmmu.h File Reference

```
#include "sim-config.h"
```

Include dependency graph for dmmu.h:



This graph shows which files directly or indirectly include this file:



### Data Structures

- struct [dmmu](#)

### Defines

- #define [DADDR\\_PAGE](#)(addr) ((addr) & [dmmu\\_state](#) → page\_mask)

### Functions

- [oraddr\\_t dmmu\\_translate](#) ([oraddr\\_t](#) virtaddr, int write\_access)
- [oraddr\\_t dmmu\\_simulate\\_tlb](#) ([oraddr\\_t](#) virtaddr, int write\_access)
- [oraddr\\_t peek\\_into\\_dtlb](#) ([oraddr\\_t](#) virtaddr, int write\_access, int through\_dc)
- void [reg\\_dmmu\\_sec](#) ()

### Variables

- struct [dmmu](#) \* [dmmu\\_state](#)

## 6.88.1 Define Documentation

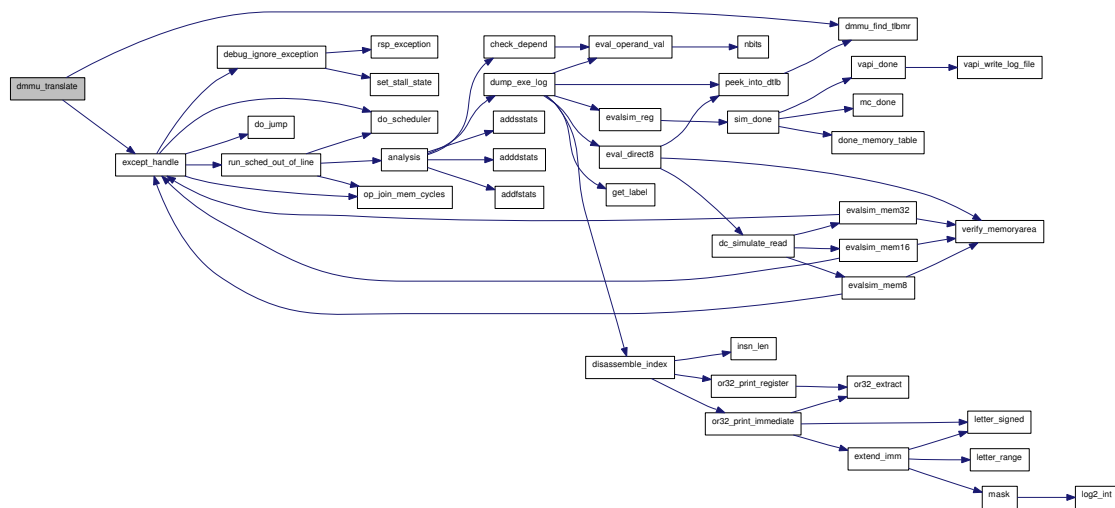
6.88.1.1 `#define DADDR_PAGE(addr) ((addr) & dmmu_state → page_mask)`

## 6.88.2 Function Documentation

6.88.2.1 `oraddr_t dmmu_simulate_tlb (oraddr_t virtaddr, int write_access)`

6.88.2.2 `oraddr_t dmmu_translate (oraddr_t virtaddr, int write_access)`

Here is the call graph for this function:



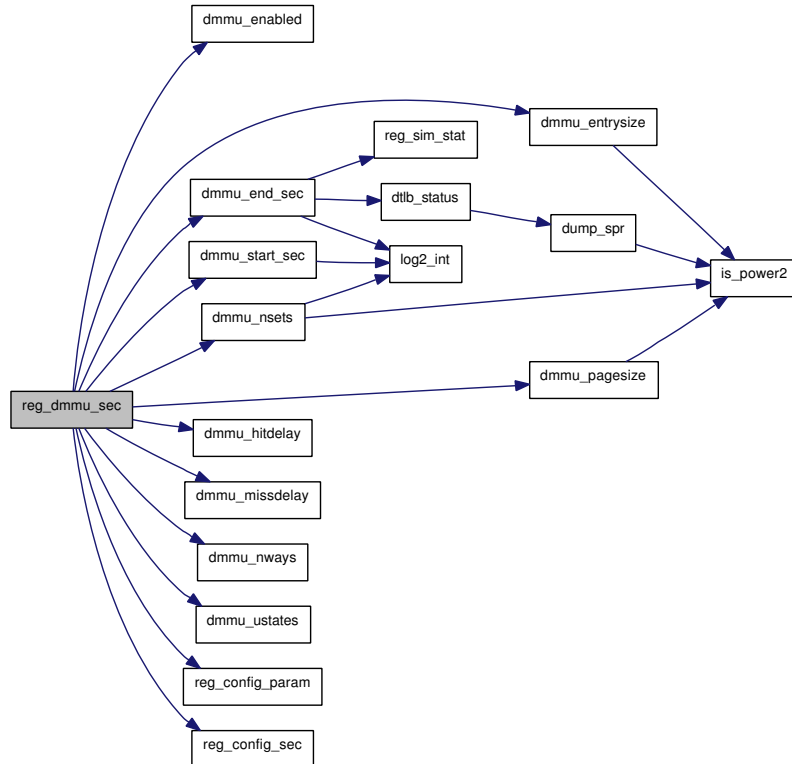
6.88.2.3 `oraddr_t peek_into_dtlb (oraddr_t virtaddr, int write_access, int through_dc)`

Here is the call graph for this function:



### 6.88.2.4 void reg\_dmmu\_sec ()

Here is the call graph for this function:



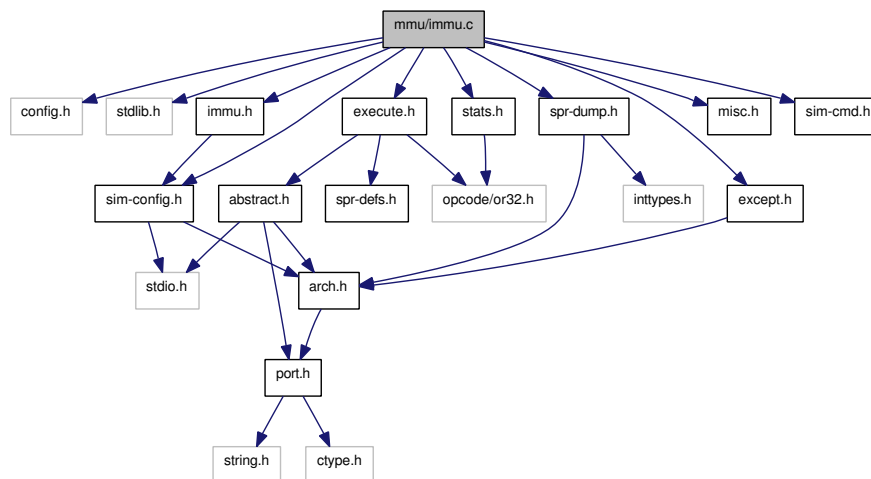
## 6.88.3 Variable Documentation

### 6.88.3.1 struct dmmu\* dmmu\_state

## 6.89 mmu/immu.c File Reference

```
#include "config.h"
#include <stdlib.h>
#include "immu.h"
#include "sim-config.h"
#include "execute.h"
#include "stats.h"
#include "except.h"
#include "spr-dump.h"
#include "misc.h"
#include "sim-cmd.h"
```

Include dependency graph for immu.c:



## Functions

- static `uorreg_t * immu_find_tlbmr (oraddr_t virtaddr, uorreg_t **itlbmr_lru, struct immu *immu)`
- `oraddr_t immu_translate (oraddr_t virtaddr)`
- `oraddr_t peek_into_itlb (oraddr_t virtaddr)`
- static void `itlb_status (void *dat)`
- static void `immu_enabled (union param_val val, void *dat)`
- static void `immu_nsets (union param_val val, void *dat)`
- static void `immu_nways (union param_val val, void *dat)`
- static void `immu_pagesize (union param_val val, void *dat)`
- static void `immu_entsize (union param_val val, void *dat)`
- static void `immu_ustates (union param_val val, void *dat)`
- static void `immu_missdelay (union param_val val, void *dat)`
- static void `immu_hitdelay (union param_val val, void *dat)`
- static void `* immu_start_sec ()`
- static void `immu_end_sec (void *dat)`
- void `reg_immu_sec (void)`

## Variables

- struct `immu` \* `immu_state`

## 6.89.1 Function Documentation

### 6.89.1.1 `static void immu_enabled (union param_val val, void * dat) [static]`

Enable or disable the IMMU

Set the corresponding field in the UPR

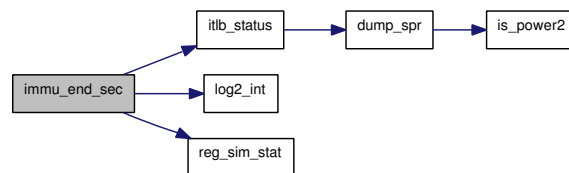
#### Parameters:

← *val* The value to use

← *dat* The `config` data structure

### 6.89.1.2 `static void immu_end_sec (void * dat) [static]`

Here is the call graph for this function:



### 6.89.1.3 `static void immu_entsize (union param_val val, void * dat) [static]`

Set the IMMU entry size

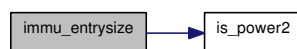
Value must be a power of 2. Ignore other values with a warning

#### Parameters:

← *val* The value to use

← *dat* The `config` data structure

Here is the call graph for this function:



**6.89.1.4** `static uorreg_t* immu_find_tlbmr (oraddr_t virtaddr, uorreg_t** tlbmr_lru, struct immu * immu)` [static]

**6.89.1.5** `static void immu_hitdelay (union param_val val, void * dat)` [static]

**6.89.1.6** `static void immu_missdelay (union param_val val, void * dat)` [static]

**6.89.1.7** `static void immu_nsets (union param_val val, void * dat)` [static]

Set the number of DMMU sets

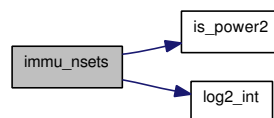
Value must be a power of 2 <= 256. Ignore any other values with a warning. Set the corresponding IMMU configuration flags.

**Parameters:**

← *val* The value to use

← *dat* The `config` data structure

Here is the call graph for this function:



**6.89.1.8** `static void immu_nways (union param_val val, void * dat)` [static]

Set the number of IMMU ways

Value must be in the range 1-4. Ignore other values with a warning. Set the corresponding IMMU configuration flags.

**Parameters:**

← *val* The value to use

← *dat* The `config` data structure

**6.89.1.9** `static void immu_pagesize (union param_val val, void * dat)` [static]

Set the IMMU page size

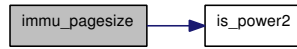
Value must be a power of 2. Ignore other values with a warning

**Parameters:**

← *val* The value to use

← *dat* The `config` data structure

Here is the call graph for this function:



#### 6.89.1.10 static void\* immu\_start\_sec () [static]

Initialize a new DMMU configuration

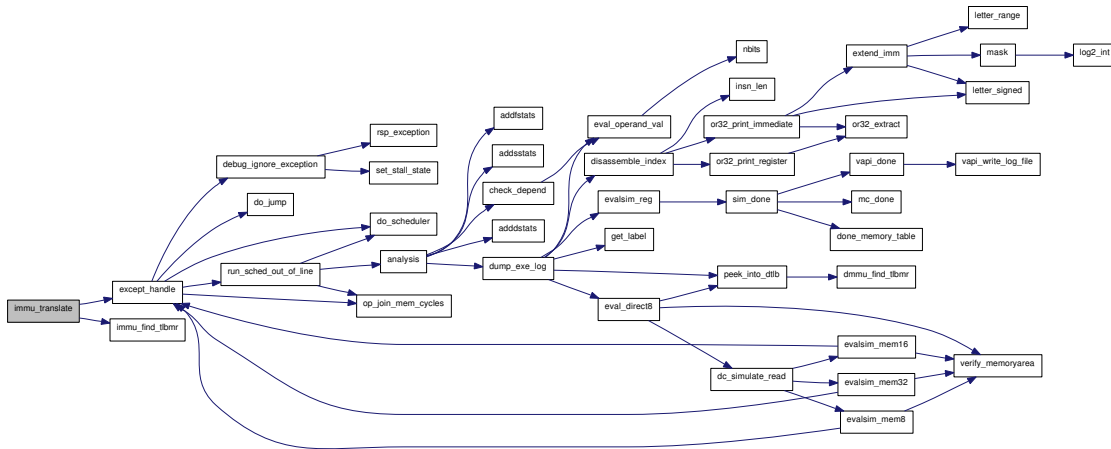
ALL parameters are set explicitly to default values.

Here is the call graph for this function:



#### 6.89.1.11 oraddr\_t immu\_translate (oraddr\_t virtaddr)

Here is the call graph for this function:



#### 6.89.1.12 static void immu\_ustates (union param\_val val, void \* dat) [static]

Set the number of IMMU usage states

Value must be 2, 3 or 4. Ignore other values with a warning

##### Parameters:

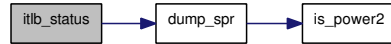
← *val* The value to use

← *dat* The `config` data structure



### 6.89.1.13 static void itlb\_status (void \* *dat*) [static]

Here is the call graph for this function:



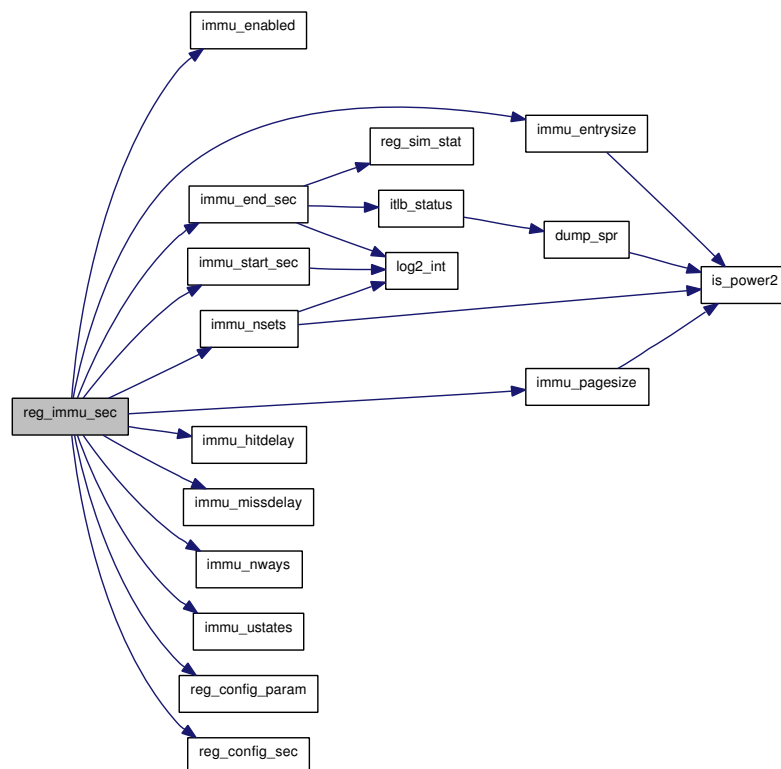
### 6.89.1.14 oraddr\_t peek\_into\_itlb (oraddr\_t *virtaddr*)

Here is the call graph for this function:



### 6.89.1.15 void reg\_immu\_sec (void)

Here is the call graph for this function:



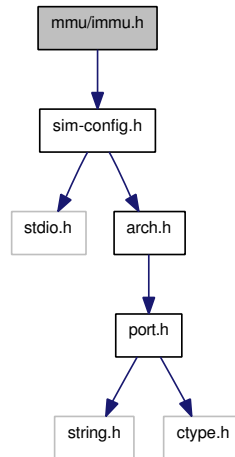
## 6.89.2 Variable Documentation

### 6.89.2.1 struct immu\* immu\_state

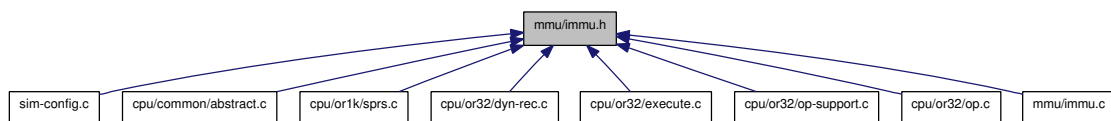
## 6.90 mmu/immu.h File Reference

```
#include "sim-config.h"
```

Include dependency graph for immu.h:



This graph shows which files directly or indirectly include this file:



### Data Structures

- struct [immu](#)

### Defines

- #define [IADDR\\_PAGE](#)(addr) ((addr) & [immu\\_state](#) → page\_mask)

### Functions

- [oraddr\\_t immu\\_translate](#) ([oraddr\\_t](#) virtaddr)
- [oraddr\\_t immu\\_simulate\\_tlb](#) ([oraddr\\_t](#) virtaddr)
- [oraddr\\_t peek\\_into\\_itlb](#) ([oraddr\\_t](#) virtaddr)
- void [reg\\_immu\\_sec](#) ()

### Variables

- struct [immu](#) \* [immu\\_state](#)

## 6.90.1 Define Documentation

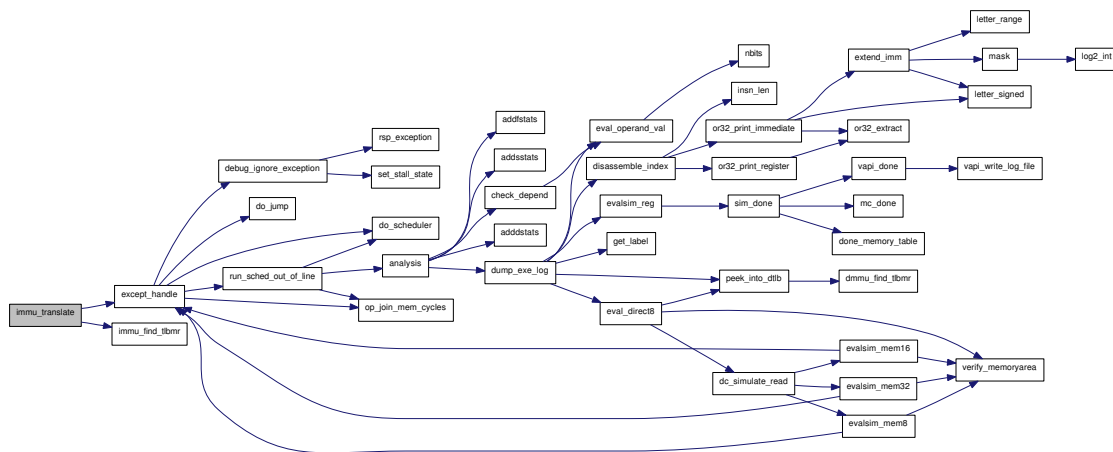
6.90.1.1 `#define IADDR_PAGE(addr) ((addr) & immu_state → page_mask)`

## 6.90.2 Function Documentation

6.90.2.1 `oraddr_t immu_simulate_tlb (oraddr_t virtaddr)`

6.90.2.2 `oraddr_t immu_translate (oraddr_t virtaddr)`

Here is the call graph for this function:



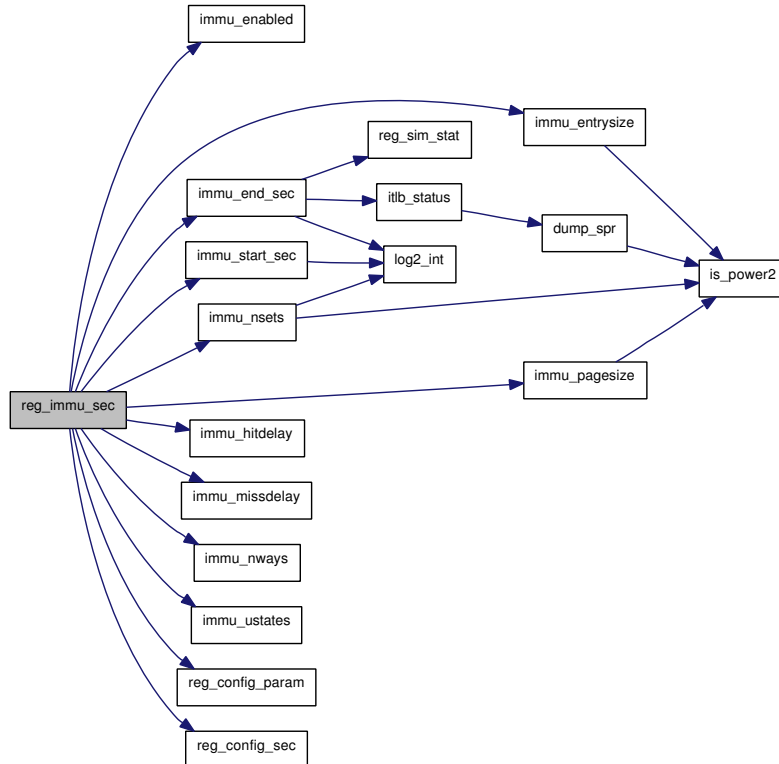
6.90.2.3 `oraddr_t peek_into_itlb (oraddr_t virtaddr)`

Here is the call graph for this function:



### 6.90.2.4 void reg\_immu\_sec ()

Here is the call graph for this function:



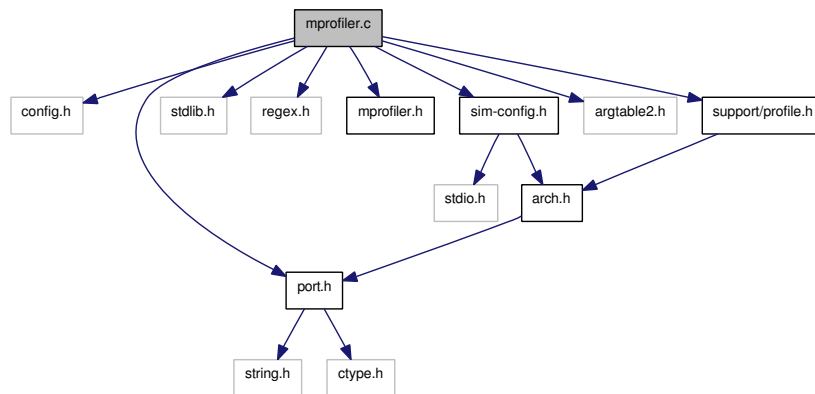
## 6.90.3 Variable Documentation

### 6.90.3.1 struct immu\* immu\_state

## 6.91 mprofiler.c File Reference

```
#include "config.h"
#include "port.h"
#include <stdlib.h>
#include <regex.h>
#include "mprofiler.h"
#include "sim-config.h"
#include "argtable2.h"
#include "support/profile.h"
```

Include dependency graph for mprofiler.c:



### Data Structures

- struct [memory\\_hash](#)

### Defines

- #define [MODE\\_DETAIL](#) 0
- #define [MODE\\_PRETTY](#) 1
- #define [MODE\\_ACCESS](#) 2
- #define [MODE\\_WIDTH](#) 3
- #define [BUF\\_SIZE](#) 256
- #define [HASH\\_SIZE](#) 0x10000
- #define [HASH\\_FUNC\(x\)](#) ((x) & 0xffff)

### Functions

- static void [hash\\_add](#) ([oraddr\\_t](#) addr, int index)
- static unsigned long [hash\\_get](#) ([oraddr\\_t](#) addr, int index)
- static void [init](#) ()
- static void [read\\_file](#) (FILE \*f, int mode)

- static int `nbits` (unsigned long a)
- static void `printout` (int mode)
- int `main_mprofiler` (int argc, char \*argv[], int just\_help)

## Variables

- static struct `memory_hash` \* `hash` [HASH\_SIZE]
- static int `group_bits` = 2
- static `oraddr_t` `start_addr` = 0
- static `oraddr_t` `end_addr` = 0xffffffff
- static FILE \* `fprof` = 0

## 6.91.1 Define Documentation

6.91.1.1 `#define BUF_SIZE 256`

6.91.1.2 `#define HASH_FUNC(x) ((x) & 0xffff)`

6.91.1.3 `#define HASH_SIZE 0x10000`

6.91.1.4 `#define MODE_ACCESS 2`

6.91.1.5 `#define MODE_DETAIL 0`

6.91.1.6 `#define MODE_PRETTY 1`

6.91.1.7 `#define MODE_WIDTH 3`

## 6.91.2 Function Documentation

6.91.2.1 `static void hash_add (oraddr_t addr, int index)` [static]

6.91.2.2 `static unsigned long hash_get (oraddr_t addr, int index)` [static]

6.91.2.3 `static void init ()` [static]

6.91.2.4 `int main_mprofiler (int argc, char * argv[], int just_help)`

Parse the arguments for the profiling utility

Updated by Jeremy Bennett to use argtable2. Also has an option just to print help, for use with the CLI.

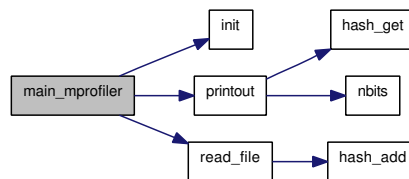
### Parameters:

- ← *argc* Number of command args
- ← *argv* Vector of the command args
- ← *just\_help* If 1 (true), ignore argc & argv and just print out the help message without parsing args

### Returns:

0 on success, 1 on failure

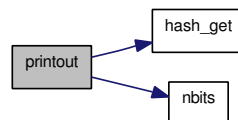
Here is the call graph for this function:



**6.91.2.5** `static int nbits (unsigned long a)` [static]

**6.91.2.6** `static void printout (int mode)` [static]

Here is the call graph for this function:



**6.91.2.7** `static void read_file (FILE *f, int mode)` [static]

Here is the call graph for this function:



## 6.91.3 Variable Documentation

**6.91.3.1** `oraddr_t end_addr = 0xffffffff` [static]

End address

**6.91.3.2** `FILE* fprof = 0` [static]

**6.91.3.3** `int group_bits = 2` [static]

Groups size – how much addresses should be joined together

**6.91.3.4** `struct memory_hash * hash[HASH_SIZE]` [static]

Hash table data structure

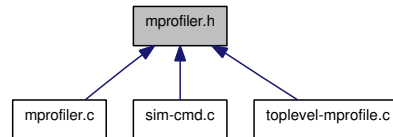
**6.91.3.5 oraddr\_t start\_addr = 0** [static]

Start address



## 6.92 mprofiler.h File Reference

This graph shows which files directly or indirectly include this file:



### Functions

- int [main\\_mprofiler](#) (int argc, char \*argv[], int just\_help)

### 6.92.1 Function Documentation

#### 6.92.1.1 int main\_mprofiler (int argc, char \* argv[], int just\_help)

Parse the arguments for the profiling utility

Updated by Jeremy Bennett to use argtable2. Also has an option just to print help, for use with the CLI.

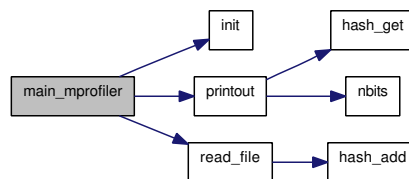
#### Parameters:

- ← *argc* Number of command args
- ← *argv* Vector of the command args
- ← *just\_help* If 1 (true), ignore argc & argv and just print out the help message without parsing args

#### Returns:

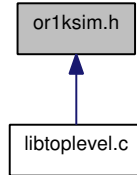
- 0 on success, 1 on failure

Here is the call graph for this function:



## 6.93 or1ksim.h File Reference

This graph shows which files directly or indirectly include this file:



### Enumerations

- enum `or1ksim_rc` { `ORIKSIM_RC_OK`, `ORIKSIM_RC_BADINIT`, `ORIKSIM_RC_BRKPT` }

### Functions

- int `or1ksim_init` (const char \*config\_file, const char \*image\_file, void \*class\_ptr, unsigned long int(\*upr)(void \*class\_ptr, unsigned long intaddr, unsigned long intmask), void(\*upw)(void \*class\_ptr, unsigned long intaddr, unsigned long intmask, unsigned long intwdata))
- int `or1ksim_run` (double duration)
- void `or1ksim_reset_duration` (double duration)
- void `or1ksim_set_time_point` ()
- double `or1ksim_get_time_period` ()
- int `or1ksim_is_le` ()
- unsigned long int `or1ksim_clock_rate` ()
- void `or1ksim_interrupt` (int i)
- void `or1ksim_interrupt_set` (int i)
- void `or1ksim_interrupt_clear` (int i)

### 6.93.1 Enumeration Type Documentation

#### 6.93.1.1 enum `or1ksim_rc`

Enumerator:

*`ORIKSIM_RC_OK`*  
*`ORIKSIM_RC_BADINIT`*  
*`ORIKSIM_RC_BRKPT`*

### 6.93.2 Function Documentation

#### 6.93.2.1 unsigned long int `or1ksim_clock_rate` ()

Return the clock rate

Value is part of the configuration

Returns:

Clock rate in Hz.

### 6.93.2.2 double or1ksim\_get\_time\_period ()

Return the time since the time point was set

Get the value from the internal parameter

Here is the call graph for this function:



**6.93.2.3 int or1ksim\_init (const char \* *config\_file*, const char \* *image\_file*, void \* *class\_ptr*, unsigned long int(\*) (void \* *class\_ptr*, unsigned long intaddr, unsigned long intmask) *upr*, void(\*) (void \* *class\_ptr*, unsigned long intaddr, unsigned long intmask, unsigned long intwdata) *upw*)**

### 6.93.2.4 void or1ksim\_interrupt (int *i*)

Trigger an edge triggered interrupt

This function is appropriate for edge triggered interrupts, which are taken and then immediately cleared.

#### Note:

There is no check that the specified interrupt number is reasonable (i.e.  $\leq 31$ ).

#### Parameters:

← *i* The interrupt number

### 6.93.2.5 void or1ksim\_interrupt\_clear (int *i*)

Clear a level triggered interrupt

This function is appropriate for level triggered interrupts, which must be explicitly set first in a separate call.

#### Note:

There is no check that the specified interrupt number is reasonable (i.e.  $\leq 31$ ).

#### Parameters:

← *i* The interrupt number to clear

### 6.93.2.6 void or1ksim\_interrupt\_set (int *i*)

Set a level triggered interrupt

This function is appropriate for level triggered interrupts, which must be explicitly cleared in a separate call.

**Note:**

There is no check that the specified interrupt number is reasonable (i.e.  $\leq 31$ ).

**Parameters:**

← *i* The interrupt number to set

**6.93.2.7 int or1ksim\_is\_le ()**

Return the endianism of the model

Note that this is a re-entrant routine.

**Returns:**

1 if the model is little endian, 0 otherwise.

**6.93.2.8 void or1ksim\_reset\_duration (double duration)**

Reset the run-time simulation end point

Reset the time for which the simulation should run to the specified duration from NOW (i.e. NOT from when the run started).

**Parameters:**

← *duration* Time to run for in seconds

**6.93.2.9 int or1ksim\_run (double duration)**

Run the simulator

The argument is a time in seconds, which is converted to a number of cycles, if positive. A negative value means "run for ever".

The semantics are that the duration for which the run may occur may be changed mid-run by a call to [or1ksim\\_reset\\_duration\(\)](#). This is to allow for the upcalls to generic components adding time, and reducing the time permitted for ISS execution before synchronization of the parent SystemC wrapper.

This is over-ridden if the call was for a negative duration, which means run forever!

Uses a simplified version of the old main program loop. Returns success if the requested number of cycles were run and an error code otherwise.

**Parameters:**

← *duration* Time to execute for (seconds)

**Returns:**

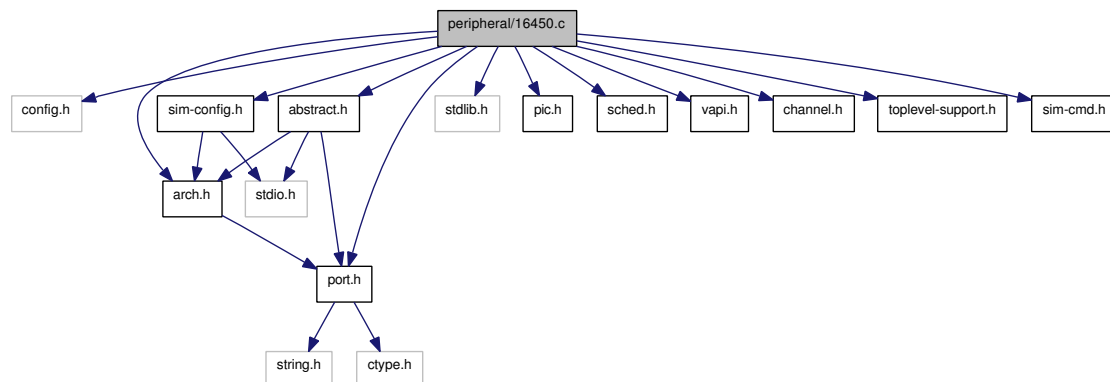
OR1KSIM\_RC\_OK if we run to completion, OR1KSIM\_RC\_BRKPT if we hit a breakpoint (not clear how this can be set without CLI access)



## 6.94 peripheral/16450.c File Reference

```
#include "config.h"
#include "port.h"
#include <stdlib.h>
#include "sim-config.h"
#include "arch.h"
#include "pic.h"
#include "sched.h"
#include "vapi.h"
#include "channel.h"
#include "abstract.h"
#include "toplevel-support.h"
#include "sim-cmd.h"
```

Include dependency graph for 16450.c:



### Data Structures

- struct [dev\\_16450](#)

### Defines

- #define [MIN\(a, b\)](#) ((a) < (b) ? (a) : (b))
- #define [UART\\_ADDR\\_SPACE](#) 8
- #define [UART\\_MAX\\_FIFO\\_LEN](#) 16
- #define [MAX\\_SKEW](#) 1
- #define [UART\\_VAPI\\_BUF\\_LEN](#) 128
- #define [UART\\_CLOCK\\_DIVIDER](#) 16
- #define [UART\\_FGETC\\_SLOWDOWN](#) 100
- #define [UART\\_RXBUF](#) 0
- #define [UART\\_TXBUF](#) 0

- #define `UART_DLL` 0
- #define `UART_DLH` 1
- #define `UART_IER` 1
- #define `UART_IIR` 2
- #define `UART_FCR` 2
- #define `UART_LCR` 3
- #define `UART_MCR` 4
- #define `UART_LSR` 5
- #define `UART_MSR` 6
- #define `UART_SCR` 7
- #define `UART_VALID_LCR` 0xff
- #define `UART_VALID_LSR` 0xff
- #define `UART_VALID_IIR` 0x0f
- #define `UART_VALID_FCR` 0xc0
- #define `UART_VALID_IER` 0x0f
- #define `UART_VALID_MCR` 0x1f
- #define `UART_VALID_MSR` 0xff
- #define `UART_LCR_DLAB` 0x80
- #define `UART_LCR_SBC` 0x40
- #define `UART_LCR_SPAR` 0x20
- #define `UART_LCR_EPAR` 0x10
- #define `UART_LCR_PARITY` 0x08
- #define `UART_LCR_STOP` 0x04
- #define `UART_LCR_WLEN5` 0x00
- #define `UART_LCR_WLEN6` 0x01
- #define `UART_LCR_WLEN7` 0x02
- #define `UART_LCR_WLEN8` 0x03
- #define `UART_LCR_RESET` 0x03
- #define `UART_LSR_RXERR` 0x80
- #define `UART_LSR_TXSRE` 0x40
- #define `UART_LSR_TXBUFE` 0x20
- #define `UART_LSR_BREAK` 0x10
- #define `UART_LSR_FRAME` 0x08
- #define `UART_LSR_PARITY` 0x04
- #define `UART_LSR_OVRRUN` 0x02
- #define `UART_LSR_RDRDY` 0x01
- #define `UART_IIR_NO_INT` 0x01
- #define `UART_IIR_ID` 0x06
- #define `UART_IIR_MSI` 0x00
- #define `UART_IIR_THRI` 0x02
- #define `UART_IIR_RDI` 0x04
- #define `UART_IIR_RLSI` 0x06
- #define `UART_IIR_CTI` 0x0c
- #define `UART_FCR_FIE` 0x01
- #define `UART_FCR_RRXFI` 0x02
- #define `UART_FCR_RTXFI` 0x04
- #define `UART_FIFO_TRIGGER(x)`
- #define `UART_IER_MSI` 0x08
- #define `UART_IER_RLSI` 0x04
- #define `UART_IER_THRI` 0x02

- #define `UART_IER_RDI` 0x01
- #define `UART_MCR_LOOP` 0x10
- #define `UART_MCR_AUX2` 0x08
- #define `UART_MCR_AUX1` 0x04
- #define `UART_MCR_RTS` 0x02
- #define `UART_MCR_DTR` 0x01
- #define `UART_MSR_DCD` 0x80
- #define `UART_MSR_RI` 0x40
- #define `UART_MSR_DSR` 0x20
- #define `UART_MSR_CTS` 0x10
- #define `UART_MSR_DDCD` 0x08
- #define `UART_MSR_TERI` 0x04
- #define `UART_MSR_DDSR` 0x02
- #define `UART_MSR_DCTS` 0x01
- #define `UART_BREAK_COUNT` 1
- #define `UART_CHAR_TIMEOUT` 4

## Functions

- static void `uart_recv_break` (void \*dat)
- static void `uart_recv_char` (void \*dat)
- static void `uart_check_char` (void \*dat)
- static void `uart_sched_recv_check` (struct `dev_16450` \*uart)
- static void `uart_vapi_cmd` (void \*dat)
- static void `uart_clear_int` (struct `dev_16450` \*uart, int intr)
- static void `uart_tx_send` (void \*dat)
- static unsigned long `char_clks` (int dll, int dlh, int lcr)
- static void `uart_int_msi` (void \*dat)
- static void `uart_int_thri` (void \*dat)
- static void `uart_int_cti` (void \*dat)
- static void `uart_int_rdi` (void \*dat)
- static void `uart_int_rlsi` (void \*dat)
- static void `uart_check_rlsi` (void \*dat)
- static void `uart_check_rdi` (void \*dat)
- static void `uart_next_int` (struct `dev_16450` \*uart)
- static void `uart_loopback` (struct `dev_16450` \*uart)
- static void `send_char` (struct `dev_16450` \*uart, int bits\_send)
- void `uart_char_clock` (void \*dat)
- void `uart_send_break` (void \*dat)
- static void `uart_add_char` (struct `dev_16450` \*uart, int ch)
- static void `uart_recv_break_start` (void \*dat)
- static void `uart_recv_break_stop` (void \*dat)
- static void `uart_write_byte` (`oraddr_t` addr, `uint8_t` value, void \*dat)
- static `uint8_t` `uart_read_byte` (`oraddr_t` addr, void \*dat)
- static void `uart_vapi_read` (unsigned long id, unsigned long data, void \*dat)
- void `uart_reset` (void \*dat)
- void `uart_status` (void \*dat)
- static void `uart_baseaddr` (union `param_val` val, void \*dat)
- static void `uart_jitter` (union `param_val` val, void \*dat)
- static void `uart_irq` (union `param_val` val, void \*dat)



- static void `uart_16550` (union `param_val` val, void \*dat)
- static void `uart_channel` (union `param_val` val, void \*dat)
- static void `uart_newway` (union `param_val` val, void \*dat)
- static void `uart_vapi_id` (union `param_val` val, void \*dat)
- static void `uart_enabled` (union `param_val` val, void \*dat)
- static void \* `uart_sec_start` ()
- static void `uart_sec_end` (void \*dat)
- void `reg_uart_sec` (void)

## 6.94.1 Define Documentation

### 6.94.1.1 `#define MAX_SKEW 1`

max. clock skew in subclocks

### 6.94.1.2 `#define MIN(a, b) ((a) < (b) ? (a) : (b))`

### 6.94.1.3 `#define UART_ADDR_SPACE 8`

UART addr space size in bytes

### 6.94.1.4 `#define UART_BREAK_COUNT 1`

### 6.94.1.5 `#define UART_CHAR_TIMEOUT 4`

### 6.94.1.6 `#define UART_CLOCK_DIVIDER 16`

UART clock divider

### 6.94.1.7 `#define UART_DLH 1`

### 6.94.1.8 `#define UART_DLL 0`

### 6.94.1.9 `#define UART_FCR 2`

### 6.94.1.10 `#define UART_FCR_FIE 0x01`

### 6.94.1.11 `#define UART_FCR_RRXFI 0x02`

### 6.94.1.12 `#define UART_FCR_RTXFI 0x04`

### 6.94.1.13 `#define UART_FGETC_SLOWDOWN 100`

fgetc() slowdown factor

### 6.94.1.14 `#define UART_FIFO_TRIGGER(x)`

**Value:**

```
/* Trigger values for indexes 0..3 */\  
(x) == 0 ? 1\  
:(x) == 1 ? 4\  
:(x) == 2 ? 8\  
:(x) == 3 ? 14 : 0)
```



```
6.94.1.15 #define UART_IER 1
6.94.1.16 #define UART_IER_MSI 0x08
6.94.1.17 #define UART_IER_RDI 0x01
6.94.1.18 #define UART_IER_RLSI 0x04
6.94.1.19 #define UART_IER_THRI 0x02
6.94.1.20 #define UART_IIR 2
6.94.1.21 #define UART_IIR_CTI 0x0c
6.94.1.22 #define UART_IIR_ID 0x06
6.94.1.23 #define UART_IIR_MSI 0x00
6.94.1.24 #define UART_IIR_NO_INT 0x01
6.94.1.25 #define UART_IIR_RDI 0x04
6.94.1.26 #define UART_IIR_RLSI 0x06
6.94.1.27 #define UART_IIR_THRI 0x02
6.94.1.28 #define UART_LCR 3
6.94.1.29 #define UART_LCR_DLAB 0x80
6.94.1.30 #define UART_LCR_EPAR 0x10
6.94.1.31 #define UART_LCR_PARITY 0x08
6.94.1.32 #define UART_LCR_RESET 0x03
6.94.1.33 #define UART_LCR_SBC 0x40
6.94.1.34 #define UART_LCR_SPAR 0x20
6.94.1.35 #define UART_LCR_STOP 0x04
6.94.1.36 #define UART_LCR_WLEN5 0x00
6.94.1.37 #define UART_LCR_WLEN6 0x01
6.94.1.38 #define UART_LCR_WLEN7 0x02
6.94.1.39 #define UART_LCR_WLEN8 0x03
6.94.1.40 #define UART_LSR 5
6.94.1.41 #define UART_LSR_BREAK 0x10
6.94.1.42 #define UART_LSR_FRAME 0x08
6.94.1.43 #define UART_LSR_OVRRUN 0x02
6.94.1.44 #define UART_LSR_PARITY 0x04
6.94.1.45 #define UART_LSR_RDRDY 0x01
```

**6.94.1.50 #define UART\_MCR 4**

**6.94.1.51 #define UART\_MCR\_AUX1 0x04**

**6.94.1.52 #define UART\_MCR\_AUX2 0x08**

**6.94.1.53 #define UART\_MCR\_DTR 0x01**

**6.94.1.54 #define UART\_MCR\_LOOP 0x10**

**6.94.1.55 #define UART\_MCR\_RTS 0x02**

**6.94.1.56 #define UART\_MSR 6**

**6.94.1.57 #define UART\_MSR\_CTS 0x10**

**6.94.1.58 #define UART\_MSR\_DCD 0x80**

**6.94.1.59 #define UART\_MSR\_DCTS 0x01**

**6.94.1.60 #define UART\_MSR\_DDCD 0x08**

**6.94.1.61 #define UART\_MSR\_DDSR 0x02**

**6.94.1.62 #define UART\_MSR\_DSR 0x20**

**6.94.1.63 #define UART\_MSR\_RI 0x40**

**6.94.1.64 #define UART\_MSR\_TERI 0x04**

**6.94.1.65 #define UART\_RXBUF 0**

**6.94.1.66 #define UART\_SCR 7**

**6.94.1.67 #define UART\_TXBUF 0**

**6.94.1.68 #define UART\_VALID\_FCR 0xc0**

**6.94.1.69 #define UART\_VALID\_IER 0x0f**

**6.94.1.70 #define UART\_VALID\_IIR 0x0f**

**6.94.1.71 #define UART\_VALID\_LCR 0xff**

**6.94.1.72 #define UART\_VALID\_LSR 0xff**

**6.94.1.73 #define UART\_VALID\_MCR 0x1f**

**6.94.1.74 #define UART\_VALID\_MSR 0xff**

**6.94.1.75 #define UART\_VAPI\_BUF\_LEN 128**

Size of VAPI command buffer

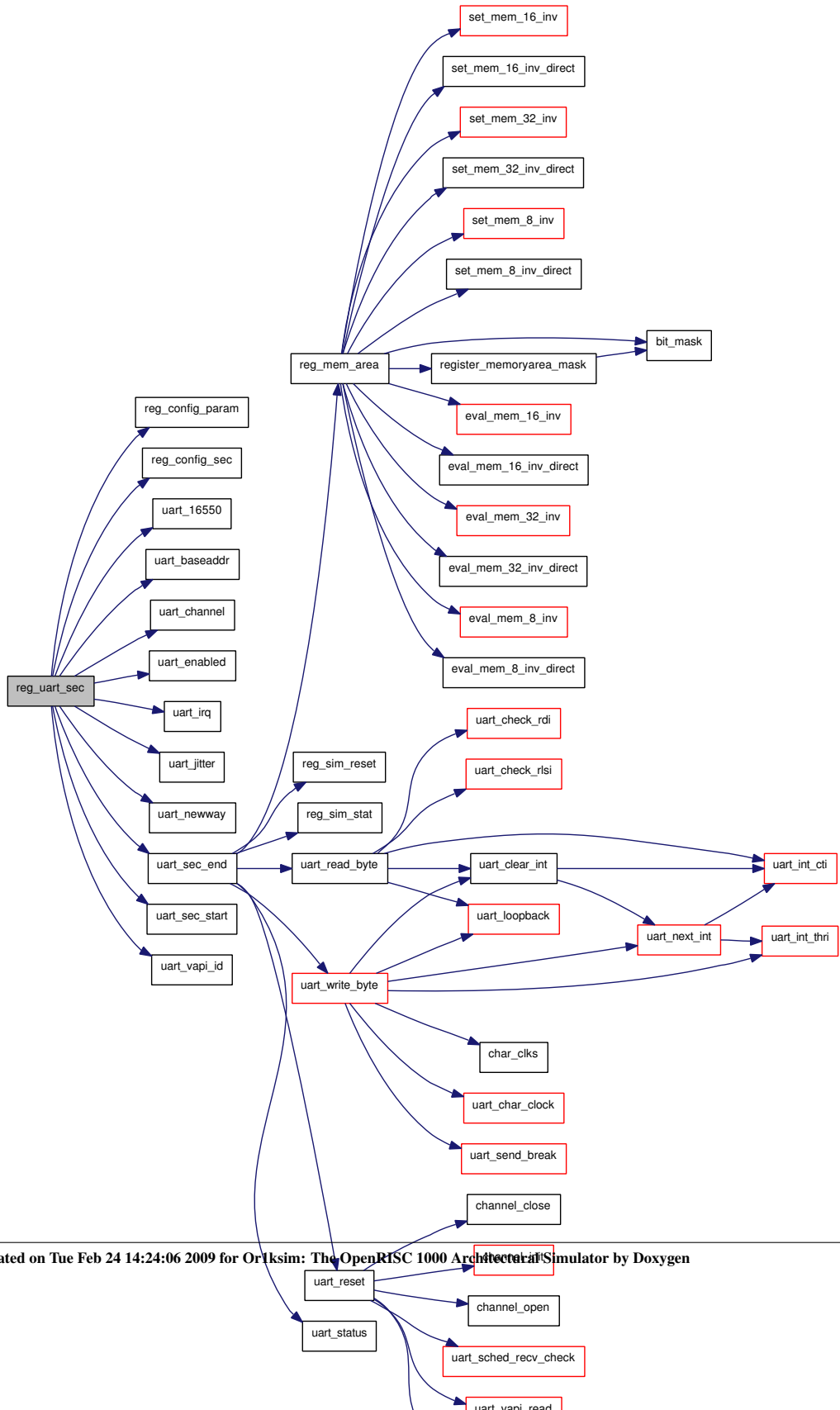


## 6.94.2 Function Documentation

6.94.2.1 static unsigned long char\_clks (int dll, int dlh, int lcr) [static]

6.94.2.2 void reg\_uart\_sec (void)

Here is the call graph for this function:

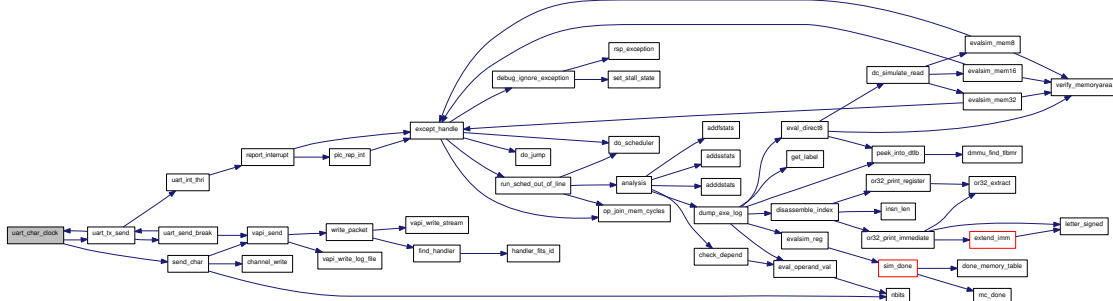






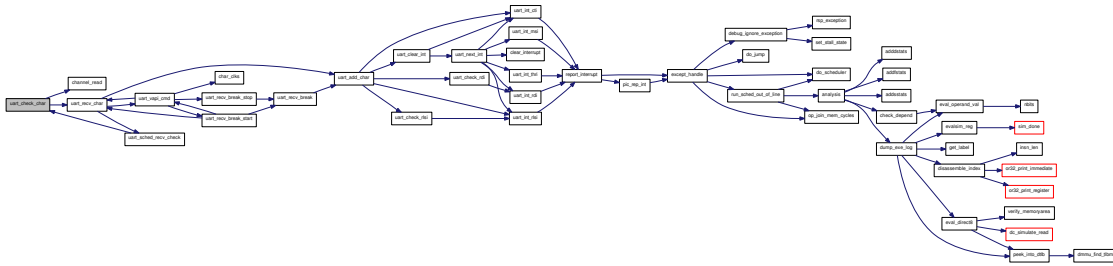
6.94.2.8 void uart\_char\_clock (void \* dat)

Here is the call graph for this function:



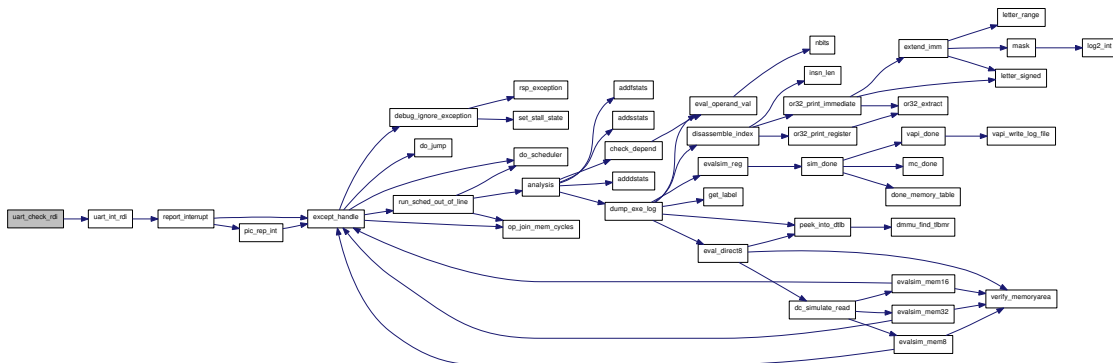
6.94.2.9 static void uart\_check\_char (void \* dat) [static]

Here is the call graph for this function:



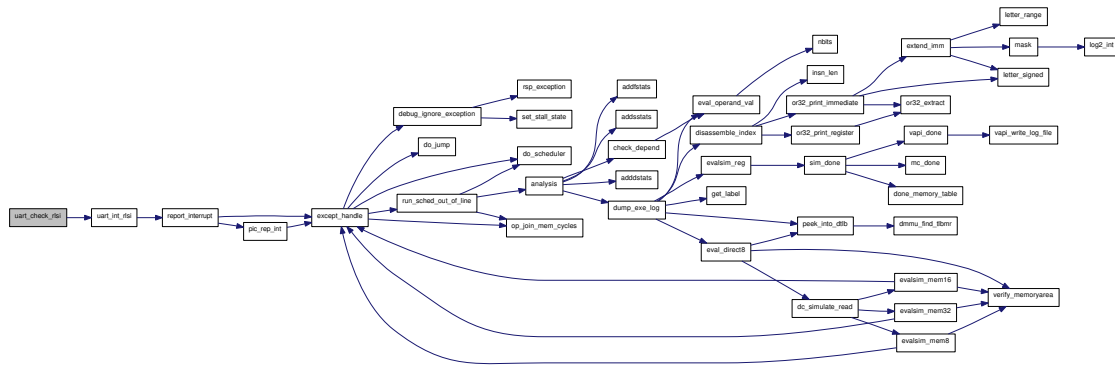
6.94.2.10 static void uart\_check\_rdi (void \* dat) [static]

Here is the call graph for this function:



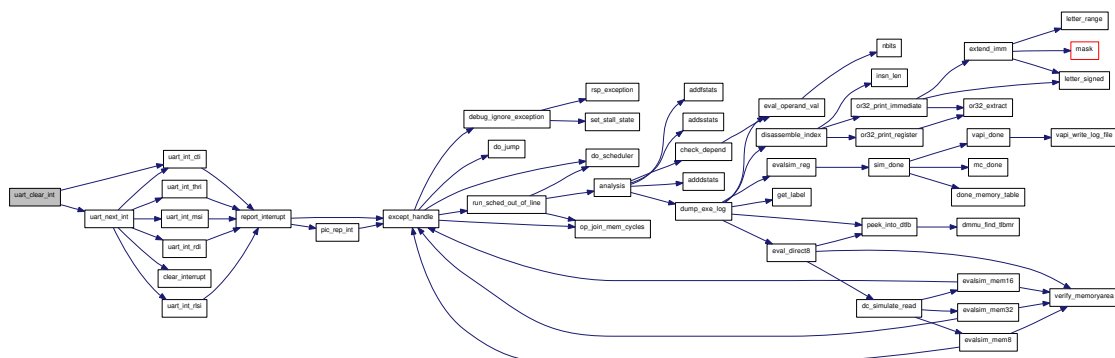
### 6.94.2.11 static void uart\_check\_rlsi (void \* dat) [static]

Here is the call graph for this function:



### 6.94.2.12 static void uart\_clear\_int (struct dev\_16450 \* uart, int intr) [static]

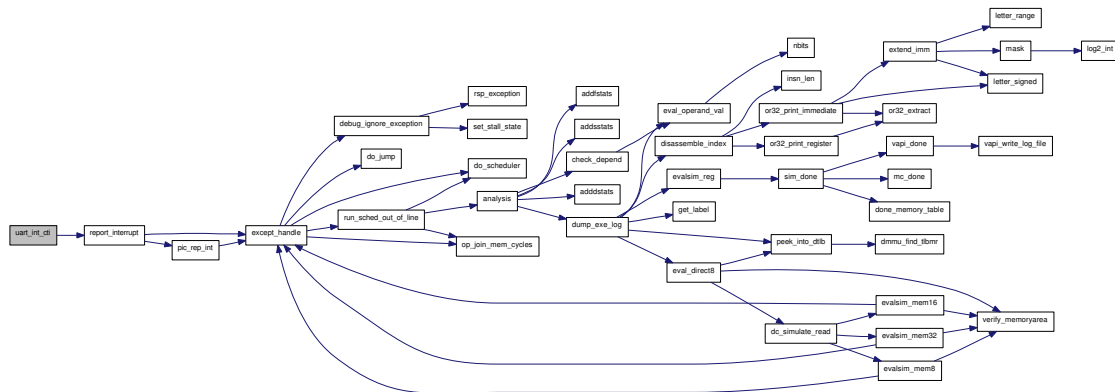
Here is the call graph for this function:



**6.94.2.13** `static void uart_enabled (union param_val val, void * dat)` [static]

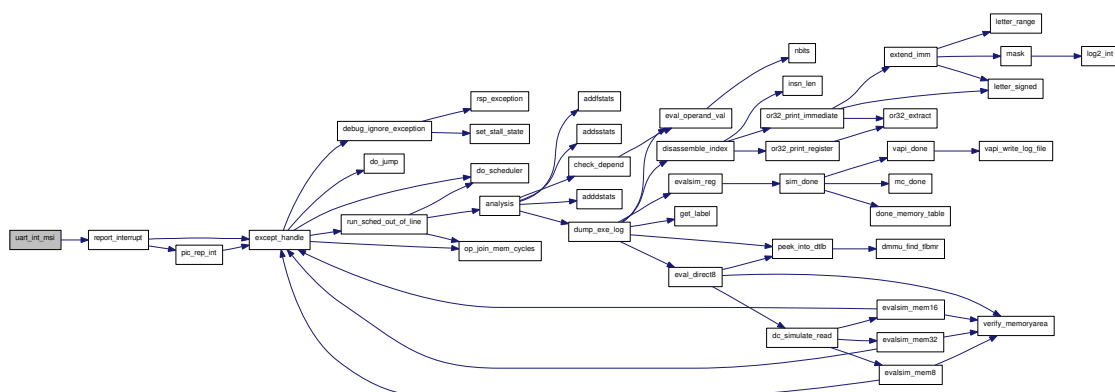
**6.94.2.14** `static void uart_int_cti (void * dat)` [static]

Here is the call graph for this function:



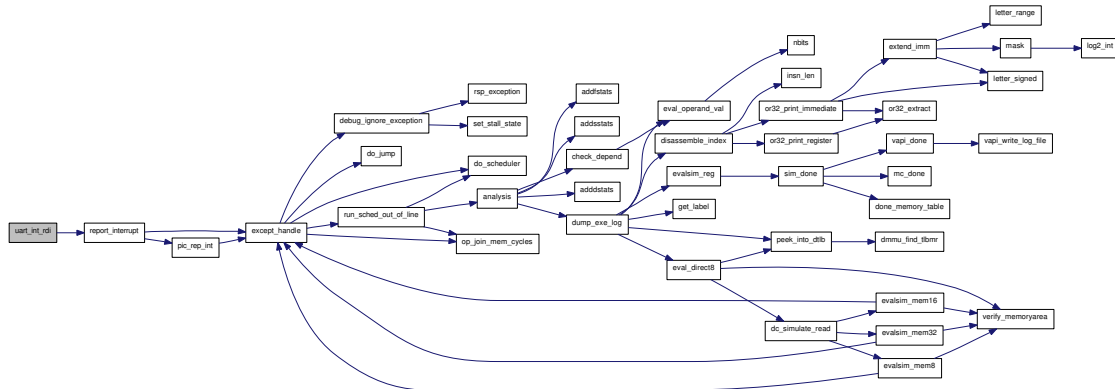
**6.94.2.15** `static void uart_int_msi (void * dat)` [static]

Here is the call graph for this function:



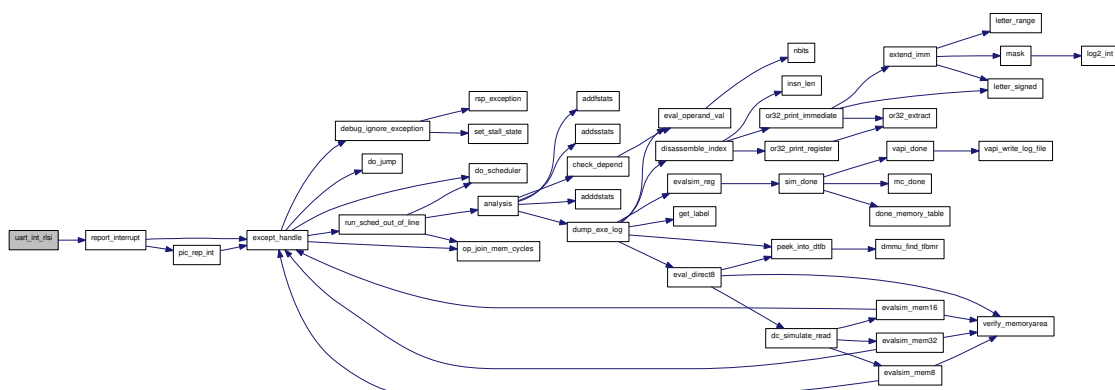
### 6.94.2.16 static void uart\_int\_rdi (void \* dat) [static]

Here is the call graph for this function:



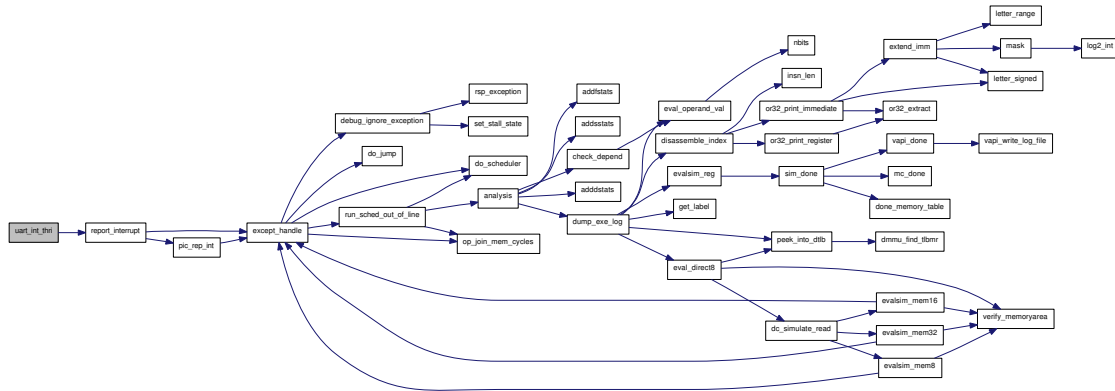
### 6.94.2.17 static void uart\_int\_rlsi (void \* dat) [static]

Here is the call graph for this function:



### 6.94.2.18 static void uart\_int\_thri (void \* dat) [static]

Here is the call graph for this function:

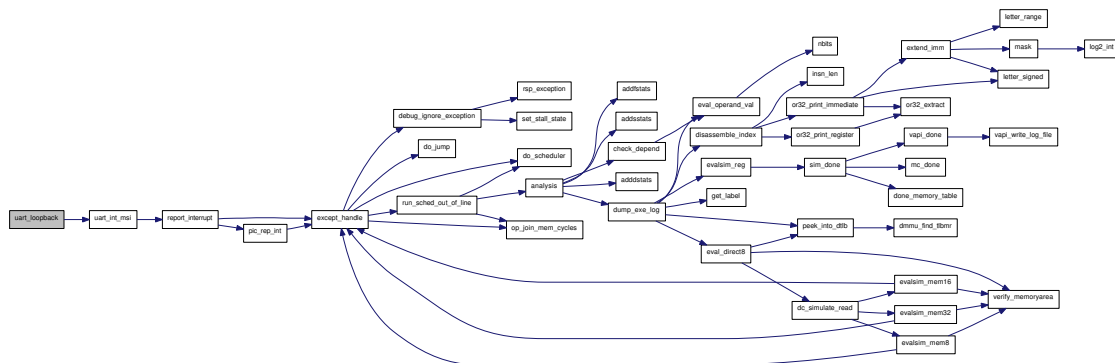


### 6.94.2.19 static void uart\_irq (union param\_val val, void \* dat) [static]

### 6.94.2.20 static void uart\_jitter (union param\_val val, void \* dat) [static]

### 6.94.2.21 static void uart\_loopback (struct dev\_16450 \* uart) [static]

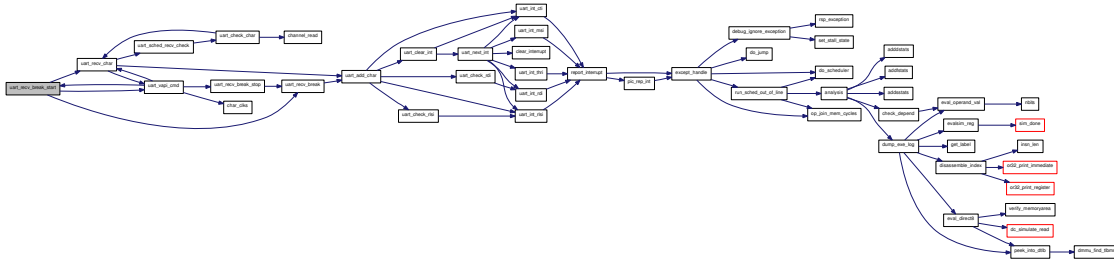
Here is the call graph for this function:





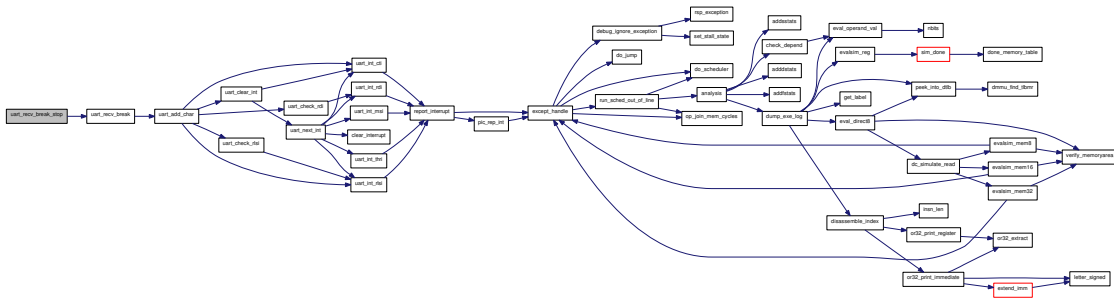
### 6.94.2.26 static void uart\_rcv\_break\_start (void \* dat) [static]

Here is the call graph for this function:



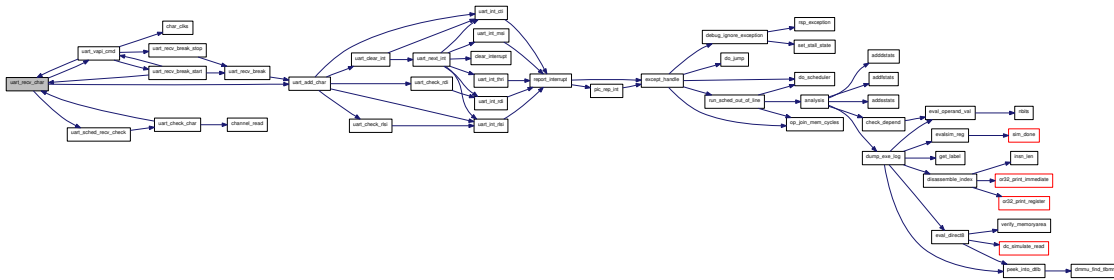
### 6.94.2.27 static void uart\_rcv\_break\_stop (void \* dat) [static]

Here is the call graph for this function:



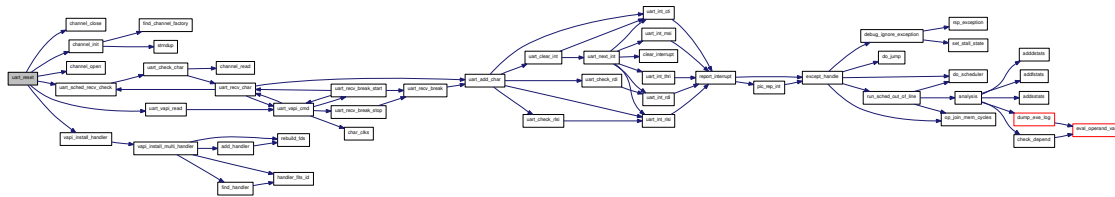
### 6.94.2.28 static void uart\_rcv\_char (void \* dat) [static]

Here is the call graph for this function:



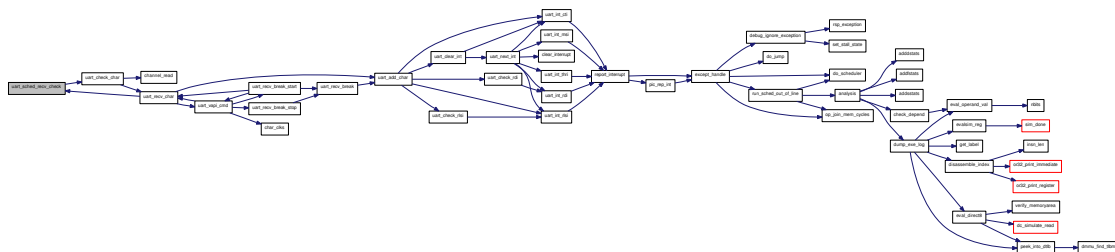
### 6.94.2.29 void uart\_reset (void \* dat)

Here is the call graph for this function:



### 6.94.2.30 static void uart\_sched\_recv\_check (struct dev\_16450 \* uart) [static]

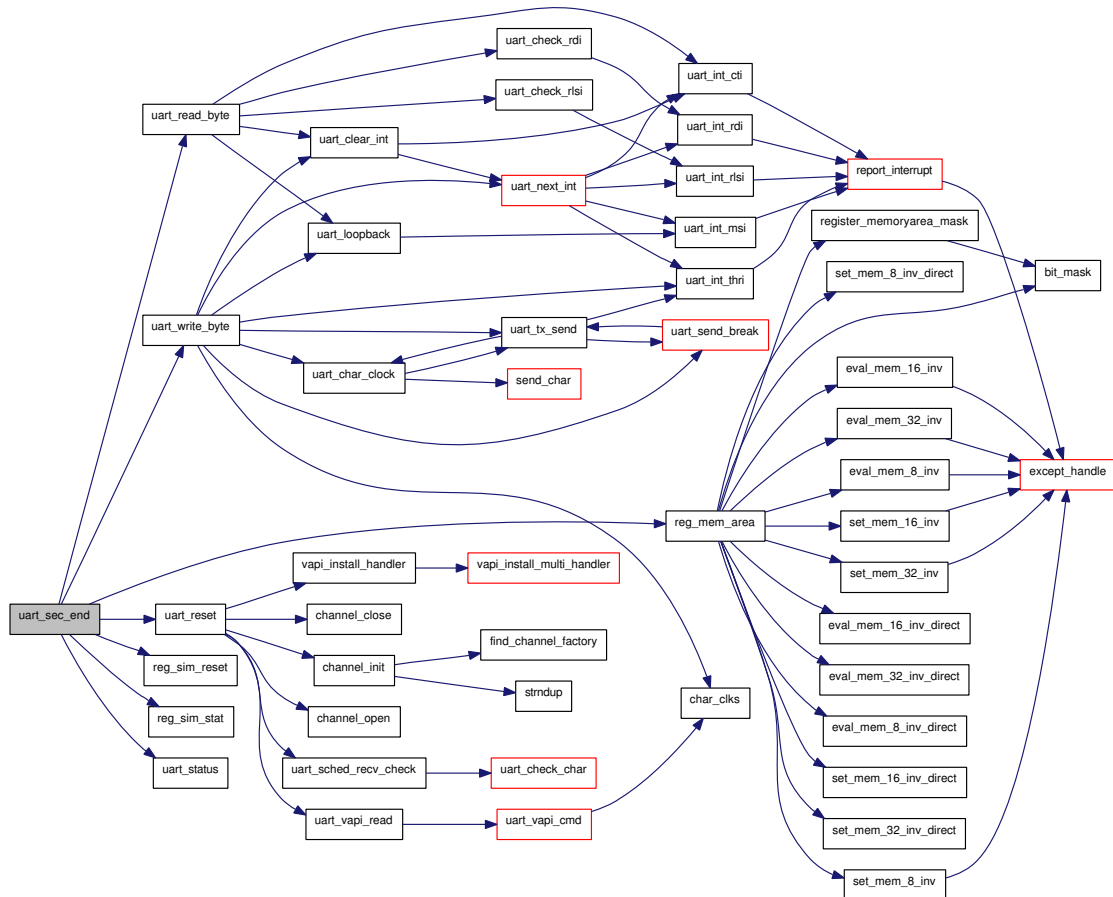
Here is the call graph for this function:





**6.94.2.31 static void uart\_sec\_end (void \* dat) [static]**

Here is the call graph for this function:

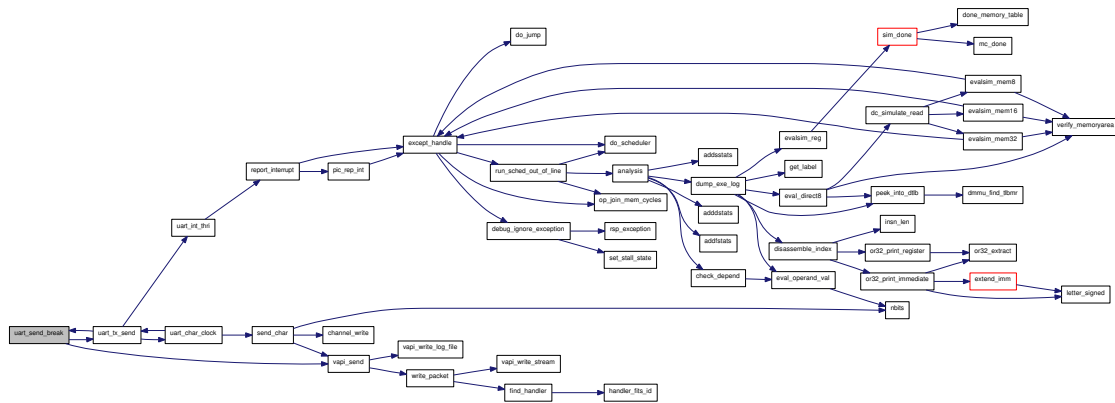
**6.94.2.32 static void\* uart\_sec\_start () [static]**

Initialize a new UART configuration

ALL parameters are set explicitly to default values.

### 6.94.2.33 void uart\_send\_break (void \* dat)

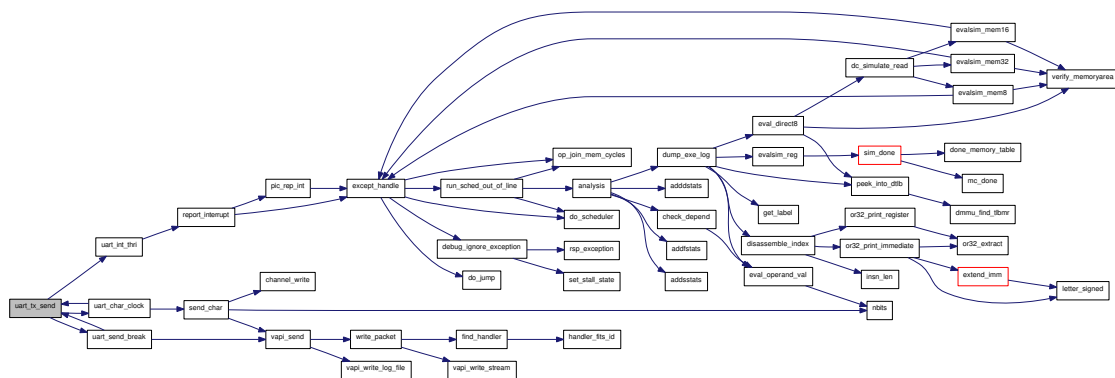
Here is the call graph for this function:



### 6.94.2.34 void uart\_status (void \* dat)

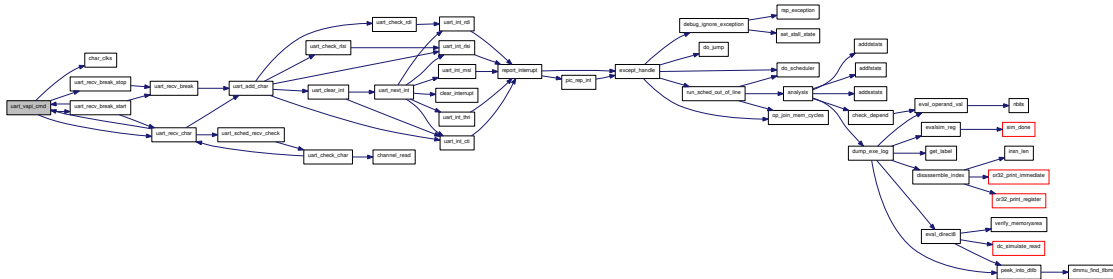
### 6.94.2.35 void uart\_tx\_send (void \* dat) [static]

Here is the call graph for this function:



**6.94.2.36** static void uart\_vapi\_cmd (void \* dat) [static]

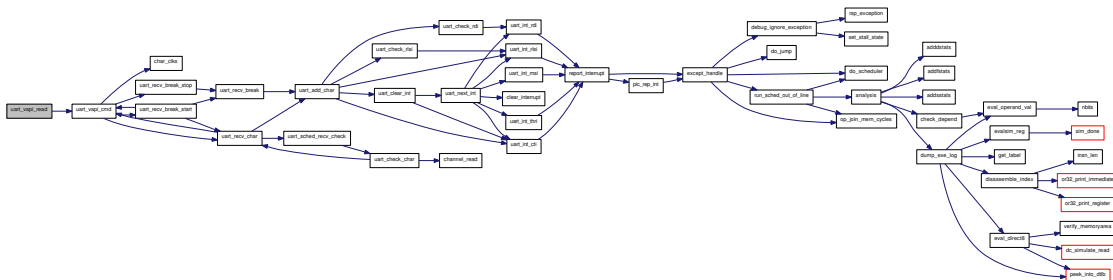
Here is the call graph for this function:



**6.94.2.37** static void uart\_vapi\_id (union param\_val val, void \* dat) [static]

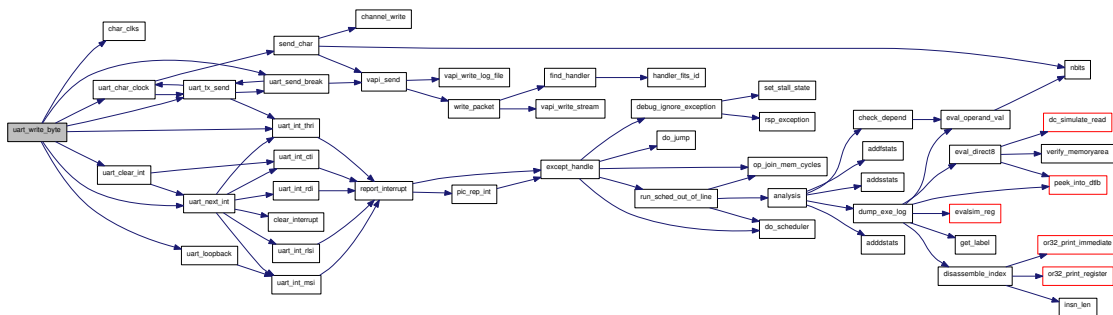
**6.94.2.38** static void uart\_vapi\_read (unsigned long id, unsigned long data, void \* dat) [static]

Here is the call graph for this function:



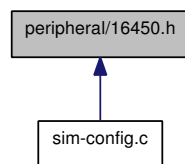
**6.94.2.39** static void uart\_write\_byte (oraddr\_t addr, uint8\_t value, void \* dat) [static]

Here is the call graph for this function:



## 6.95 peripheral/16450.h File Reference

This graph shows which files directly or indirectly include this file:



### Functions

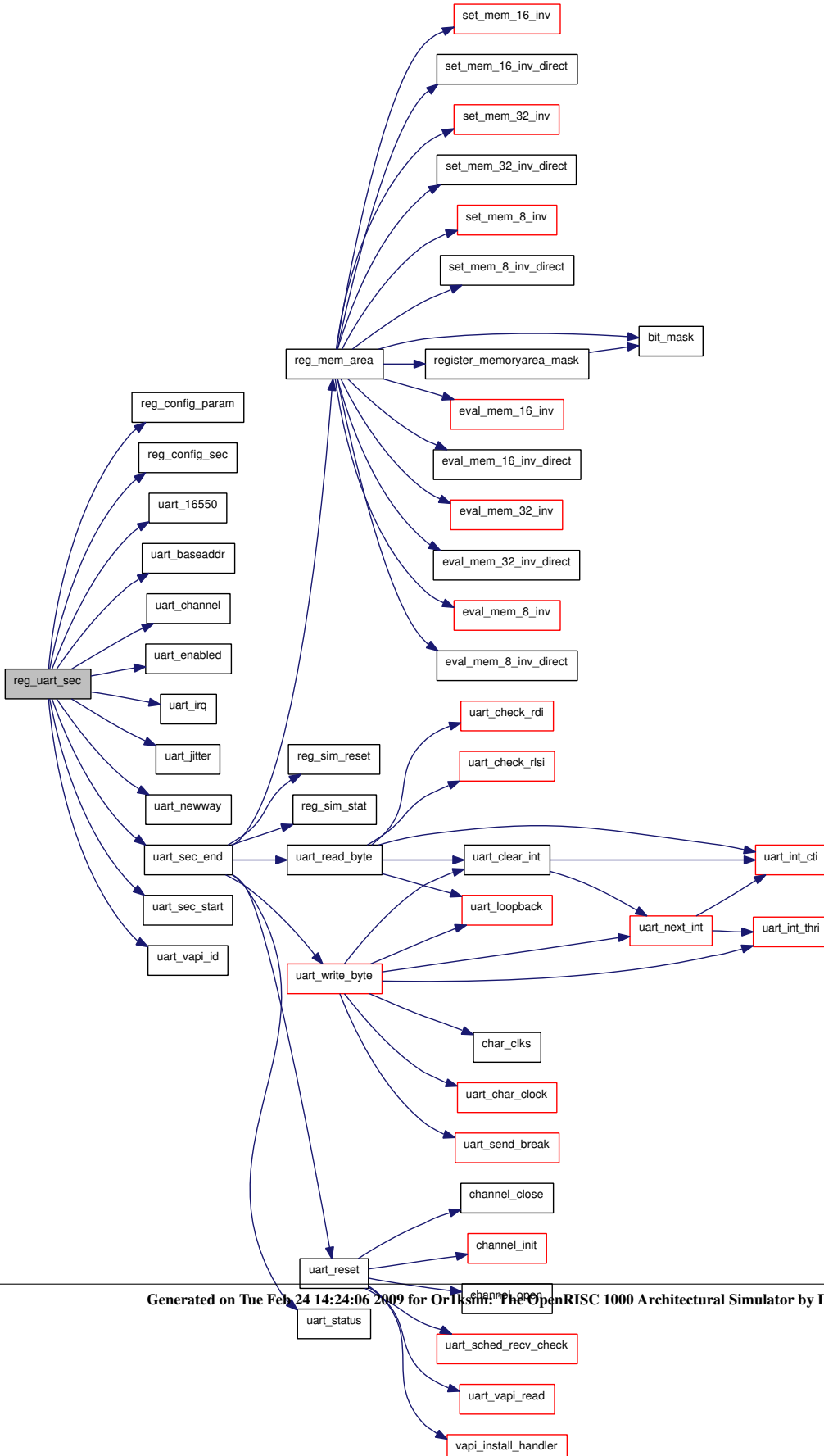
- void [uart\\_reset](#) ()
  
- void [uart\\_status](#) ()
  
- void [reg\\_uart\\_sec](#) ()



### 6.95.1 Function Documentation

#### 6.95.1.1 void reg\_uart\_sec ()

Here is the call graph for this function:

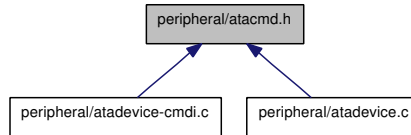


6.95.1.2 void uart\_reset ()

6.95.1.3 void uart\_status ()

## 6.96 peripheral/atacmd.h File Reference

This graph shows which files directly or indirectly include this file:



### Defines

- #define [CFA\\_ERASE\\_SECTORS](#) 0xC0
- #define [CFA\\_REQUEST\\_EXTENDED\\_ERROR\\_CODE](#) 0x03
- #define [CFA\\_TRANSLATE\\_SECTOR](#) 0x87
- #define [CFA\\_WRITE\\_MULTIPLE\\_WITHOUT\\_ERASE](#) 0xCD
- #define [CFA\\_WRITE\\_SECTORS\\_WITHOUT\\_ERASE](#) 0x38
- #define [CHECK\\_POWER\\_MODE](#) 0xE5
- #define [DEVICE\\_RESET](#) 0x08
- #define [DOWNLOAD\\_MICROCODE](#) 0x92
- #define [EXECUTE\\_DEVICE\\_DIAGNOSTICS](#) 0x90
- #define [FLUSH\\_CACHE](#) 0xE7
- #define [GET\\_MEDIA\\_STATUS](#) 0xDA
- #define [IDENTIFY\\_DEVICE](#) 0xEC
- #define [IDENTIFY\\_PACKET\\_DEVICE](#) 0xA1
- #define [IDLE](#) 0xE3
- #define [IDLE\\_IMMEDIATE](#) 0xE1
- #define [INITIALIZE\\_DEVICE\\_PARAMETERS](#) 0x91
- #define [MEDIA\\_EJECT](#) 0xED
- #define [MEDIA\\_LOCK](#) 0xDE
- #define [MEDIA\\_UNLOCK](#) 0xDF
- #define [NOP](#) 0x00
- #define [PACKET](#) 0xA0
- #define [READ\\_BUFFER](#) 0xE4
- #define [READ\\_DMA](#) 0xC8
- #define [READ\\_DMA\\_QUEUED](#) 0xC7
- #define [READ\\_MULTIPLE](#) 0xC4
- #define [READ\\_NATIVE\\_MAX\\_ADDRESS](#) 0xF8
- #define [READ\\_SECTOR](#) 0x20
- #define [READ\\_SECTORS](#) 0x20
- #define [READ\\_VERIFY\\_SECTOR](#) 0x40
- #define [READ\\_VERIFY\\_SECTORS](#) 0x40
- #define [SECURITY\\_DISABLE\\_PASSWORD](#) 0xF6
- #define [SECURITY\\_ERASE\\_PREPARE](#) 0xF3
- #define [SECURITY\\_ERASE\\_UNIT](#) 0xF4
- #define [SECURITY\\_FREEZE\\_LOCK](#) 0xF5
- #define [SECURITY\\_SET\\_PASSWORD](#) 0xF1
- #define [SECURITY\\_UNLOCK](#) 0xF2
- #define [SEEK](#) 0x70



- #define SERVICE 0xA2
- #define SET\_FEATURES 0xEF
- #define SET\_MAX 0xF9
- #define SET\_MULTIPLE\_MODE 0xC6
- #define SLEEP 0xE6
- #define SMART 0xB0
- #define STANDBY 0xE2
- #define STANDBY\_IMMEDIATE 0xE0
- #define WRITE\_BUFFER 0xE8
- #define WRITE\_DMA 0xCA
- #define WRITE\_DMA\_QUEUED 0xCC
- #define WRITE\_MULTIPLE 0xC5
- #define WRITE\_SECTOR 0x30
- #define WRITE\_SECTORS 0x30
- #define CFA\_ENABLE\_8BIT\_PIO\_TRANSFER\_MODE 0x01
- #define ENABLE\_WRITE\_CACHE 0x02
- #define SET\_TRANSFER\_MODE\_SECTOR\_COUNT\_REG 0x03
- #define ENABLE\_ADVANCED\_POWER\_MANAGEMENT 0x05
- #define ENABLE\_POWERUP\_IN\_STANDBY\_FEATURE\_SET 0x06
- #define POWERUP\_IN\_STANDBY\_FEATURE\_SET\_SPINUP 0x07
- #define CFA\_ENABLE\_POWER\_MODE1 0x0A
- #define DISABLE\_MEDIA\_STATUS\_NOTIFICATION 0x31
- #define DISABLE\_READ\_LOOKAHEAD 0x55
- #define ENABLE\_RELEASE\_INTERRUPT 0x5D
- #define ENABLE\_SERVICE\_INTERRUPT 0x5E
- #define DISABLE\_REVERTING\_TO\_POWERON\_DEFAULTS 0x66
- #define CFA\_DISABLE\_8BIT\_PIO\_TRANSFER\_MODE 0x81
- #define DISABLE\_WRITE\_CACHE 0x82
- #define DISABLE\_ADVANCED\_POWER\_MANAGEMENT 0x85
- #define DISABLE\_POWERUP\_IN\_STANDBY\_FEATURE\_SET 0x86
- #define CFA\_DISABLE\_POWER\_MODE1 0x8A
- #define ENABLE\_MEDIA\_STATUS\_NOTIFICATION 0x95
- #define ENABLE\_READ\_LOOKAHEAD\_FEATURE 0xAA
- #define ENABLE\_REVERTING\_TO\_POWERON\_DEFAULTS 0xCC
- #define DISABLE\_RELEASE\_INTERRUPT 0xDD
- #define DISABLE\_SERVICE\_INTERRUPT 0xDE
- #define SET\_MAX\_ADDRESS 0x00
- #define SET\_MAX\_SET\_PASSWORD 0x01
- #define SET\_MAX\_LOCK 0x02
- #define SET\_MAX\_UNLOCK 0x03
- #define SET\_MAX\_FREEZE\_LOCK 0x04
- #define SMART\_READ\_DATA 0xD0
- #define SMART\_ATTRIBITE\_AUTOSAVE 0xD1
- #define SMART\_SAVE\_ATTRIBUTE\_VALUES 0xD3
- #define SMART\_EXECUTE\_OFFLINE\_IMMEDIATE 0xD4
- #define SMART\_READ\_LOG 0xD5
- #define SMART\_WRITE\_LOG 0xD6
- #define SMART\_ENABLE\_OPERATIONS 0xD8
- #define SMART\_DISABLE\_OPERATIONS 0xD9
- #define SMART\_RETURN\_STATUS 0xDA



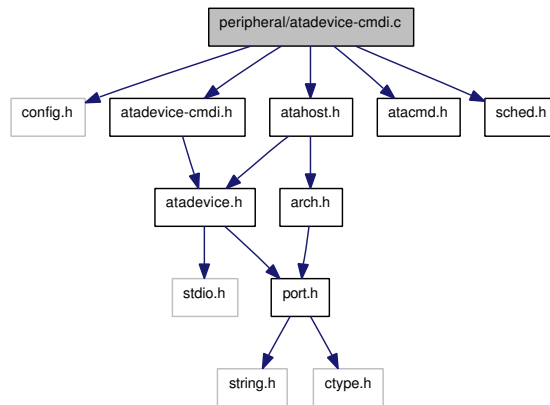
## 6.96.1 Define Documentation

- 6.96.1.1 `#define CFA_DISABLE_8BIT_PIO_TRANSFER_MODE 0x81`
- 6.96.1.2 `#define CFA_DISABLE_POWER_MODE1 0x8A`
- 6.96.1.3 `#define CFA_ENABLE_8BIT_PIO_TRANSFER_MODE 0x01`
- 6.96.1.4 `#define CFA_ENABLE_POWER_MODE1 0x0A`
- 6.96.1.5 `#define CFA_ERASE_SECTORS 0xC0`
- 6.96.1.6 `#define CFA_REQUEST_EXTENDED_ERROR_CODE 0x03`
- 6.96.1.7 `#define CFA_TRANSLATE_SECTOR 0x87`
- 6.96.1.8 `#define CFA_WRITE_MULTIPLE_WITHOUT_ERASE 0xCD`
- 6.96.1.9 `#define CFA_WRITE_SECTORS_WITHOUT_ERASE 0x38`
- 6.96.1.10 `#define CHECK_POWER_MODE 0xE5`
- 6.96.1.11 `#define DEVICE_RESET 0x08`
- 6.96.1.12 `#define DISABLE_ADVANCED_POWER_MANAGEMENT 0x85`
- 6.96.1.13 `#define DISABLE_MEDIA_STATUS_NOTIFICATION 0x31`
- 6.96.1.14 `#define DISABLE_POWERUP_IN_STANDBY_FEATURE_SET 0x86`
- 6.96.1.15 `#define DISABLE_READ_LOOKAHEAD 0x55`
- 6.96.1.16 `#define DISABLE_RELEASE_INTERRUPT 0xDD`
- 6.96.1.17 `#define DISABLE_REVERTING_TO_POWERON_DEFAULTS 0x66`
- 6.96.1.18 `#define DISABLE_SERVICE_INTERRUPT 0xDE`
- 6.96.1.19 `#define DISABLE_WRITE_CACHE 0x82`
- 6.96.1.20 `#define DOWNLOAD_MICROCODE 0x92`
- 6.96.1.21 `#define ENABLE_ADVANCED_POWER_MANAGEMENT 0x05`
- 6.96.1.22 `#define ENABLE_MEDIA_STATUS_NOTIFICATION 0x95`
- 6.96.1.23 `#define ENABLE_POWERUP_IN_STANDBY_FEATURE_SET 0x06`
- 6.96.1.24 `#define ENABLE_READ_LOOKAHEAD_FEATURE 0xAA`
- 6.96.1.25 `#define ENABLE_RELEASE_INTERRUPT 0x5D`
- 6.96.1.26 `#define ENABLE_REVERTING_TO_POWERON_DEFAULTS 0xCC`
- 6.96.1.27 `#define ENABLE_SERVICE_INTERRUPT 0x5E`
- 6.96.1.28 `#define ENABLE_WRITE_CACHE 0x02`
- 6.96.1.29 `#define EXECUTE_DEVICE_DIAGNOSTICS 0x90`
- 6.96.1.30 `#define FLUSH_CACHE 0xE7`

## 6.97 peripheral/atadevice-cmdi.c File Reference

```
#include "config.h"
#include "atadevice-cmdi.h"
#include "atahost.h"
#include "atacmd.h"
#include "sched.h"
```

Include dependency graph for atadevice-cmdi.c:



## Functions

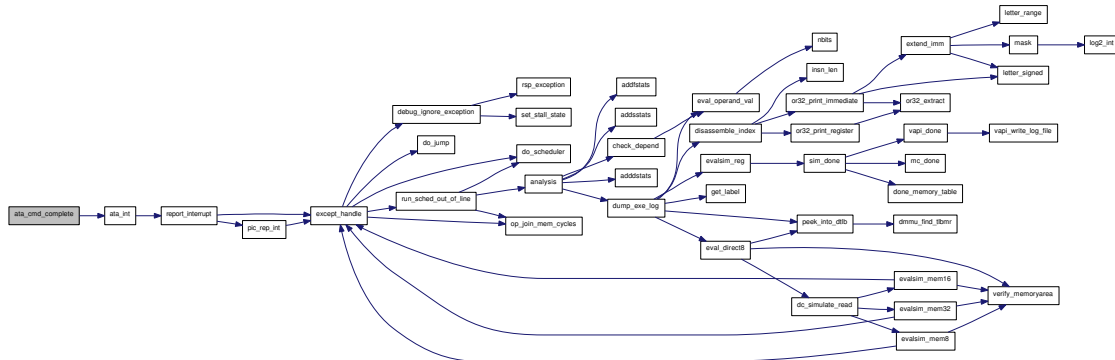
- static void [ata\\_cmd\\_complete](#) (void \*dat)
- static void [ata\\_set\\_sect](#) (struct [ata\\_device](#) \*dev, uint32\_t sect)
- static uint32\_t [ata\\_calc\\_lba](#) (struct [ata\\_device](#) \*dev)
- static void [ata\\_read\\_sect](#) (struct [ata\\_device](#) \*dev)
- static void [ata\\_write\\_sect](#) (struct [ata\\_device](#) \*dev)
- static void [ata\\_set\\_device\\_signature](#) (struct [ata\\_device](#) \*device, int packet)
- void [ata\\_execute\\_device\\_diagnostics\\_cmd](#) (struct [ata\\_device](#) \*device)
- static void [ata\\_device\\_reset\\_cmd](#) (struct [ata\\_device](#) \*device)
- static void [ata\\_identify\\_device\\_cmd](#) (struct [ata\\_device](#) \*device)
- static void [ata\\_initialize\\_device\\_parameters\\_cmd](#) (struct [ata\\_device](#) \*device)
- static void [ata\\_read\\_sectors\\_cmd](#) (struct [ata\\_device](#) \*device)
- static void [ata\\_read\\_native\\_max\\_addr](#) (struct [ata\\_device](#) \*dev)
- static void [ata\\_write\\_sectors](#) (struct [ata\\_device](#) \*dev)
- static void [ata\\_set\\_features](#) (struct [ata\\_device](#) \*dev)
- int [ata\\_device\\_execute\\_cmd](#) (struct [ata\\_device](#) \*device)

## 6.97.1 Function Documentation

**6.97.1.1** `static uint32_t ata_calc_lba (struct ata_device * dev)` [static]

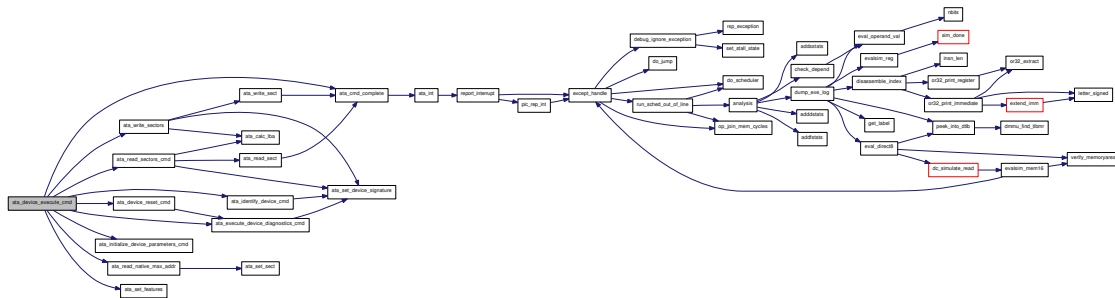
**6.97.1.2** `static void ata_cmd_complete (void * dat)` [static]

Here is the call graph for this function:



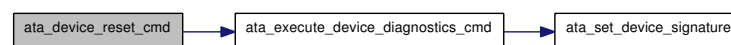
**6.97.1.3** `int ata_device_execute_cmd (struct ata_device * device)`

Here is the call graph for this function:



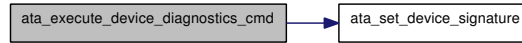
**6.97.1.4** `static void ata_device_reset_cmd (struct ata_device * device)` [static]

Here is the call graph for this function:



### 6.97.1.5 void ata\_execute\_device\_diagnostics\_cmd (struct ata\_device \* device)

Here is the call graph for this function:



### 6.97.1.6 static void ata\_identify\_device\_cmd (struct ata\_device \* device) [static]

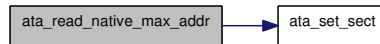
Here is the call graph for this function:



### 6.97.1.7 static void ata\_initialize\_device\_parameters\_cmd (struct ata\_device \* device) [static]

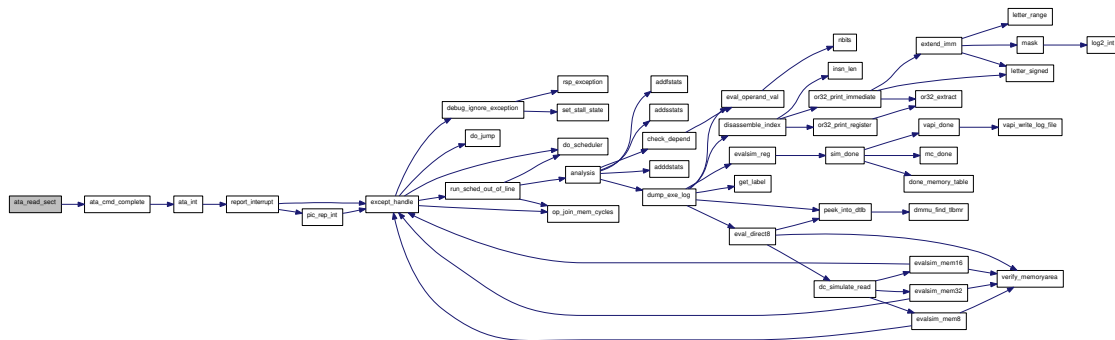
### 6.97.1.8 static void ata\_read\_native\_max\_addr (struct ata\_device \* dev) [static]

Here is the call graph for this function:



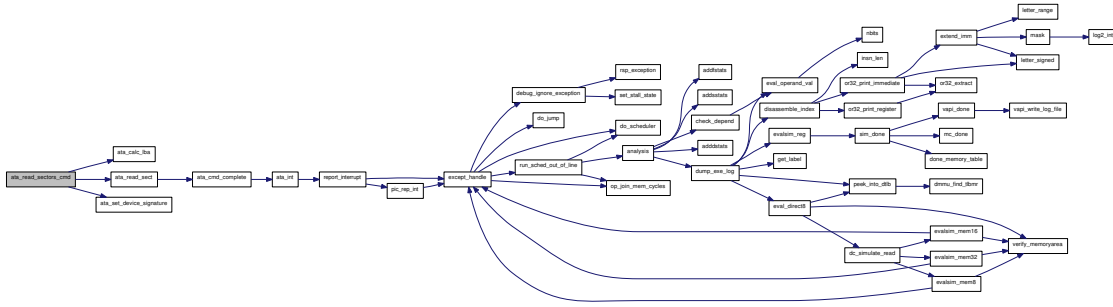
### 6.97.1.9 static void ata\_read\_sect (struct ata\_device \* dev) [static]

Here is the call graph for this function:



6.97.1.10 static void ata\_read\_sectors\_cmd (struct ata\_device \* device) [static]

Here is the call graph for this function:



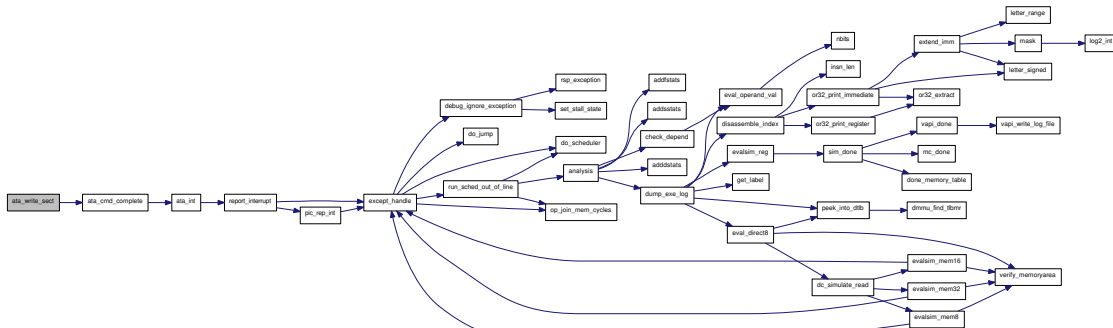
6.97.1.11 static void ata\_set\_device\_signature (struct ata\_device \* device, int packet) [static]

6.97.1.12 static void ata\_set\_features (struct ata\_device \* dev) [static]

6.97.1.13 static void ata\_set\_sect (struct ata\_device \* dev, uint32\_t sect) [static]

6.97.1.14 static void ata\_write\_sect (struct ata\_device \* dev) [static]

Here is the call graph for this function:



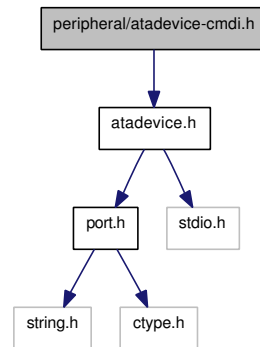




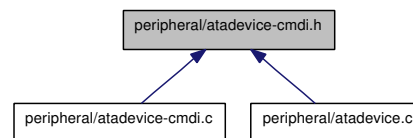
## 6.98 peripheral/atadevice-cmdi.h File Reference

```
#include "atadevice.h"
```

Include dependency graph for atadevice-cmdi.h:



This graph shows which files directly or indirectly include this file:



### Defines

- #define [BYTES\\_PER\\_SECTOR](#) 512
- #define [MIN\\_MWDMA\\_CYCLE\\_TIME](#) 100
- #define [RECOMMENDED\\_MWDMA\\_CYCLE\\_TIME](#) 100
- #define [MIN\\_PIO\\_CYCLE\\_TIME\\_NO\\_IORDY](#) 100
- #define [MIN\\_PIO\\_CYCLE\\_TIME\\_IORDY](#) 100
- #define [SUPPORT\\_NOP\\_CMD](#) 0
- #define [SUPPORT\\_READ\\_BUFFER\\_CMD](#) 0
- #define [SUPPORT\\_WRITE\\_BUFFER\\_CMD](#) 0
- #define [SUPPORT\\_HOST\\_PROTECTED\\_AREA](#) 0
- #define [SUPPORT\\_DEVICE\\_RESET\\_CMD](#) 1
- #define [SUPPORT\\_SERVICE\\_INTERRUPT](#) 0
- #define [SUPPORT\\_RELEASE\\_INTERRUPT](#) 0
- #define [SUPPORT\\_LOOKAHEAD](#) 0
- #define [SUPPORT\\_WRITE\\_CACHE](#) 0
- #define [SUPPORT\\_POWER\\_MANAGEMENT](#) 0
- #define [SUPPORT\\_REMOVABLE\\_MEDIA](#) 0
- #define [SUPPORT\\_SECURITY\\_MODE](#) 0
- #define [SUPPORT\\_SMART](#) 0
- #define [SUPPORT\\_SET\\_MAX](#) 0
- #define [SET\\_FEATURES\\_REQUIRED\\_AFTER\\_POWER\\_UP](#) 0
- #define [SUPPORT\\_POWER\\_UP\\_IN\\_STANDBY\\_MODE](#) 0

- #define [SUPPORT\\_REMOVABLE\\_MEDIA\\_NOTIFICATION](#) 0
  
- #define [SUPPORT\\_APM](#) 0
  
- #define [SUPPORT\\_CFA](#) 0
  
- #define [SUPPORT\\_READ\\_WRITE\\_DMA\\_QUEUED](#) 0
  
- #define [SUPPORT\\_DOWNLOAD\\_MICROCODE](#) 0
  
- #define [QUEUE\\_DEPTH](#) 0

## Functions

- int [ata\\_device\\_execute\\_cmd](#) (struct [ata\\_device](#) \*device)
  
- void [ata\\_execute\\_device\\_diagnostics\\_cmd](#) (struct [ata\\_device](#) \*device)



## 6.98.1 Define Documentation

- 6.98.1.1 `#define BYTES_PER_SECTOR 512`
- 6.98.1.2 `#define MIN_MWDMA_CYCLE_TIME 100`
- 6.98.1.3 `#define MIN_PIO_CYCLE_TIME_IORDY 100`
- 6.98.1.4 `#define MIN_PIO_CYCLE_TIME_NO_IORDY 100`
- 6.98.1.5 `#define QUEUE_DEPTH 0`
- 6.98.1.6 `#define RECOMMENDED_MWDMA_CYCLE_TIME 100`
- 6.98.1.7 `#define SET_FEATURES_REQUIRED_AFTER_POWER_UP 0`
- 6.98.1.8 `#define SUPPORT_APM 0`
- 6.98.1.9 `#define SUPPORT_CFA 0`
- 6.98.1.10 `#define SUPPORT_DEVICE_RESET_CMD 1`
- 6.98.1.11 `#define SUPPORT_DOWNLOAD_MICROCODE 0`
- 6.98.1.12 `#define SUPPORT_HOST_PROTECTED_AREA 0`
- 6.98.1.13 `#define SUPPORT_LOOKAHEAD 0`
- 6.98.1.14 `#define SUPPORT_NOP_CMD 0`
- 6.98.1.15 `#define SUPPORT_POWER_MANAGEMENT 0`
- 6.98.1.16 `#define SUPPORT_POWER_UP_IN_STANDBY_MODE 0`
- 6.98.1.17 `#define SUPPORT_READ_BUFFER_CMD 0`
- 6.98.1.18 `#define SUPPORT_READ_WRITE_DMA_QUEUED 0`
- 6.98.1.19 `#define SUPPORT_RELEASE_INTERRUPT 0`
- 6.98.1.20 `#define SUPPORT_REMOVABLE_MEDIA 0`
- 6.98.1.21 `#define SUPPORT_REMOVABLE_MEDIA_NOTIFICATION 0`
- 6.98.1.22 `#define SUPPORT_SECURITY_MODE 0`
- 6.98.1.23 `#define SUPPORT_SERVICE_INTERRUPT 0`
- 6.98.1.24 `#define SUPPORT_SET_MAX 0`
- 6.98.1.25 `#define SUPPORT_SMART 0`
- 6.98.1.26 `#define SUPPORT_WRITE_BUFFER_CMD 0`
- 6.98.1.27 `#define SUPPORT_WRITE_CACHE 0`

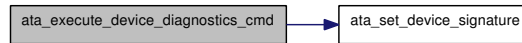
## 6.98.2 Function Documentation

- 6.98.2.1 `int ata_device_execute_cmd (struct ata_device * device)`

Here is the call graph for this function:

**6.98.2.2 void ata\_execute\_device\_diagnostics\_cmd (struct ata\_device \* device)**

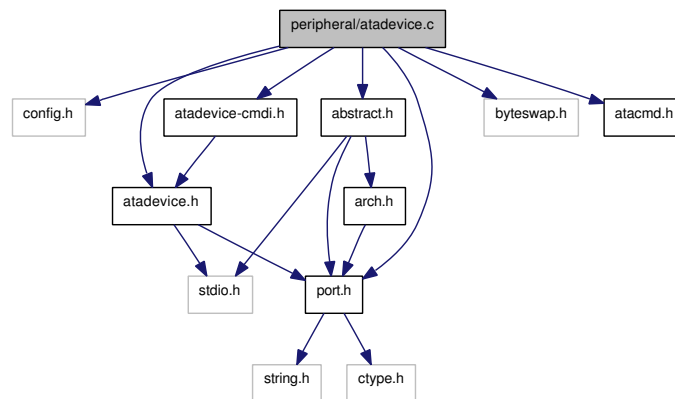
Here is the call graph for this function:



## 6.99 peripheral/atadevice.c File Reference

```
#include "config.h"
#include "port.h"
#include <byteswap.h>
#include "atadevice.h"
#include "atadevice-cmdi.h"
#include "atacmd.h"
#include "abstract.h"
```

Include dependency graph for atadevice.c:



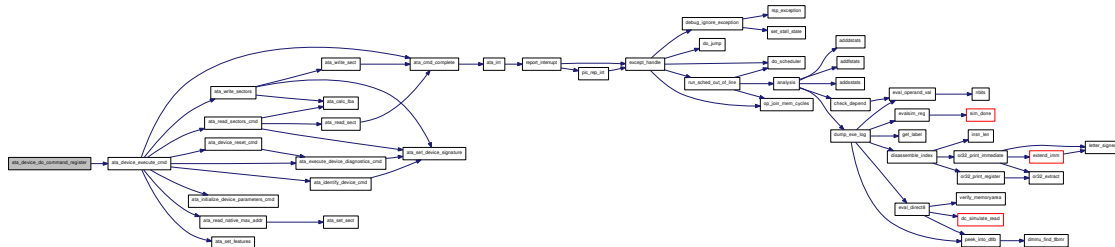
## Functions

- static FILE \* [open\\_file](#) (uint32\_t \*size, const char \*filename)
- static FILE \* [open\\_local](#) (void)
- static void [ata\\_device\\_init](#) (struct [ata\\_device](#) \*device, int dev)
- void [ata\\_devices\\_init](#) (struct [ata\\_devices](#) \*devices)
- static void [ata\\_device\\_hw\\_reset](#) (struct [ata\\_device](#) \*device, int reset\_signal, int daspo, int pdiagi, int daspi)
- void [ata\\_devices\\_hw\\_reset](#) (struct [ata\\_devices](#) \*devices, int reset\_signal)
- static void [ata\\_device\\_do\\_control\\_register](#) (struct [ata\\_device](#) \*device)
- static void [ata\\_device\\_do\\_command\\_register](#) (struct [ata\\_device](#) \*device)
- short [ata\\_devices\\_read](#) (struct [ata\\_devices](#) \*devices, char adr)
- static void [ata\\_device\\_write](#) (struct [ata\\_device](#) \*device, char adr, short value)
- void [ata\\_devices\\_write](#) (struct [ata\\_devices](#) \*devices, char adr, short value)

### 6.99.1 Function Documentation

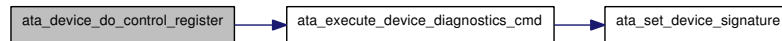
#### 6.99.1.1 static void ata\_device\_do\_command\_register (struct ata\_device \* device) [static]

Here is the call graph for this function:



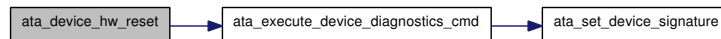
#### 6.99.1.2 static void ata\_device\_do\_control\_register (struct ata\_device \* device) [static]

Here is the call graph for this function:



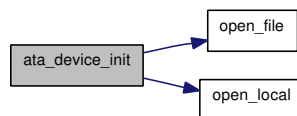
#### 6.99.1.3 static void ata\_device\_hw\_reset (struct ata\_device \* device, int reset\_signal, int daspo, int pdiagi, int daspi) [static]

Here is the call graph for this function:



#### 6.99.1.4 static void ata\_device\_init (struct ata\_device \* device, int dev) [static]

Here is the call graph for this function:







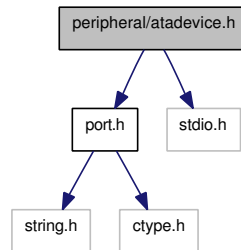
**6.99.1.10** static FILE\* `open_file` (uint32\_t \* *size*, const char \* *filename*) [static]

**6.99.1.11** static FILE\* `open_local` (void) [static]

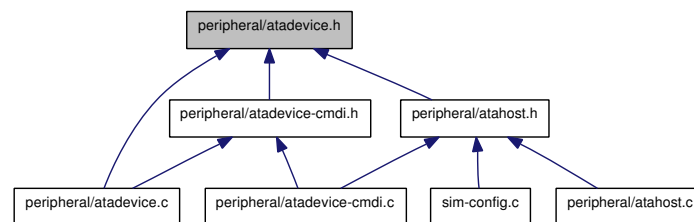
## 6.100 peripheral/atadevice.h File Reference

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

Include dependency graph for atadevice.h:



This graph shows which files directly or indirectly include this file:



### Data Structures

- struct [ata\\_device](#)
- struct [ata\\_devices](#)

### Defines

- #define [ATA\\_ASR](#) 0x78
- #define [ATA\\_CR](#) 0x5c
- #define [ATA\\_CHR](#) 0x54
- #define [ATA\\_CLR](#) 0x50
- #define [ATA\\_DR](#) 0x40
- #define [ATA\\_DCR](#) 0x78
- #define [ATA\\_DHR](#) 0x58
- #define [ATA\\_ERR](#) 0x44
- #define [ATA\\_FR](#) 0x44
- #define [ATA\\_SCR](#) 0x48
- #define [ATA\\_SNR](#) 0x4c
- #define [ATA\\_SR](#) 0x5c
- #define [ATA\\_DA](#) 0x7c
- #define [ATA\\_SR\\_BSY](#) 0x80
- #define [ATA\\_SR\\_DRDY](#) 0x40

- #define [ATA\\_SR\\_DF](#) 0x20
- #define [ATA\\_SR\\_DSC](#) 0x10
- #define [ATA\\_SR\\_DRQ](#) 0x08
- #define [ATA\\_SR\\_COR](#) 0x04
- #define [ATA\\_SR\\_IDX](#) 0x02
- #define [ATA\\_SR\\_ERR](#) 0x01
- #define [ATA\\_DCR\\_RST](#) 0x04
- #define [ATA\\_DCR\\_IEN](#) 0x02
- #define [ATA\\_DAR\\_WTG](#) 0x40
- #define [ATA\\_DAR\\_H](#) 0x3c
- #define [ATA\\_DAR\\_DS1](#) 0x02
- #define [ATA\\_DAR\\_DS0](#) 0x01
- #define [ATA\\_DHR\\_LBA](#) 0x40
- #define [ATA\\_DHR\\_DEV](#) 0x10
- #define [ATA\\_DHR\\_H](#) 0x0f
- #define [ATA\\_ERR\\_BBK](#) 0x80
- #define [ATA\\_ERR\\_UNC](#) 0x40
- #define [ATA\\_ERR\\_IDNF](#) 0x10
- #define [ATA\\_ERR\\_ABT](#) 0x04
- #define [ATA\\_ERR\\_TON](#) 0x02
- #define [ATA\\_ERR\\_AMN](#) 0x01
- #define [TYPE\\_NO\\_CONNECT](#) 0
- #define [TYPE\\_FILE](#) 1
- #define [TYPE\\_LOCAL](#) 2
- #define [ATA\\_STATE\\_IDLE](#) 0x00
- #define [ATA\\_STATE\\_SW\\_RST](#) 0x01
- #define [ATA\\_STATE\\_HW\\_RST](#) 0x02

## Functions

- void [ata\\_devices\\_init](#) (struct [ata\\_devices](#) \*devices)
- void [ata\\_devices\\_hw\\_reset](#) (struct [ata\\_devices](#) \*devices, int reset\_signal)
- short [ata\\_devices\\_read](#) (struct [ata\\_devices](#) \*devices, char adr)
- void [ata\\_devices\\_write](#) (struct [ata\\_devices](#) \*devices, char adr, short value)



## 6.100.1 Define Documentation

- 6.100.1.1 `#define ATA_ASR 0x78`
- 6.100.1.2 `#define ATA_CHR 0x54`
- 6.100.1.3 `#define ATA_CLR 0x50`
- 6.100.1.4 `#define ATA_CR 0x5c`
- 6.100.1.5 `#define ATA_DA 0x7c`
- 6.100.1.6 `#define ATA_DAR_DS0 0x01`
- 6.100.1.7 `#define ATA_DAR_DS1 0x02`
- 6.100.1.8 `#define ATA_DAR_H 0x3c`
- 6.100.1.9 `#define ATA_DAR_WTG 0x40`
- 6.100.1.10 `#define ATA_DCR 0x78`
- 6.100.1.11 `#define ATA_DCR_IEN 0x02`
- 6.100.1.12 `#define ATA_DCR_RST 0x04`
- 6.100.1.13 `#define ATA_DHR 0x58`
- 6.100.1.14 `#define ATA_DHR_DEV 0x10`
- 6.100.1.15 `#define ATA_DHR_H 0x0f`
- 6.100.1.16 `#define ATA_DHR_LBA 0x40`
- 6.100.1.17 `#define ATA_DR 0x40`
- 6.100.1.18 `#define ATA_ERR 0x44`
- 6.100.1.19 `#define ATA_ERR_ABT 0x04`
- 6.100.1.20 `#define ATA_ERR_AMN 0x01`
- 6.100.1.21 `#define ATA_ERR_BBK 0x80`
- 6.100.1.22 `#define ATA_ERR_IDNF 0x10`
- 6.100.1.23 `#define ATA_ERR_TON 0x02`
- 6.100.1.24 `#define ATA_ERR_UNC 0x40`
- 6.100.1.25 `#define ATA_FR 0x44`
- 6.100.1.26 `#define ATA_SCR 0x48`
- 6.100.1.27 `#define ATA_SNR 0x4c`

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Generated on Tue Feb 27 19:24:00 2009 for OoRism: The OpenRISC 1000 Architectural Simulator by Doxygen

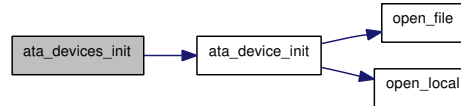
- 6.100.1.28 `#define ATA_SR 0x5c`

- 6.100.1.29 `#define ATA_SR_BSY 0x80`

- 6.100.1.30 `#define ATA_SR_COR 0x04`

### 6.100.2.2 void ata\_devices\_init (struct ata\_devices \* devices)

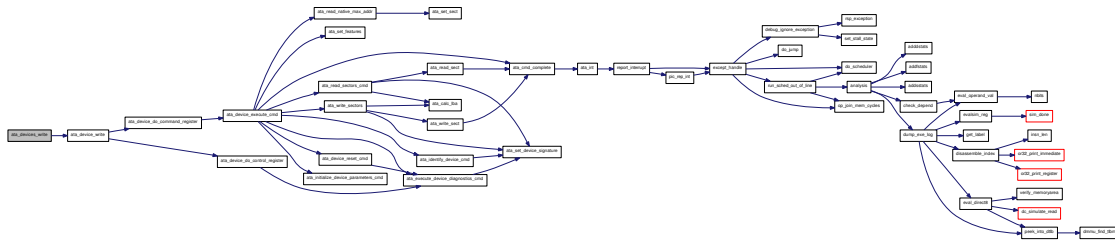
Here is the call graph for this function:



### 6.100.2.3 short ata\_devices\_read (struct ata\_devices \* devices, char adr)

### 6.100.2.4 void ata\_devices\_write (struct ata\_devices \* devices, char adr, short value)

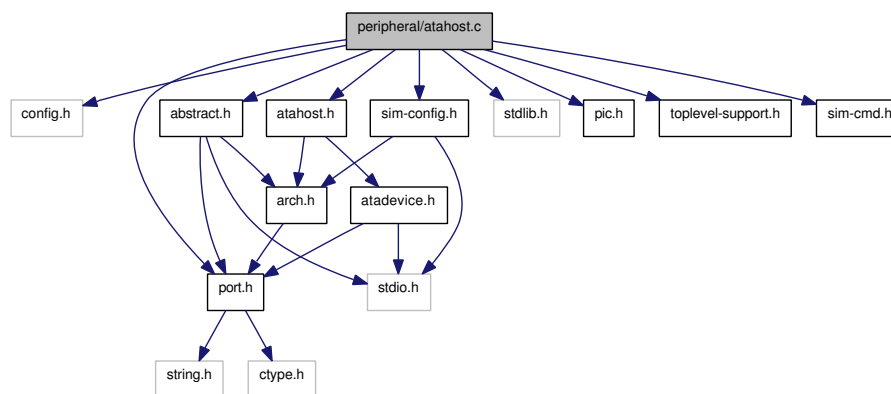
Here is the call graph for this function:



## 6.101 peripheral/atahost.c File Reference

```
#include "config.h"
#include "port.h"
#include <stdlib.h>
#include "atahost.h"
#include "sim-config.h"
#include "abstract.h"
#include "pic.h"
#include "toplevel-support.h"
#include "sim-cmd.h"
```

Include dependency graph for atahost.c:



### Defines

- #define [PIO\\_MODE0\\_T1](#) 6
- #define [PIO\\_MODE0\\_T2](#) 28
- #define [PIO\\_MODE0\\_T4](#) 2
- #define [PIO\\_MODE0\\_TEOC](#) 23
- #define [DMA\\_MODE0\\_TM](#) 4
- #define [DMA\\_MODE0\\_TD](#) 21
- #define [DMA\\_MODE0\\_TEOC](#) 21

### Functions

- static void [ata\\_reset](#) (void \*dat)
- void [ata\\_int](#) (void \*dat)
- static uint32\_t [ata\\_read32](#) (oraddr\_t addr, void \*dat)
- static void [ata\\_write32](#) (oraddr\_t addr, uint32\_t value, void \*dat)
- static void [ata\\_status](#) (void \*dat)
- static void [ata\\_baseaddr](#) (union [param\\_val](#) val, void \*dat)
- static void [ata\\_irq](#) (union [param\\_val](#) val, void \*dat)

- static void [ata\\_dev\\_id](#) (union [param\\_val](#) val, void \*dat)
- static void [ata\\_rev](#) (union [param\\_val](#) val, void \*dat)
- static void [ata\\_pio\\_mode0\\_t1](#) (union [param\\_val](#) val, void \*dat)
- static void [ata\\_pio\\_mode0\\_t2](#) (union [param\\_val](#) val, void \*dat)
- static void [ata\\_pio\\_mode0\\_t4](#) (union [param\\_val](#) val, void \*dat)
- static void [ata\\_pio\\_mode0\\_tec](#) (union [param\\_val](#) val, void \*dat)
- static void [ata\\_dma\\_mode0\\_tm](#) (union [param\\_val](#) val, void \*dat)
- static void [ata\\_dma\\_mode0\\_td](#) (union [param\\_val](#) val, void \*dat)
- static void [ata\\_dma\\_mode0\\_tec](#) (union [param\\_val](#) val, void \*dat)
- static void [ata\\_type](#) (union [param\\_val](#) val, void \*dat)
- static void [ata\\_file](#) (union [param\\_val](#) val, void \*dat)
- static void [ata\\_size](#) (union [param\\_val](#) val, void \*dat)
- static void [ata\\_packet](#) (union [param\\_val](#) val, void \*dat)
- static void [ata\\_enabled](#) (union [param\\_val](#) val, void \*dat)
- static void [ata\\_heads](#) (union [param\\_val](#) val, void \*dat)
- static void [ata\\_sectors](#) (union [param\\_val](#) val, void \*dat)
- static void [ata\\_firmware](#) (union [param\\_val](#) val, void \*dat)
- static void [ata\\_mwdma](#) (union [param\\_val](#) val, void \*dat)
- static void [ata\\_pio](#) (union [param\\_val](#) val, void \*dat)
- static void [ata\\_start\\_device](#) (union [param\\_val](#) val, void \*dat)
- static void [ata\\_enddevice](#) (union [param\\_val](#) val, void \*dat)
- static void \* [ata\\_sec\\_start](#) (void)
- static void [ata\\_sec\\_end](#) (void \*dat)
- void [reg\\_ata\\_sec](#) ()

## Variables

- static unsigned int [conf\\_dev](#)



### 6.101.1 Define Documentation

6.101.1.1 `#define DMA_MODE0_TD 21`

6.101.1.2 `#define DMA_MODE0_TEOC 21`

6.101.1.3 `#define DMA_MODE0_TM 4`

6.101.1.4 `#define PIO_MODE0_T1 6`

6.101.1.5 `#define PIO_MODE0_T2 28`

6.101.1.6 `#define PIO_MODE0_T4 2`

6.101.1.7 `#define PIO_MODE0_TEOC 23`

### 6.101.2 Function Documentation

6.101.2.1 `static void ata_baseaddr (union param_val val, void * dat) [static]`

6.101.2.2 `static void ata_dev_id (union param_val val, void * dat) [static]`

6.101.2.3 `static void ata_dma_mode0_td (union param_val val, void * dat) [static]`

6.101.2.4 `static void ata_dma_mode0_teoc (union param_val val, void * dat) [static]`

6.101.2.5 `static void ata_dma_mode0_tm (union param_val val, void * dat) [static]`

6.101.2.6 `static void ata_enabled (union param_val val, void * dat) [static]`

6.101.2.7 `static void ata_enddevice (union param_val val, void * dat) [static]`

6.101.2.8 `static void ata_file (union param_val val, void * dat) [static]`

Set the ATA file

Free any previously allocated value. Only used if device type is 1.

#### Parameters:

← *val* The value to use

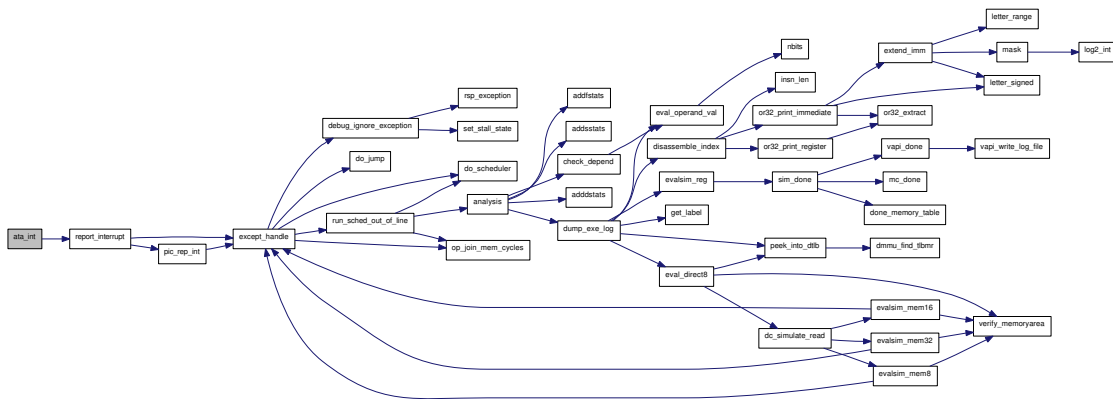
← *dat* The `config` data structure

**6.101.2.9** `static void ata_firmware (union param_val val, void * dat) [static]`

**6.101.2.10** `static void ata_heads (union param_val val, void * dat) [static]`

**6.101.2.11** `void ata_int (void * dat)`

Here is the call graph for this function:



**6.101.2.12** `static void ata_irq (union param_val val, void * dat) [static]`

**6.101.2.13** `static void ata_mwdma (union param_val val, void * dat) [static]`

Set the ATA multi-word DMA mode

Must be -1, 0, 1 or 2.

**Parameters:**

← *val* The value to use

← *dat* The `config` data structure

**6.101.2.14** `static void ata_packet (union param_val val, void * dat) [static]`

**6.101.2.15** `static void ata_pio (union param_val val, void * dat) [static]`

Set the ATA programmed I/O mode

Must be 0, 1, 2, 3 or 4.

**Parameters:**

← *val* The value to use

← *dat* The `config` data structure

**6.101.2.16** `static void ata_pio_mode0_t1 (union param_val val, void * dat)` [static]

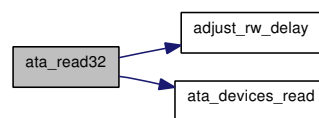
**6.101.2.17** `static void ata_pio_mode0_t2 (union param_val val, void * dat)` [static]

**6.101.2.18** `static void ata_pio_mode0_t4 (union param_val val, void * dat)` [static]

**6.101.2.19** `static void ata_pio_mode0_teoc (union param_val val, void * dat)` [static]

**6.101.2.20** `static uint32_t ata_read32 (oraddr_t addr, void * dat)` [static]

Here is the call graph for this function:



**6.101.2.21** `static void ata_reset (void * dat)` [static]

Here is the call graph for this function:



**6.101.2.22** `static void ata_rev (union param_val val, void * dat)` [static]

Set the ATA revision

This must be in the range 0-15, to fit in the relevant field. Anything larger is truncated with a warning.

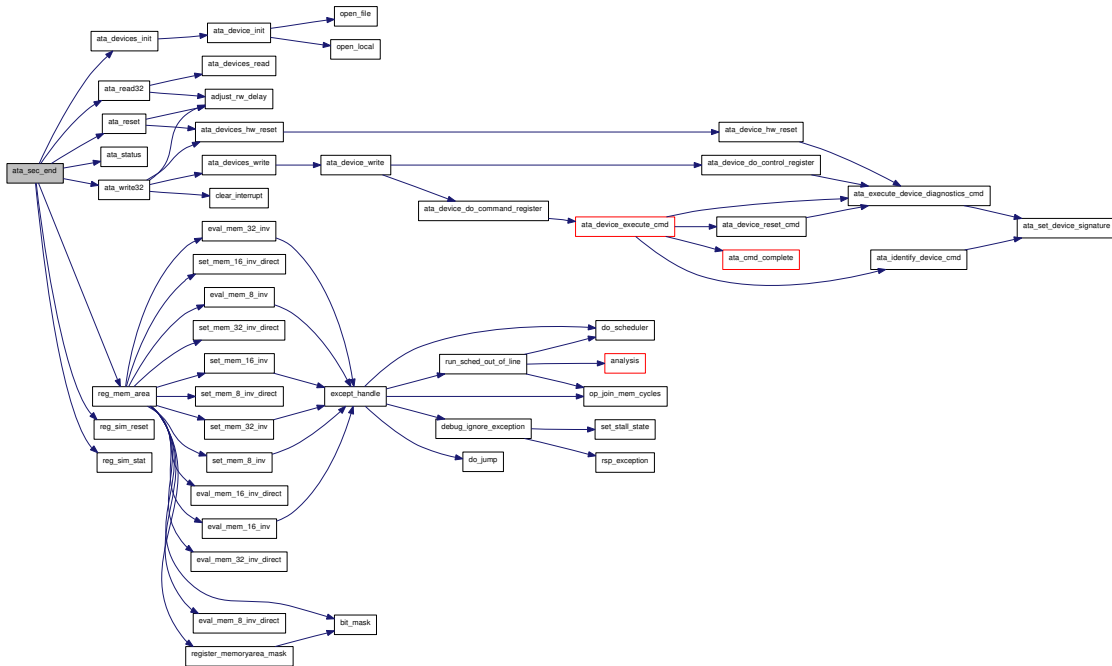
#### Parameters:

← *val* The value to use

← *dat* The `config` data structure

### 6.101.2.23 static void ata\_sec\_end (void \* dat) [static]

Here is the call graph for this function:



### 6.101.2.24 static void\* ata\_sec\_start (void) [static]

Initialize a new ATA configuration

ALL parameters are set explicitly to default values.

**6.101.2.25** `static void ata_sectors (union param_val val, void * dat)` [static]

**6.101.2.26** `static void ata_size (union param_val val, void * dat)` [static]

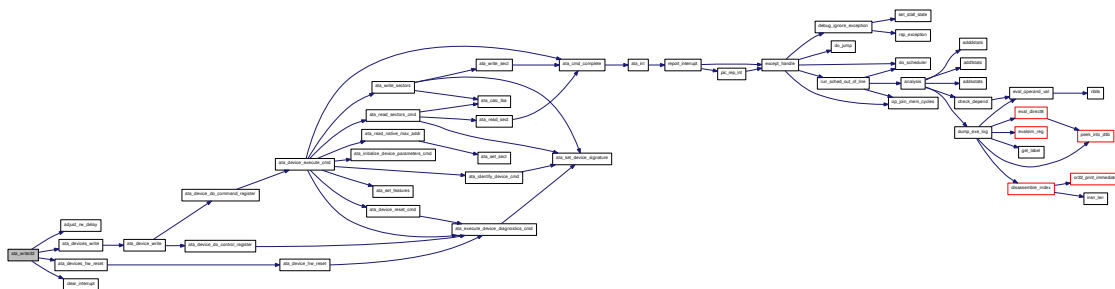
**6.101.2.27** `static void ata_start_device (union param_val val, void * dat)` [static]

**6.101.2.28** `static void ata_status (void * dat)` [static]

**6.101.2.29** `static void ata_type (union param_val val, void * dat)` [static]

**6.101.2.30** `static void ata_write32 (oraddr_t addr, uint32_t value, void * dat)` [static]

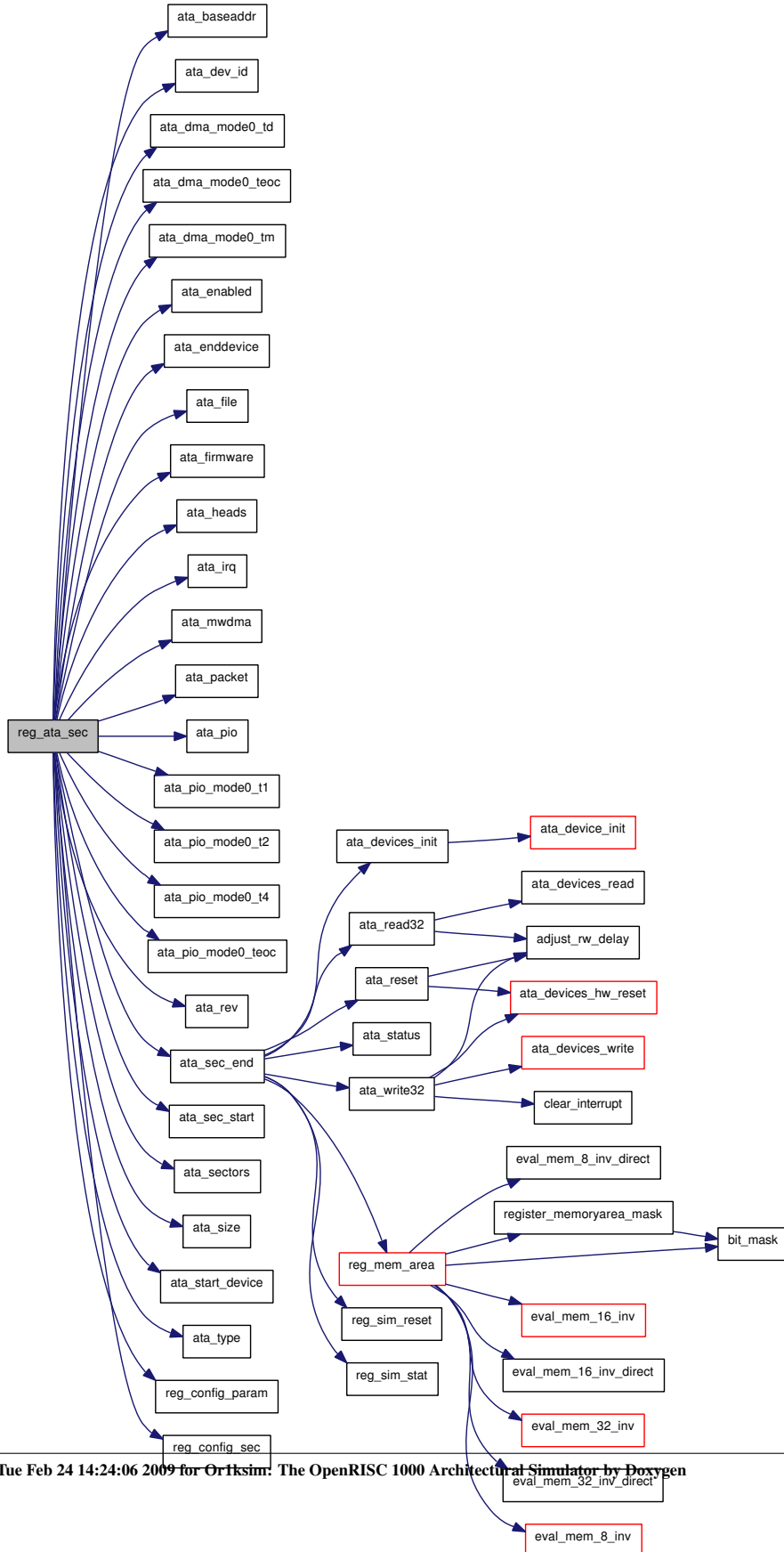
Here is the call graph for this function:





6.101.2.31 void reg\_ata\_sec ()

Here is the call graph for this function:



### 6.101.3 Variable Documentation

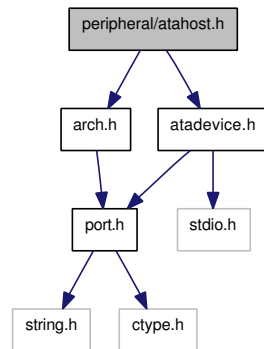
6.101.3.1 `unsigned int conf_dev` `[static]`



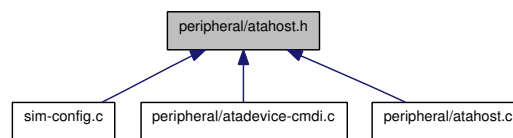
## 6.102 peripheral/atahost.h File Reference

```
#include "arch.h"
#include "atadevice.h"
```

Include dependency graph for atahost.h:



This graph shows which files directly or indirectly include this file:



### Data Structures

- struct [ata\\_host](#)

### Defines

- #define [ATA\\_CTRL](#) 0x00
- #define [ATA\\_STAT](#) 0x04
- #define [ATA\\_PCTR](#) 0x08
- #define [ATA\\_PFTR0](#) 0x0c
- #define [ATA\\_PFTR1](#) 0x10
- #define [ATA\\_DTR0](#) 0x14
- #define [ATA\\_DTR1](#) 0x18
- #define [ATA\\_TXB](#) 0x3c
- #define [ATA\\_RXB](#) 0x3c
- #define [ATA\\_DMA\\_EN](#) (0<<15)
- #define [ATA\\_DMA\\_WR](#) (1<<14)
- #define [ATA\\_DMA\\_RD](#) (0<<14)
- #define [ATA\\_BELEC1](#) (1<<9)
- #define [ATA\\_BELECO](#) (1<<8)
- #define [ATA\\_IDE\\_EN](#) (1<<7)
- #define [ATA\\_FTE1](#) (1<<6)

- #define `ATA_FTE0` (1<< 5)
- #define `ATA_PWPP` (1<< 4)
- #define `ATA_IORDY_FTE1` (1<< 3)
- #define `ATA_IORDY_FTE0` (1<< 2)
- #define `ATA_IORDY` (1<< 1)
- #define `ATA_RST` (1<< 0)
- #define `ATA_DEVID` 0xf0000000
- #define `ATA_REVNO` 0x0f000000
- #define `ATA_DMA_TIP` (1<<15)
- #define `ATA_DRBE` (1<<10)
- #define `ATA_DTBF` (1<< 9)
- #define `ATA_DMARQ` (1<< 8)
- #define `ATA_PIO_TIP` (1<< 7)
- #define `ATA_PWPPF` (1<< 6)
- #define `ATA_IDEIS` (1<< 0)
- #define `ATA_TEOC` 24
- #define `ATA_T4` 16
- #define `ATA_T2` 8
- #define `ATA_TD` 8
- #define `ATA_T1` 0
- #define `ATA_TM` 0
- #define `ATA_ADDR_SPACE` 0x80
- #define `is_ata_hostadr`(adr) (!(adr & 0x40))
- #define `ata_pio_delay`(pioreg) ( (((pioreg >> ATA\_T1) & 0xff) +1) + (((pioreg >> ATA\_T2) & 0xff) +1) + (((pioreg >> ATA\_T4) & 0xff) +1) +1 )
- #define `ata_dma_delay`(dmareg) ( (((dmareg >> ATA\_TD) & 0xff) +1) + (((pioreg >> ATA\_TM) & 0xff) +1) +1 )

## Functions

- void `ata_int` (void \*dat)
- void `reg_ata_sec` ()



## 6.102.1 Define Documentation

6.102.1.1 **#define ATA\_ADDR\_SPACE 0x80**

6.102.1.2 **#define ATA\_BELEC0 (1<< 8)**

6.102.1.3 **#define ATA\_BELEC1 (1<< 9)**

6.102.1.4 **#define ATA\_CTRL 0x00**

6.102.1.5 **#define ATA\_DEVID 0xf0000000**

6.102.1.6 **#define ata\_dma\_delay(dmareg) ( (((dmareg >> ATA\_TD) & 0xff) +1) + (((pioreg >> ATA\_TM) & 0xff) +1) +1 )**

6.102.1.7 **#define ATA\_DMA\_EN (0<<15)**

6.102.1.8 **#define ATA\_DMA\_RD (0<<14)**

6.102.1.9 **#define ATA\_DMA\_TIP (1<<15)**

6.102.1.10 **#define ATA\_DMA\_WR (1<<14)**

6.102.1.11 **#define ATA\_DMARQ (1<< 8)**

6.102.1.12 **#define ATA\_DRBE (1<<10)**

6.102.1.13 **#define ATA\_DTBF (1<< 9)**

6.102.1.14 **#define ATA\_DTR0 0x14**

6.102.1.15 **#define ATA\_DTR1 0x18**

6.102.1.16 **#define ATA\_FTE0 (1<< 5)**

6.102.1.17 **#define ATA\_FTE1 (1<< 6)**

6.102.1.18 **#define ATA\_IDE\_EN (1<< 7)**

6.102.1.19 **#define ATA\_IDEIS (1<< 0)**

6.102.1.20 **#define ATA\_IORDY (1<< 1)**

6.102.1.21 **#define ATA\_IORDY\_FTE0 (1<< 2)**

6.102.1.22 **#define ATA\_IORDY\_FTE1 (1<< 3)**

6.102.1.23 **#define ATA\_PCTR 0x08**

6.102.1.24 **#define ATA\_PFTR0 0x0c**

6.102.1.25 **#define ATA\_PFTR1 0x10**

6.102.1.26 **#define ata\_pio\_delay(pioreg) ( (((pioreg >> ATA\_T1) & 0xff) +1) + (((pioreg >> ATA\_T2) & 0xff) +1) + (((pioreg >> ATA\_T3) & 0xff) +1) +1 )**

6.102.1.27 **#define ATA\_PIO\_TIP (1<< 7)**

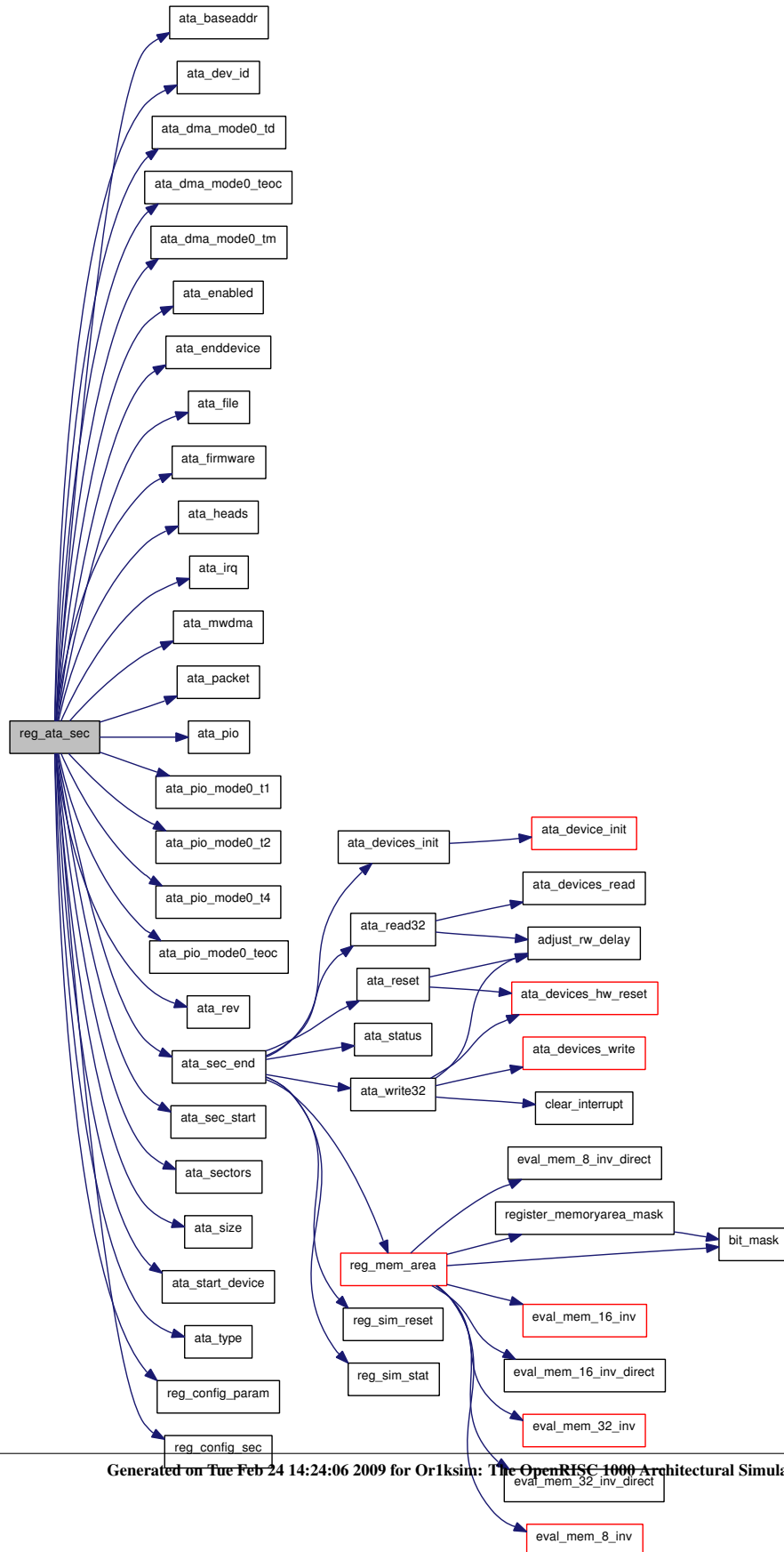
6.102.1.28 **#define ATA\_PWPP (1<< 4)**

6.102.1.29 **#define ATA\_PWPPF (1<< 6)**



### 6.102.2.2 void reg\_ata\_sec ()

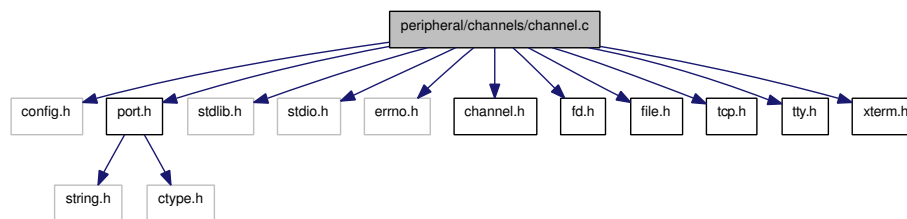
Here is the call graph for this function:



## 6.103 peripheral/channels/channel.c File Reference

```
#include "config.h"  
#include "port.h"  
#include <stdlib.h>  
#include <stdio.h>  
#include <errno.h>  
#include "channel.h"  
#include "fd.h"  
#include "file.h"  
#include "tcp.h"  
#include "tty.h"  
#include "xterm.h"
```

Include dependency graph for channel.c:



### Data Structures

- struct [channel\\_factory](#)

### Functions

- static struct [channel\\_factory](#) \* [find\\_channel\\_factory](#) (const char \*name)
- struct [channel](#) \* [channel\\_init](#) (const char \*descriptor)
- int [channel\\_open](#) (struct [channel](#) \*channel)
- int [channel\\_read](#) (struct [channel](#) \*channel, char \*buffer, int size)
- int [channel\\_write](#) (struct [channel](#) \*channel, const char \*buffer, int size)
- void [channel\\_close](#) (struct [channel](#) \*channel)

### Variables

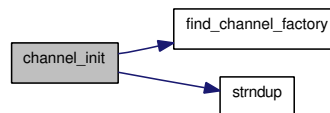
- static struct [channel\\_factory](#) [preloaded](#) []
- static struct [channel\\_factory](#) \* [head](#) = &[preloaded](#)[0]

## 6.103.1 Function Documentation

**6.103.1.1** void `channel_close` (`struct channel *channel`)

**6.103.1.2** `struct channel*` `channel_init` (`const char *descriptor`) [read]

Here is the call graph for this function:



**6.103.1.3** int `channel_open` (`struct channel *channel`)

**6.103.1.4** int `channel_read` (`struct channel *channel`, `char *buffer`, `int size`)

**6.103.1.5** int `channel_write` (`struct channel *channel`, `const char *buffer`, `int size`)

**6.103.1.6** `static struct channel_factory *` `find_channel_factory` (`const char *name`) [static, read]

## 6.103.2 Variable Documentation

**6.103.2.1** `struct channel_factory*` `head = &preloaded[0]` [static]

**6.103.2.2** `struct channel_factory` `preloaded[]` [static]

**Initial value:**

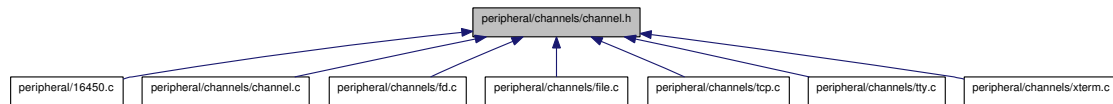
```

{
  {"fd",      &fd_channel_ops,   &preloaded[1]},
  {"file",   &file_channel_ops, &preloaded[2]},
  {"xterm",  &xterm_channel_ops, &preloaded[3]},
  {"tcp",    &tcp_channel_ops,   &preloaded[4]},
  {"tty",    &tty_channel_ops,   NULL}
}
  
```



## 6.104 peripheral/channels/channel.h File Reference

This graph shows which files directly or indirectly include this file:



### Data Structures

- struct [channel\\_ops](#)
- struct [channel](#)

### Functions

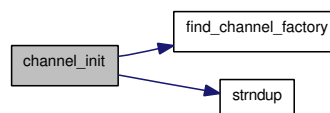
- struct [channel](#) \* [channel\\_init](#) (const char \*descriptor)
- int [channel\\_open](#) (struct [channel](#) \*channel)
- int [channel\\_read](#) (struct [channel](#) \*channel, char \*buffer, int size)
- int [channel\\_write](#) (struct [channel](#) \*channel, const char \*buffer, int size)
- void [channel\\_close](#) (struct [channel](#) \*channel)

#### 6.104.1 Function Documentation

**6.104.1.1** void [channel\\_close](#) (struct [channel](#) \* *channel*)

**6.104.1.2** struct [channel](#)\* [channel\\_init](#) (const char \* *descriptor*) [read]

Here is the call graph for this function:



**6.104.1.3** int [channel\\_open](#) (struct [channel](#) \* *channel*)

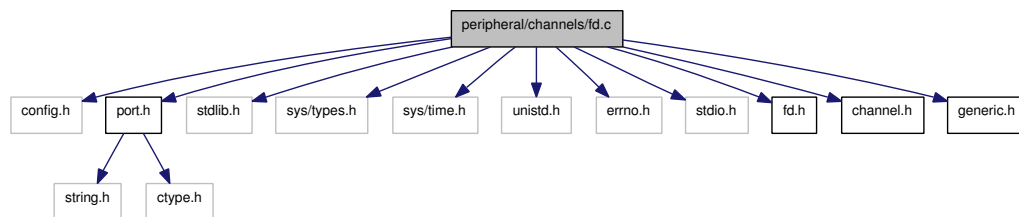
**6.104.1.4** int [channel\\_read](#) (struct [channel](#) \* *channel*, char \* *buffer*, int *size*)

**6.104.1.5** int [channel\\_write](#) (struct [channel](#) \* *channel*, const char \* *buffer*, int *size*)

## 6.105 peripheral/channels/fd.c File Reference

```
#include "config.h"
#include "port.h"
#include <stdlib.h>
#include <sys/types.h>
#include <sys/time.h>
#include <unistd.h>
#include <errno.h>
#include <stdio.h>
#include "fd.h"
#include "channel.h"
#include "generic.h"
```

Include dependency graph for fd.c:



## Functions

- static void \* [fd\\_init](#) (const char \*args)
- static int [fd\\_isok](#) (void \*data)
- static char \* [fd\\_status](#) (void \*data)
- int [fd\\_read](#) (void \*data, char \*buffer, int size)
- int [fd\\_write](#) (void \*data, const char \*buffer, int size)
- static int [fd\\_status\\_fd](#) (int fd, char \*str, int size)

## Variables

- struct [channel\\_ops](#) [fd\\_channel\\_ops](#)

## 6.105.1 Function Documentation

**6.105.1.1** `static void * fd_init (const char * args) [static]`

**6.105.1.2** `static int fd_isok (void * data) [static]`

**6.105.1.3** `int fd_read (void * data, char * buffer, int size)`

**6.105.1.4** `static char * fd_status (void * data) [static]`

Here is the call graph for this function:



**6.105.1.5** `static int fd_status_fd (int fd, char * str, int size) [static]`

**6.105.1.6** `int fd_write (void * data, const char * buffer, int size)`

## 6.105.2 Variable Documentation

**6.105.2.1** `struct channel_ops fd_channel_ops`

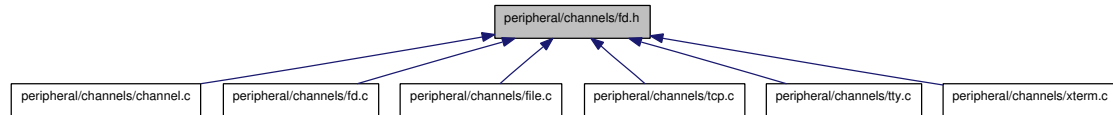
**Initial value:**

```
{
    .init    = fd_init,
    .open    = generic_open,
    .close   = generic_close,
    .read    = fd_read,
    .write   = fd_write,
    .free    = generic_free,
    .isok    = fd_isok,
    .status  = fd_status,
}
```

Global data structure representing the operations for communicating through a file descriptor [channel](#)

## 6.106 peripheral/channels/fd.h File Reference

This graph shows which files directly or indirectly include this file:



### Data Structures

- struct [fd\\_channel](#)

### Functions

- int [fd\\_read](#) (void \*data, char \*buffer, int size)
- int [fd\\_write](#) (void \*data, const char \*buffer, int size)

### Variables

- struct [channel\\_ops](#) [fd\\_channel\\_ops](#)

#### 6.106.1 Function Documentation

**6.106.1.1** int [fd\\_read](#) (void \* *data*, char \* *buffer*, int *size*)

**6.106.1.2** int [fd\\_write](#) (void \* *data*, const char \* *buffer*, int *size*)

#### 6.106.2 Variable Documentation

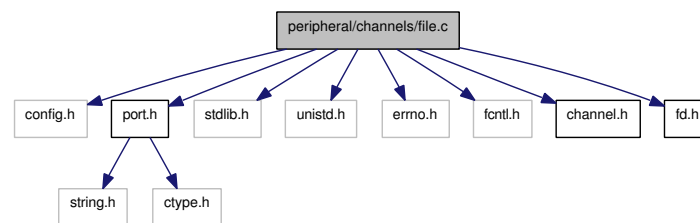
**6.106.2.1** struct [channel\\_ops](#) [fd\\_channel\\_ops](#)

Global data structure representing the operations for communicating through a file descriptor [channel](#)

## 6.107 peripheral/channels/file.c File Reference

```
#include "config.h"  
#include "port.h"  
#include <stdlib.h>  
#include <unistd.h>  
#include <errno.h>  
#include <fcntl.h>  
#include "channel.h"  
#include "fd.h"
```

Include dependency graph for file.c:



### Data Structures

- struct [file\\_channel](#)

### Functions

- static void \* [file\\_init](#) (const char \*args)
- static int [file\\_open](#) (void \*data)
- static void [file\\_close](#) (void \*data)
- static void [file\\_free](#) (void \*data)

### Variables

- struct [channel\\_ops](#) [file\\_channel\\_ops](#)

## 6.107.1 Function Documentation

**6.107.1.1** `static void file_close (void * data)` [static]

**6.107.1.2** `static void file_free (void * data)` [static]

**6.107.1.3** `static void * file_init (const char * args)` [static]

Here is the call graph for this function:



**6.107.1.4** `static int file_open (void * data)` [static]

## 6.107.2 Variable Documentation

**6.107.2.1** `struct channel_ops file_channel_ops`

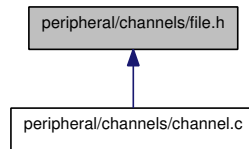
**Initial value:**

```
{
    .init = file_init,
    .open = file_open,
    .close = file_close,
    .read = fd_read,
    .write = fd_write,
    .free = file_free,
}
```

Data structure with all the operations for communicating with a file [channel](#)

## 6.108 peripheral/channels/file.h File Reference

This graph shows which files directly or indirectly include this file:



### Variables

- struct [channel\\_ops](#) [file\\_channel\\_ops](#)

#### 6.108.1 Variable Documentation

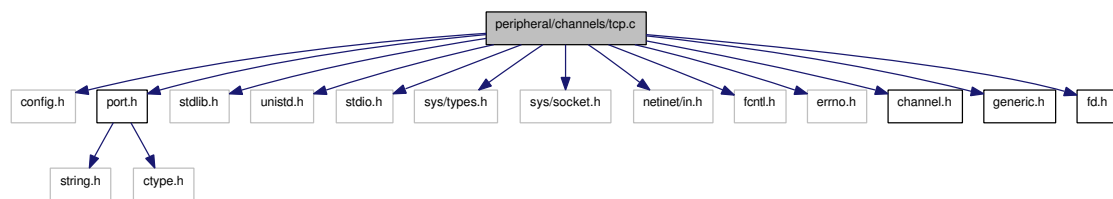
##### 6.108.1.1 struct [channel\\_ops](#) [file\\_channel\\_ops](#)

Data structure with all the operations for communicating with a file [channel](#)

## 6.109 peripheral/channels/tcp.c File Reference

```
#include "config.h"
#include "port.h"
#include <stdlib.h>
#include <unistd.h>
#include <stdio.h>
#include <sys/types.h>
#include <sys/socket.h>
#include <netinet/in.h>
#include <fcntl.h>
#include <errno.h>
#include "channel.h"
#include "generic.h"
#include "fd.h"
```

Include dependency graph for tcp.c:



### Data Structures

- struct [tcp\\_channel](#)

### Functions

- static void \* [tcp\\_init](#) (const char \*input)
- static int [tcp\\_open](#) (void \*data)
- static int [tcp\\_read](#) (void \*data, char \*buffer, int size)
- static int [tcp\\_write](#) (void \*data, const char \*buffer, int size)
- static int [wait\\_for\\_tcp\\_connect](#) (struct [tcp\\_channel](#) \*channel)

### Variables

- struct [channel\\_ops](#) [tcp\\_channel\\_ops](#)



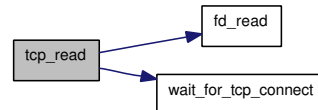
## 6.109.1 Function Documentation

**6.109.1.1** `static void * tcp_init (const char * input)` [static]

**6.109.1.2** `static int tcp_open (void * data)` [static]

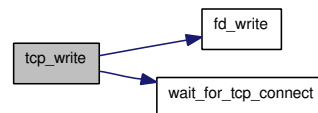
**6.109.1.3** `static int tcp_read (void * data, char * buffer, int size)` [static]

Here is the call graph for this function:



**6.109.1.4** `static int tcp_write (void * data, const char * buffer, int size)` [static]

Here is the call graph for this function:



**6.109.1.5** `static int wait_for_tcp_connect (struct tcp_channel * channel)` [static]

## 6.109.2 Variable Documentation

**6.109.2.1** `struct channel_ops tcp_channel_ops`

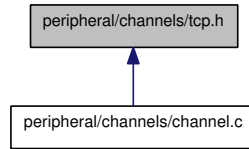
**Initial value:**

```
{
    .init = tcp_init,
    .open = tcp_open,
    .close = generic_close,
    .read = tcp_read,
    .write = tcp_write,
    .free = generic_free,
}
```

Data structure holding all the operations for a TCP/IP [channel](#)

## 6.110 peripheral/channels/tcp.h File Reference

This graph shows which files directly or indirectly include this file:



### Variables

- struct [channel\\_ops](#) [tcp\\_channel\\_ops](#)

#### 6.110.1 Variable Documentation

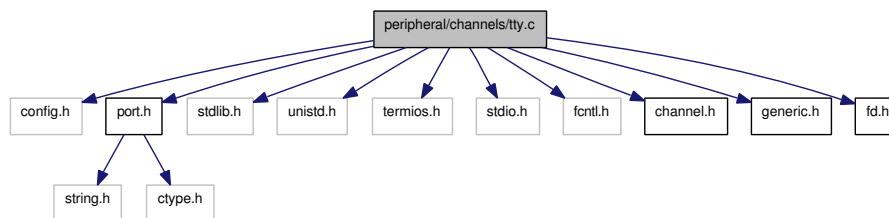
##### 6.110.1.1 struct [channel\\_ops](#) [tcp\\_channel\\_ops](#)

Data structure holding all the operations for a TCP/IP [channel](#)

## 6.111 peripheral/channels/tty.c File Reference

```
#include "config.h"
#include "port.h"
#include <stdlib.h>
#include <unistd.h>
#include <termios.h>
#include <stdio.h>
#include <fcntl.h>
#include "channel.h"
#include "generic.h"
#include "fd.h"
```

Include dependency graph for tty.c:



### Data Structures

- struct [tty\\_channel](#)

### Defines

- #define [DEFAULT\\_BAUD](#) B19200
- #define [DEFAULT\\_TTY\\_DEVICE](#) "/dev/ttyS0"

### Functions

- static void \* [tty\\_init](#) (const char \*input)
- static int [tty\\_open](#) (void \*data)
- static int [parse\\_baud](#) (char \*baud\_string)

### Variables

- struct {
  - char \* [name](#)
  - int [value](#)
 } [baud\\_table](#) []
- struct [channel\\_ops](#) [tty\\_channel\\_ops](#)

### 6.111.1 Define Documentation

6.111.1.1 `#define DEFAULT_BAUD B19200`

6.111.1.2 `#define DEFAULT_TTY_DEVICE "/dev/ttyS0"`

### 6.111.2 Function Documentation

6.111.2.1 `static int parse_baud (char * baud_string)` [static]

6.111.2.2 `static void * tty_init (const char * input)` [static]

Here is the call graph for this function:



6.111.2.3 `static int tty_open (void * data)` [static]

### 6.111.3 Variable Documentation

6.111.3.1 `struct { ... } baud_table[]` [static]

Table of Baud rates

6.111.3.2 `char* name`

6.111.3.3 `struct channel_ops tty_channel_ops`

**Initial value:**

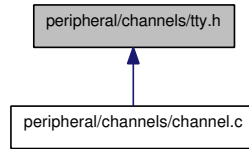
```
{
    .init = tty_init,
    .open = tty_open,
    .close = generic_close,
    .read = fd_read,
    .write = fd_write,
    .free = generic_free,
}
```

Global data structure representing the operations on a TTY [channel](#)

6.111.3.4 `int value`

## 6.112 peripheral/channels/tty.h File Reference

This graph shows which files directly or indirectly include this file:



### Variables

- struct [channel\\_ops](#) [tty\\_channel\\_ops](#)

#### 6.112.1 Variable Documentation

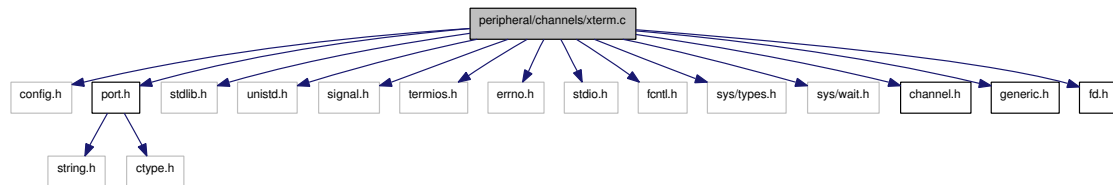
##### 6.112.1.1 struct [channel\\_ops](#) [tty\\_channel\\_ops](#)

Global data structure representing the operations on a TTY [channel](#)

## 6.113 peripheral/channels/xterm.c File Reference

```
#include "config.h"
#include "port.h"
#include <stdlib.h>
#include <unistd.h>
#include <signal.h>
#include <termios.h>
#include <errno.h>
#include <stdio.h>
#include <fcntl.h>
#include <sys/types.h>
#include <sys/wait.h>
#include "channel.h"
#include "generic.h"
#include "fd.h"
```

Include dependency graph for xterm.c:



### Data Structures

- struct [xterm\\_channel](#)

### Defines

- #define [MAX\\_XTERM\\_ARGS](#) 100

### Functions

- static void [xterm\\_close](#) (void \*data)
- static void \* [xterm\\_init](#) (const char \*input)
- static int [xterm\\_open](#) (void \*data)
- static char \* [basename](#) (const char \*filename)

### Variables

- struct [channel\\_ops](#) [xterm\\_channel\\_ops](#)

## 6.113.1 Define Documentation

### 6.113.1.1 #define MAX\_XTERM\_ARGS 100

## 6.113.2 Function Documentation

### 6.113.2.1 static char\* basename (const char \*filename) [static]

### 6.113.2.2 static void xterm\_close (void \*data) [static]

### 6.113.2.3 static void \* xterm\_init (const char \*input) [static]

### 6.113.2.4 static int xterm\_open (void \*data) [static]

Here is the call graph for this function:



## 6.113.3 Variable Documentation

### 6.113.3.1 struct channel\_ops xterm\_channel\_ops

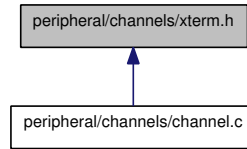
**Initial value:**

```
{
    .init = xterm_init,
    .open = xterm_open,
    .close = xterm_close,
    .read = fd_read,
    .write = fd_write,
    .free = generic_free,
}
```

Global data structure with the xterm interface functions

## 6.114 peripheral/channels/xterm.h File Reference

This graph shows which files directly or indirectly include this file:



### Variables

- struct [channel\\_ops](#) [xterm\\_channel\\_ops](#)

#### 6.114.1 Variable Documentation

##### 6.114.1.1 struct [channel\\_ops](#) [xterm\\_channel\\_ops](#)

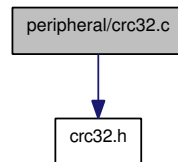
Global data structure with the xterm interface functions



## 6.115 peripheral/crc32.c File Reference

```
#include "crc32.h"
```

Include dependency graph for crc32.c:



### Functions

- unsigned long [crc32](#) (const void \*buf, unsigned len)
- void [crc32\\_init](#) (unsigned long \*value)
- void [crc32\\_feed\\_bytes](#) (unsigned long \*value, const void \*buf, unsigned len)
- void [crc32\\_close](#) (unsigned long \*value)

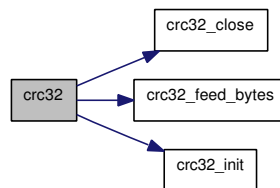
### Variables

- static unsigned long [crc32\\_table](#) [256]

#### 6.115.1 Function Documentation

##### 6.115.1.1 unsigned long [crc32](#) (const void \* buf, unsigned len)

Here is the call graph for this function:



##### 6.115.1.2 void [crc32\\_close](#) (unsigned long \* value)

##### 6.115.1.3 void [crc32\\_feed\\_bytes](#) (unsigned long \* value, const void \* buf, unsigned len)

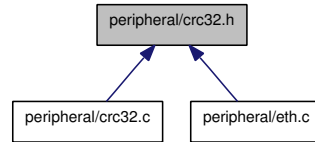
##### 6.115.1.4 void [crc32\\_init](#) (unsigned long \* value)

#### 6.115.2 Variable Documentation

##### 6.115.2.1 unsigned long [crc32\\_table](#)[256] [static]

## 6.116 peripheral/crc32.h File Reference

This graph shows which files directly or indirectly include this file:



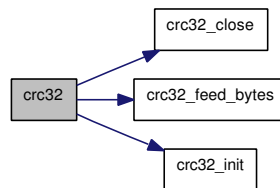
### Functions

- unsigned long [crc32](#) (const void \*buf, unsigned len)
- void [crc32\\_init](#) (unsigned long \*value)
- void [crc32\\_feed\\_bytes](#) (unsigned long \*value, const void \*buf, unsigned len)
- void [crc32\\_close](#) (unsigned long \*value)

#### 6.116.1 Function Documentation

##### 6.116.1.1 unsigned long [crc32](#) (const void \* *buf*, unsigned *len*)

Here is the call graph for this function:



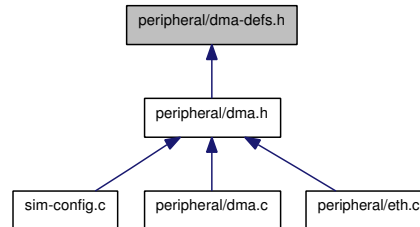
##### 6.116.1.2 void [crc32\\_close](#) (unsigned long \* *value*)

##### 6.116.1.3 void [crc32\\_feed\\_bytes](#) (unsigned long \* *value*, const void \* *buf*, unsigned *len*)

##### 6.116.1.4 void [crc32\\_init](#) (unsigned long \* *value*)

## 6.117 peripheral/dma-defs.h File Reference

This graph shows which files directly or indirectly include this file:



### Defines

- #define [DMA\\_NUM\\_CHANNELS](#) 31
- #define [DMA\\_ADDR\\_SPACE](#) 0x400
- #define [DMA\\_CSR](#) 0x00
- #define [DMA\\_INT\\_MSK\\_A](#) 0x04
- #define [DMA\\_INT\\_MSK\\_B](#) 0x08
- #define [DMA\\_INT\\_SRC\\_A](#) 0x0C
- #define [DMA\\_INT\\_SRC\\_B](#) 0x10
- #define [DMA\\_CH\\_BASE](#) 0x20
- #define [DMA\\_CH\\_SIZE](#) 0x20
- #define [DMA\\_CH\\_CSR](#) 0x00
- #define [DMA\\_CH\\_SZ](#) 0x04
- #define [DMA\\_CH\\_A0](#) 0x08
- #define [DMA\\_CH\\_AM0](#) 0x0C
- #define [DMA\\_CH\\_A1](#) 0x10
- #define [DMA\\_CH\\_AM1](#) 0x14
- #define [DMA\\_CH\\_DESC](#) 0x18
- #define [DMA\\_CH\\_SWPTR](#) 0x1C
- #define [DMA\\_CSR\\_PAUSE\\_OFFSET](#) 0
- #define [DMA\\_CH\\_CSR\\_CH\\_EN\\_OFFSET](#) 0
- #define [DMA\\_CH\\_CSR\\_DST\\_SEL\\_OFFSET](#) 1
- #define [DMA\\_CH\\_CSR\\_SRC\\_SEL\\_OFFSET](#) 2
- #define [DMA\\_CH\\_CSR\\_INC\\_DST\\_OFFSET](#) 3
- #define [DMA\\_CH\\_CSR\\_INC\\_SRC\\_OFFSET](#) 4
- #define [DMA\\_CH\\_CSR\\_MODE\\_OFFSET](#) 5
- #define [DMA\\_CH\\_CSR\\_ARS\\_OFFSET](#) 6
- #define [DMA\\_CH\\_CSR\\_USE\\_ED\\_OFFSET](#) 7
- #define [DMA\\_CH\\_CSR\\_SZ\\_WB\\_OFFSET](#) 8
- #define [DMA\\_CH\\_CSR\\_STOP\\_OFFSET](#) 9
- #define [DMA\\_CH\\_CSR\\_BUSY\\_OFFSET](#) 10
- #define [DMA\\_CH\\_CSR\\_DONE\\_OFFSET](#) 11
- #define [DMA\\_CH\\_CSR\\_ERR\\_OFFSET](#) 12
- #define [DMA\\_CH\\_CSR\\_PRIORITY\\_OFFSET](#) 13
- #define [DMA\\_CH\\_CSR\\_PRIORITY\\_WIDTH](#) 3
- #define [DMA\\_CH\\_CSR\\_REST\\_EN\\_OFFSET](#) 16
- #define [DMA\\_CH\\_CSR\\_INE\\_ERR\\_OFFSET](#) 17

- #define DMA\_CH\_CSR\_INE\_DONE\_OFFSET 18
- #define DMA\_CH\_CSR\_INE\_CHK\_DONE\_OFFSET 19
- #define DMA\_CH\_CSR\_INT\_ERR\_OFFSET 20
- #define DMA\_CH\_CSR\_INT\_DONE\_OFFSET 21
- #define DMA\_CH\_CSR\_INT\_CHUNK\_DONE\_OFFSET 22
- #define DMA\_CH\_CSR\_RESERVED\_OFFSET 23
- #define DMA\_CH\_CSR\_RESERVED\_WIDTH 9
- #define DMA\_CH\_CSR\_WRITE\_MASK 0x000FE3FF
- #define DMA\_CH\_SZ\_TOT\_SZ\_OFFSET 0
- #define DMA\_CH\_SZ\_TOT\_SZ\_WIDTH 12
- #define DMA\_CH\_SZ\_CHK\_SZ\_OFFSET 16
- #define DMA\_CH\_SZ\_CHK\_SZ\_WIDTH 9
- #define DMA\_CH\_A0\_ADDR\_OFFSET 2
- #define DMA\_CH\_A0\_ADDR\_WIDTH 30
- #define DMA\_CH\_A1\_ADDR\_OFFSET 2
- #define DMA\_CH\_A1\_ADDR\_WIDTH 30
- #define DMA\_CH\_AM0\_MASK\_OFFSET 4
- #define DMA\_CH\_AM0\_MASK\_WIDTH 28
- #define DMA\_CH\_AM1\_MASK\_OFFSET 4
- #define DMA\_CH\_AM1\_MASK\_WIDTH 28
- #define DMA\_CH\_DESC\_ADDR\_OFFSET 2
- #define DMA\_CH\_DESC\_ADDR\_WIDTH 30
- #define DMA\_CH\_SWPTR\_PTR\_OFFSET 2
- #define DMA\_CH\_SWPTR\_PTR\_WIDTH 29
- #define DMA\_CH\_SWPTR\_EN\_OFFSET 31
- #define DMA\_DESC\_CSR 0x00
- #define DMA\_DESC\_ADR0 0x04
- #define DMA\_DESC\_ADR1 0x08
- #define DMA\_DESC\_NEXT 0x0C
- #define DMA\_DESC\_CSR\_EOL\_OFFSET 20
- #define DMA\_DESC\_CSR\_INC\_SRC\_OFFSET 19
- #define DMA\_DESC\_CSR\_INC\_DST\_OFFSET 18
- #define DMA\_DESC\_CSR\_SRC\_SEL\_OFFSET 17
- #define DMA\_DESC\_CSR\_DST\_SEL\_OFFSET 16
- #define DMA\_DESC\_CSR\_TOT\_SZ\_OFFSET 0
- #define DMA\_DESC\_CSR\_TOT\_SZ\_WIDTH 12

## 6.117.1 Define Documentation

6.117.1.1 `#define DMA_ADDR_SPACE 0x400`

6.117.1.2 `#define DMA_CH_A0 0x08`

6.117.1.3 `#define DMA_CH_A0_ADDR_OFFSET 2`

6.117.1.4 `#define DMA_CH_A0_ADDR_WIDTH 30`

6.117.1.5 `#define DMA_CH_A1 0x10`

6.117.1.6 `#define DMA_CH_A1_ADDR_OFFSET 2`

6.117.1.7 `#define DMA_CH_A1_ADDR_WIDTH 30`

6.117.1.8 `#define DMA_CH_AM0 0x0C`

6.117.1.9 `#define DMA_CH_AM0_MASK_OFFSET 4`

6.117.1.10 `#define DMA_CH_AM0_MASK_WIDTH 28`

6.117.1.11 `#define DMA_CH_AM1 0x14`

6.117.1.12 `#define DMA_CH_AM1_MASK_OFFSET 4`

6.117.1.13 `#define DMA_CH_AM1_MASK_WIDTH 28`

6.117.1.14 `#define DMA_CH_BASE 0x20`

Offset of first [channel](#) registers



- 6.117.1.15 `#define DMA_CH_CSR 0x00`
- 6.117.1.16 `#define DMA_CH_CSR_ARS_OFFSET 6`
- 6.117.1.17 `#define DMA_CH_CSR_BUSY_OFFSET 10`
- 6.117.1.18 `#define DMA_CH_CSR_CH_EN_OFFSET 0`
- 6.117.1.19 `#define DMA_CH_CSR_DONE_OFFSET 11`
- 6.117.1.20 `#define DMA_CH_CSR_DST_SEL_OFFSET 1`
- 6.117.1.21 `#define DMA_CH_CSR_ERR_OFFSET 12`
- 6.117.1.22 `#define DMA_CH_CSR_INC_DST_OFFSET 3`
- 6.117.1.23 `#define DMA_CH_CSR_INC_SRC_OFFSET 4`
- 6.117.1.24 `#define DMA_CH_CSR_INE_CHK_DONE_OFFSET 19`
- 6.117.1.25 `#define DMA_CH_CSR_INE_DONE_OFFSET 18`
- 6.117.1.26 `#define DMA_CH_CSR_INE_ERR_OFFSET 17`
- 6.117.1.27 `#define DMA_CH_CSR_INT_CHUNK_DONE_OFFSET 22`
- 6.117.1.28 `#define DMA_CH_CSR_INT_DONE_OFFSET 21`
- 6.117.1.29 `#define DMA_CH_CSR_INT_ERR_OFFSET 20`
- 6.117.1.30 `#define DMA_CH_CSR_MODE_OFFSET 5`
- 6.117.1.31 `#define DMA_CH_CSR_PRIORITY_OFFSET 13`
- 6.117.1.32 `#define DMA_CH_CSR_PRIORITY_WIDTH 3`
- 6.117.1.33 `#define DMA_CH_CSR_RESERVED_OFFSET 23`
- 6.117.1.34 `#define DMA_CH_CSR_RESERVED_WIDTH 9`
- 6.117.1.35 `#define DMA_CH_CSR_REST_EN_OFFSET 16`
- 6.117.1.36 `#define DMA_CH_CSR_SRC_SEL_OFFSET 2`
- 6.117.1.37 `#define DMA_CH_CSR_STOP_OFFSET 9`
- 6.117.1.38 `#define DMA_CH_CSR_SZ_WB_OFFSET 8`
- 6.117.1.39 `#define DMA_CH_CSR_USE_ED_OFFSET 7`
- 6.117.1.40 `#define DMA_CH_CSR_WRITE_MASK 0x000FE3FF`
- 6.117.1.41 `#define DMA_CH_DESC 0x18`
- 6.117.1.42 `#define DMA_CH_DESC_ADDR_OFFSET 2`
- 6.117.1.43 `#define DMA_CH_DESC_ADDR_WIDTH 30`
- 6.117.1.44 `#define DMA_CH_SIZE 0x20`

---

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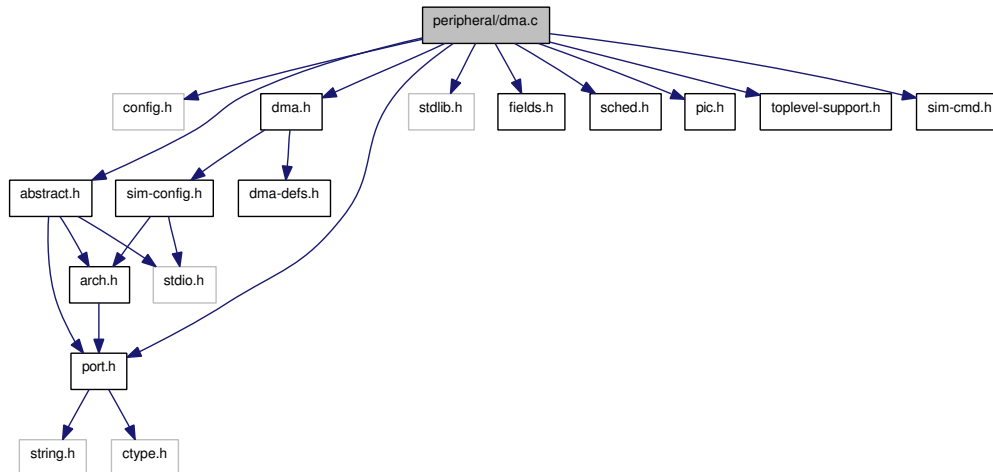


- 6.117.1.45 `#define DMA_CH_SWPTR 0x1C`
- 6.117.1.46 `#define DMA_CH_SWPTR_EN_OFFSET 31`
- 6.117.1.47 `#define DMA_CH_SWPTR_PTR_OFFSET 2`
- 6.117.1.48 `#define DMA_CH_SWPTR_PTR_WIDTH 29`
- 6.117.1.49 `#define DMA_CH_SZ 0x04`
- 6.117.1.50 `#define DMA_CH_SZ_CHK_SZ_OFFSET 16`
- 6.117.1.51 `#define DMA_CH_SZ_CHK_SZ_WIDTH 9`
- 6.117.1.52 `#define DMA_CH_SZ_TOT_SZ_OFFSET 0`
- 6.117.1.53 `#define DMA_CH_SZ_TOT_SZ_WIDTH 12`
- 6.117.1.54 `#define DMA_CSR 0x00`
- 6.117.1.55 `#define DMA_CSR_PAUSE_OFFSET 0`
- 6.117.1.56 `#define DMA_DESC_ADR0 0x04`
- 6.117.1.57 `#define DMA_DESC_ADR1 0x08`
- 6.117.1.58 `#define DMA_DESC_CSR 0x00`
- 6.117.1.59 `#define DMA_DESC_CSR_DST_SEL_OFFSET 16`
- 6.117.1.60 `#define DMA_DESC_CSR_EOL_OFFSET 20`
- 6.117.1.61 `#define DMA_DESC_CSR_INC_DST_OFFSET 18`
- 6.117.1.62 `#define DMA_DESC_CSR_INC_SRC_OFFSET 19`
- 6.117.1.63 `#define DMA_DESC_CSR_SRC_SEL_OFFSET 17`
- 6.117.1.64 `#define DMA_DESC_CSR_TOT_SZ_OFFSET 0`
- 6.117.1.65 `#define DMA_DESC_CSR_TOT_SZ_WIDTH 12`
- 6.117.1.66 `#define DMA_DESC_NEXT 0x0C`
- 6.117.1.67 `#define DMA_INT_MSK_A 0x04`
- 6.117.1.68 `#define DMA_INT_MSK_B 0x08`
- 6.117.1.69 `#define DMA_INT_SRC_A 0x0C`
- 6.117.1.70 `#define DMA_INT_SRC_B 0x10`
- 6.117.1.71 `#define DMA_NUM_CHANNELS 31`

## 6.118 peripheral/dma.c File Reference

```
#include "config.h"
#include "port.h"
#include <stdlib.h>
#include "dma.h"
#include "fields.h"
#include "abstract.h"
#include "sched.h"
#include "pic.h"
#include "toplevel-support.h"
#include "sim-cmd.h"
```

Include dependency graph for dma.c:



### Defines

- #define [CHANNEL\\_ND\\_I](#)(ch) (TEST\_FLAG(ch → regs.csr,DMA\_CH\_CSR,MODE) && TEST\_FLAG(ch → regs.csr,DMA\_CH\_CSR,USE\_ED) && ch → dma\_nd\_i)

### Functions

- static unsigned long [dma\\_read\\_ch\\_csr](#) (struct [dma\\_channel](#) \*channel)
- static void [dma\\_write\\_ch\\_csr](#) (struct [dma\\_channel](#) \*channel, unsigned long value)
- static void [dma\\_load\\_descriptor](#) (struct [dma\\_channel](#) \*channel)
- static void [dma\\_init\\_transfer](#) (struct [dma\\_channel](#) \*channel)
- static void [dma\\_channel\\_terminate\\_transfer](#) (struct [dma\\_channel](#) \*channel, int generate\_interrupt)
- static void [dma\\_channel\\_clock](#) (void \*dat)
- static void [masked\\_increase](#) (oraddr\_t \*value, unsigned long mask)
- static void [dma\\_reset](#) (void \*dat)

- static void [dma\\_status](#) (void \*dat)
- static uint32\_t [dma\\_read32](#) (oraddr\_t addr, void \*dat)
- static void [dma\\_write32](#) (oraddr\_t addr, uint32\_t value, void \*dat)
- void [set\\_dma\\_req\\_i](#) (struct dma\_channel \*channel)
- void [clear\\_dma\\_req\\_i](#) (struct dma\_channel \*channel)
- void [set\\_dma\\_nd\\_i](#) (struct dma\_channel \*channel)
- void [clear\\_dma\\_nd\\_i](#) (struct dma\_channel \*channel)
- unsigned [check\\_dma\\_ack\\_o](#) (struct dma\_channel \*channel)
- struct dma\_channel \* [find\\_dma\\_controller\\_ch](#) (unsigned controller, unsigned channel)
- static void [dma\\_baseaddr](#) (union param\_val val, void \*dat)
- static void [dma\\_irq](#) (union param\_val val, void \*dat)
- static void [dma\\_vapi\\_id](#) (union param\_val val, void \*dat)
- static void [dma\\_enabled](#) (union param\_val val, void \*dat)
- static void \* [dma\\_sec\\_start](#) ()
- static void [dma\\_sec\\_end](#) (void \*dat)
- void [reg\\_dma\\_sec](#) (void)

## Variables

- static struct [dma\\_controller](#) \* [dmas](#) = NULL

## 6.118.1 Define Documentation

6.118.1.1 `#define CHANNEL_ND_I(ch)` (`TEST_FLAG(ch → regs.csr,DMA_CH_CSR,MODE)`  
&& `TEST_FLAG(ch → regs.csr,DMA_CH_CSR,USE_ED)` && `ch → dma_nd_i`)

## 6.118.2 Function Documentation

6.118.2.1 `unsigned check_dma_ack_o` (`struct dma_channel * channel`)

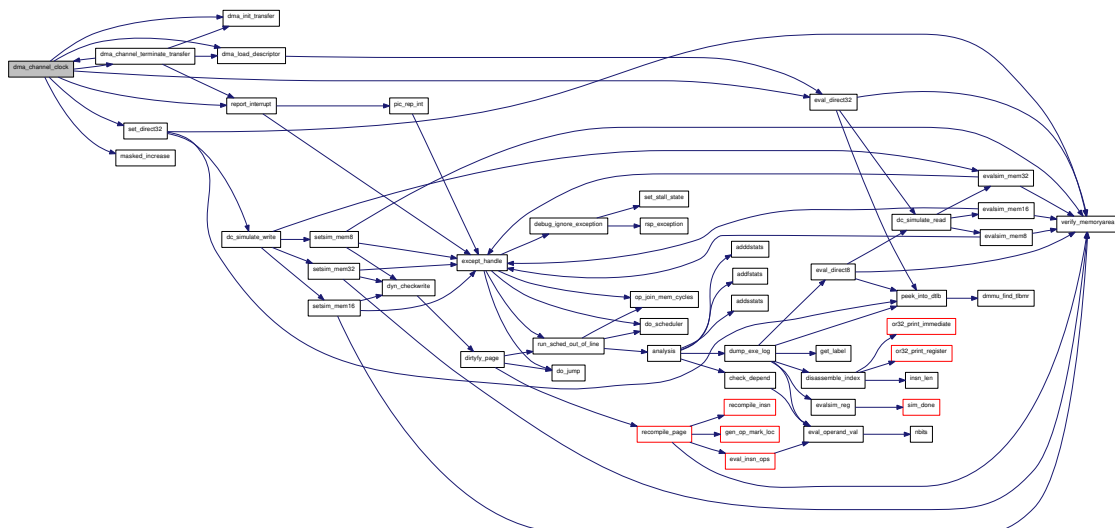
6.118.2.2 `void clear_dma_nd_i` (`struct dma_channel * channel`)

6.118.2.3 `void clear_dma_req_i` (`struct dma_channel * channel`)

6.118.2.4 `static void dma_baseaddr` (`union param_val val, void * dat`) [`static`]

6.118.2.5 `static void dma_channel_clock` (`void * dat`) [`static`]

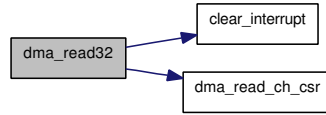
Here is the call graph for this function:





**6.118.2.11** `static uint32_t dma_read32 (oraddr_t addr, void * dat)` [static]

Here is the call graph for this function:

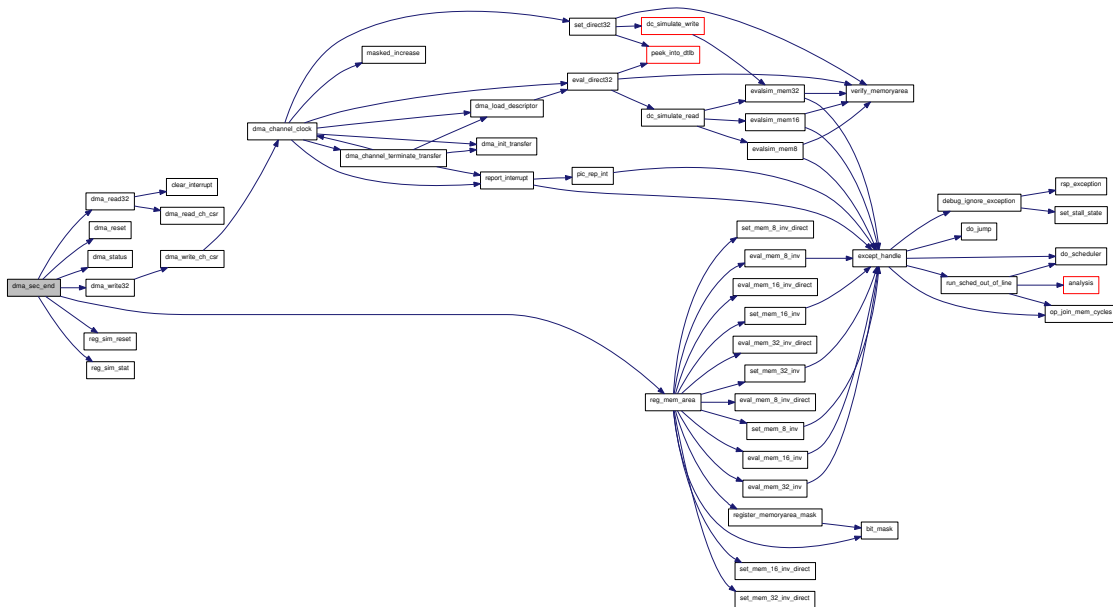


**6.118.2.12** `static unsigned long dma_read_ch_csr (struct dma_channel * channel)` [static]

**6.118.2.13** `static void dma_reset (void * dat)` [static]

**6.118.2.14** `static void dma_sec_end (void * dat)` [static]

Here is the call graph for this function:



**6.118.2.15** `static void* dma_sec_start ()` [static]

Initialize a new DMA configuration  
 ALL parameters are set explicitly to default values.

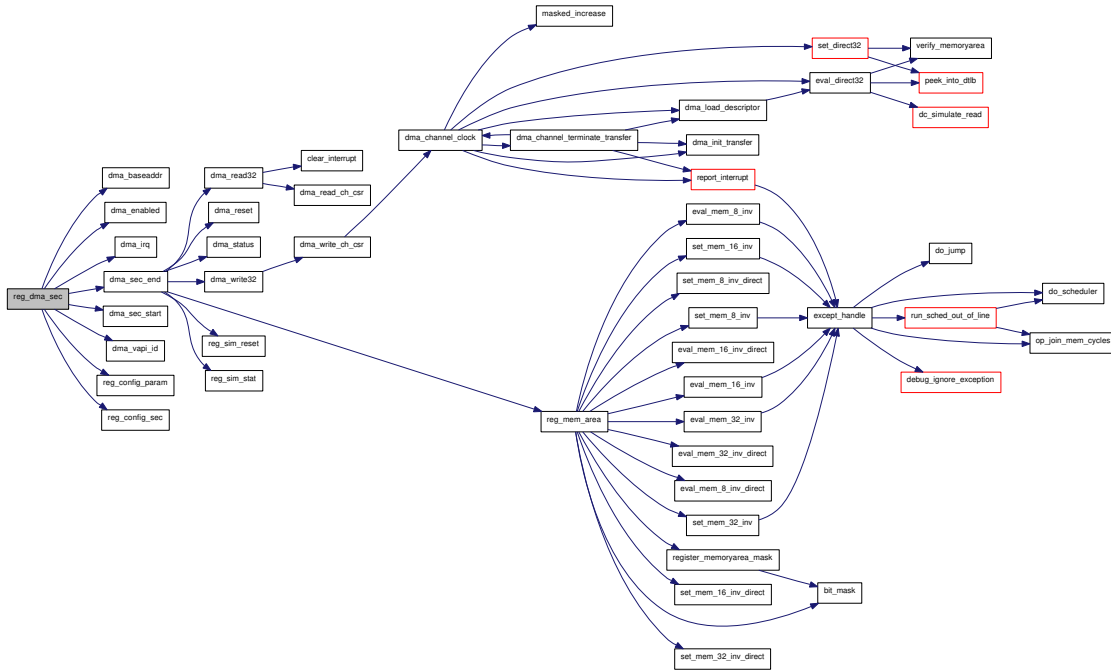


**6.118.2.20** `struct dma_channel* find_dma_controller_ch (unsigned controller, unsigned channel)`  
[read]

**6.118.2.21** `static void masked_increase (oraddr_t * value, unsigned long mask)` [static]

**6.118.2.22** `void reg_dma_sec (void)`

Here is the call graph for this function:



**6.118.2.23** `void set_dma_nd_i (struct dma_channel * channel)`

**6.118.2.24** `void set_dma_req_i (struct dma_channel * channel)`

### 6.118.3 Variable Documentation

**6.118.3.1** `struct dma_controller* dmas = NULL` [static]

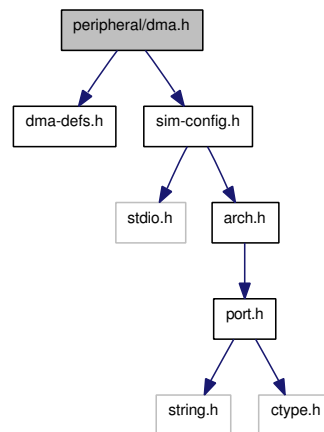


## 6.119 peripheral/dma.h File Reference

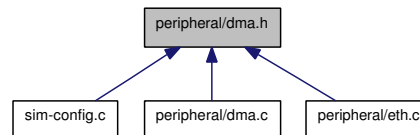
```
#include "dma-defs.h"
```

```
#include "sim-config.h"
```

Include dependency graph for dma.h:



This graph shows which files directly or indirectly include this file:



### Data Structures

- struct [dma\\_channel](#)
- struct [dma\\_controller](#)

### Functions

- void [set\\_dma\\_req\\_i](#) (struct [dma\\_channel](#) \*channel)
- void [clear\\_dma\\_req\\_i](#) (struct [dma\\_channel](#) \*channel)
- void [set\\_dma\\_nd\\_i](#) (struct [dma\\_channel](#) \*channel)
- void [clear\\_dma\\_nd\\_i](#) (struct [dma\\_channel](#) \*channel)
- unsigned [check\\_dma\\_ack\\_o](#) (struct [dma\\_channel](#) \*channel)
- struct [dma\\_channel](#) \* [find\\_dma\\_controller\\_ch](#) (unsigned controller, unsigned channel)
- void [reg\\_dma\\_sec](#) ()

## 6.119.1 Function Documentation

6.119.1.1 unsigned check\_dma\_ack\_o (struct dma\_channel \* channel)

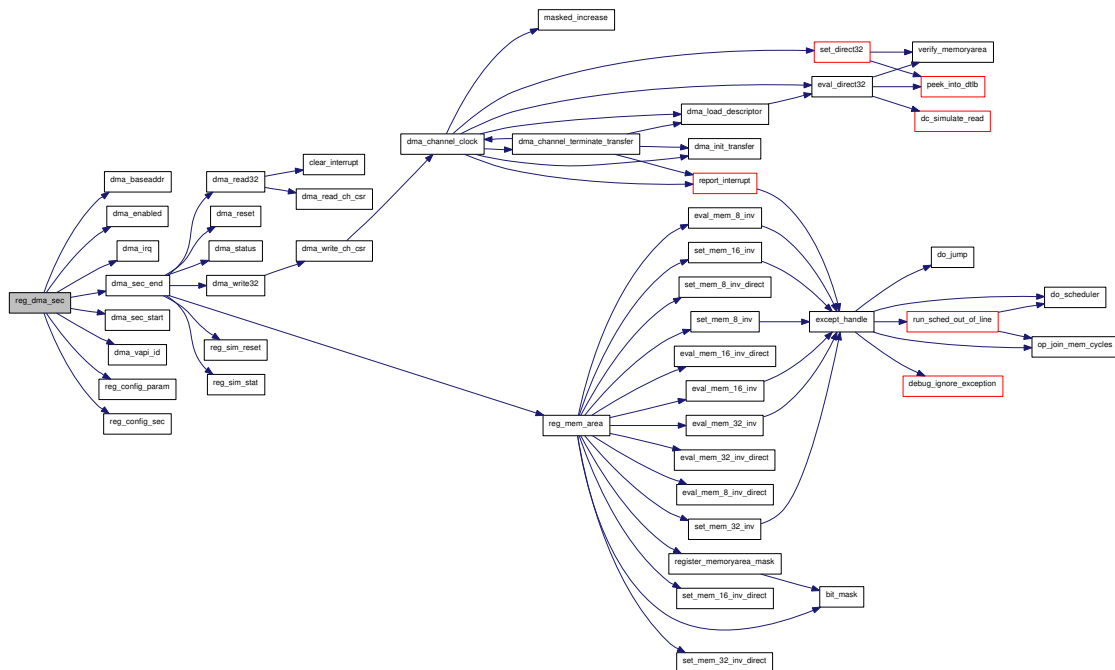
6.119.1.2 void clear\_dma\_nd\_i (struct dma\_channel \* channel)

6.119.1.3 void clear\_dma\_req\_i (struct dma\_channel \* channel)

6.119.1.4 struct dma\_channel\* find\_dma\_controller\_ch (unsigned controller, unsigned channel)  
[read]

6.119.1.5 void reg\_dma\_sec ()

Here is the call graph for this function:



6.119.1.6 void set\_dma\_nd\_i (struct dma\_channel \* channel)

6.119.1.7 void set\_dma\_req\_i (struct dma\_channel \* channel)

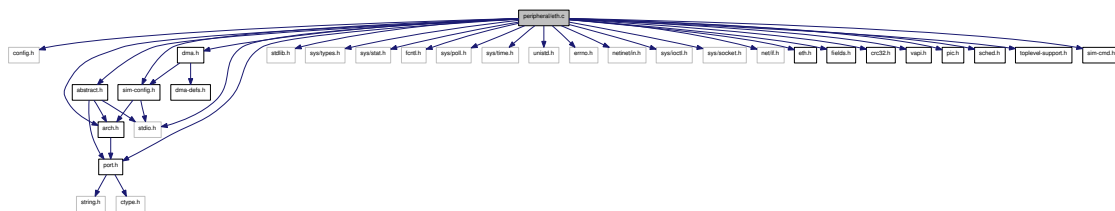
## 6.120 peripheral/eth.c File Reference

```

#include "config.h"
#include "port.h"
#include <stdlib.h>
#include <stdio.h>
#include <sys/types.h>
#include <sys/stat.h>
#include <fcntl.h>
#include <sys/poll.h>
#include <sys/time.h>
#include <unistd.h>
#include <errno.h>
#include <netinet/in.h>
#include <sys/ioctl.h>
#include <sys/socket.h>
#include <net/if.h>
#include "arch.h"
#include "abstract.h"
#include "eth.h"
#include "dma.h"
#include "sim-config.h"
#include "fields.h"
#include "crc32.h"
#include "vapi.h"
#include "pic.h"
#include "sched.h"
#include "toplevel-support.h"
#include "sim-cmd.h"

```

Include dependency graph for eth.c:



## Data Structures

- struct [ether\\_addr](#)
- struct [ether\\_header](#)
- struct [eth\\_device](#)

## Defines

- #define [ETH\\_ADDR\\_SPACE](#) 0x1000
- #define [ETH\\_MODER](#) (4 \* 0x00)
- #define [ETH\\_INT\\_SOURCE](#) (4 \* 0x01)
- #define [ETH\\_INT\\_MASK](#) (4 \* 0x02)
- #define [ETH\\_IPGT](#) (4 \* 0x03)
- #define [ETH\\_IPGR1](#) (4 \* 0x04)
- #define [ETH\\_IPGR2](#) (4 \* 0x05)
- #define [ETH\\_PACKETLEN](#) (4 \* 0x06)
- #define [ETH\\_COLLCONF](#) (4 \* 0x07)
- #define [ETH\\_TX\\_BD\\_NUM](#) (4 \* 0x08)
- #define [ETH\\_CTRLMODER](#) (4 \* 0x09)
- #define [ETH\\_MIIMODER](#) (4 \* 0x0A)
- #define [ETH\\_MIICOMMAND](#) (4 \* 0x0B)
- #define [ETH\\_MIIADDRESS](#) (4 \* 0x0C)
- #define [ETH\\_MIITX\\_DATA](#) (4 \* 0x0D)
- #define [ETH\\_MIIRX\\_DATA](#) (4 \* 0x0E)
- #define [ETH\\_MIISTATUS](#) (4 \* 0x0F)
- #define [ETH\\_MAC\\_ADDR0](#) (4 \* 0x10)
- #define [ETH\\_MAC\\_ADDR1](#) (4 \* 0x11)
- #define [ETH\\_HASH0](#) (4 \* 0x12)
- #define [ETH\\_HASH1](#) (4 \* 0x13)
- #define [ETH\\_BD\\_BASE](#) 0x400
- #define [ETH\\_BD\\_COUNT](#) 0x100
- #define [ETH\\_BD\\_SPACE](#) (4 \* ETH\_BD\_COUNT)
- #define [ETH\\_DMA\\_RX\\_TX](#) 0x800
- #define [ETH\\_MODER\\_DMAEN\\_OFFSET](#) 17
- #define [ETH\\_MODER\\_RECSCALL\\_OFFSET](#) 16
- #define [ETH\\_MODER\\_PAD\\_OFFSET](#) 15
- #define [ETH\\_MODER\\_HUGEN\\_OFFSET](#) 14
- #define [ETH\\_MODER\\_CRCEN\\_OFFSET](#) 13
- #define [ETH\\_MODER\\_DLYCRCEN\\_OFFSET](#) 12
- #define [ETH\\_MODER\\_RST\\_OFFSET](#) 11
- #define [ETH\\_MODER\\_FULLD\\_OFFSET](#) 10
- #define [ETH\\_MODER\\_EXDFREN\\_OFFSET](#) 9
- #define [ETH\\_MODER\\_NOBCKOF\\_OFFSET](#) 8
- #define [ETH\\_MODER\\_LOOPBCK\\_OFFSET](#) 7
- #define [ETH\\_MODER\\_IFG\\_OFFSET](#) 6
- #define [ETH\\_MODER\\_PRO\\_OFFSET](#) 5
- #define [ETH\\_MODER\\_IAM\\_OFFSET](#) 4
- #define [ETH\\_MODER\\_BRO\\_OFFSET](#) 3
- #define [ETH\\_MODER\\_NOPRE\\_OFFSET](#) 2
- #define [ETH\\_MODER\\_TXEN\\_OFFSET](#) 1

- #define ETH\_MODER\_RXEN\_OFFSET 0
- #define ETH\_INT\_SOURCE\_RXC\_OFFSET 6
- #define ETH\_INT\_SOURCE\_TXC\_OFFSET 5
- #define ETH\_INT\_SOURCE\_BUSY\_OFFSET 4
- #define ETH\_INT\_SOURCE\_RXE\_OFFSET 3
- #define ETH\_INT\_SOURCE\_RXB\_OFFSET 2
- #define ETH\_INT\_SOURCE\_TXE\_OFFSET 1
- #define ETH\_INT\_SOURCE\_TXB\_OFFSET 0
- #define ETH\_INT\_MASK\_RXC\_M\_OFFSET 6
- #define ETH\_INT\_MASK\_TXC\_M\_OFFSET 5
- #define ETH\_INT\_MASK\_BUSY\_M\_OFFSET 4
- #define ETH\_INT\_MASK\_RXE\_M\_OFFSET 3
- #define ETH\_INT\_MASK\_RXB\_M\_OFFSET 2
- #define ETH\_INT\_MASK\_TXE\_M\_OFFSET 1
- #define ETH\_INT\_MASK\_TXB\_M\_OFFSET 0
- #define ETH\_PACKETLEN\_MINFL\_OFFSET 16
- #define ETH\_PACKETLEN\_MINFL\_WIDTH 16
- #define ETH\_PACKETLEN\_MAXFL\_OFFSET 0
- #define ETH\_PACKETLEN\_MAXFL\_WIDTH 16
- #define ETH\_COLLCONF\_MAXRET\_OFFSET 16
- #define ETH\_COLLCONF\_MAXRET\_WIDTH 4
- #define ETH\_COLLCONF\_COLLVALID\_OFFSET 0
- #define ETH\_COLLCONF\_COLLVALID\_WIDTH 6
- #define ETH\_CMODER\_TXFLOW\_OFFSET 2
- #define ETH\_CMODER\_RXFLOW\_OFFSET 1
- #define ETH\_CMODER\_PASSALL\_OFFSET 0
- #define ETH\_MIIMODER\_MRST\_OFFSET 9
- #define ETH\_MIIMODER\_NOPRE\_OFFSET 8
- #define ETH\_MIIMODER\_CLKDIV\_OFFSET 0
- #define ETH\_MIIMODER\_CLKDIV\_WIDTH 8
- #define ETH\_MIICOMM\_WCDATA\_OFFSET 2
- #define ETH\_MIICOMM\_RSTAT\_OFFSET 1
- #define ETH\_MIICOMM\_SCANS\_OFFSET 0
- #define ETH\_MIIADDR\_RGAD\_OFFSET 8
- #define ETH\_MIIADDR\_RGAD\_WIDTH 5
- #define ETH\_MIIADDR\_FIAD\_OFFSET 0
- #define ETH\_MIIADDR\_FIAD\_WIDTH 5
- #define ETH\_MIISTAT\_NVALID\_OFFSET 1
- #define ETH\_MIISTAT\_BUSY\_OFFSET 1
- #define ETH\_MIISTAT\_FAIL\_OFFSET 0
- #define ETH\_TX\_BD\_LENGTH\_OFFSET 16
- #define ETH\_TX\_BD\_LENGTH\_WIDTH 16
- #define ETH\_TX\_BD\_READY\_OFFSET 15
- #define ETH\_TX\_BD\_IRQ\_OFFSET 14
- #define ETH\_TX\_BD\_WRAP\_OFFSET 13
- #define ETH\_TX\_BD\_PAD\_OFFSET 12
- #define ETH\_TX\_BD\_CRC\_OFFSET 11
- #define ETH\_TX\_BD\_LAST\_OFFSET 10
- #define ETH\_TX\_BD\_PAUSE\_OFFSET 9
- #define ETH\_TX\_BD\_UNDERRUN\_OFFSET 8

- #define ETH\_TX\_BD\_RETRY\_OFFSET 4
- #define ETH\_TX\_BD\_RETRY\_WIDTH 4
- #define ETH\_TX\_BD\_RETRANSMIT\_OFFSET 3
- #define ETH\_TX\_BD\_COLLISION\_OFFSET 2
- #define ETH\_TX\_BD\_DEFER\_OFFSET 1
- #define ETH\_TX\_BD\_NO\_CARRIER\_OFFSET 0
- #define ETH\_RX\_BD\_LENGTH\_OFFSET 16
- #define ETH\_RX\_BD\_LENGTH\_WIDTH 16
- #define ETH\_RX\_BD\_READY\_OFFSET 15
- #define ETH\_RX\_BD\_IRQ\_OFFSET 14
- #define ETH\_RX\_BD\_WRAP\_OFFSET 13
- #define ETH\_RX\_BD\_MISS\_OFFSET 7
- #define ETH\_RX\_BD\_UVERRUN\_OFFSET 6
- #define ETH\_RX\_BD\_INVALID\_OFFSET 5
- #define ETH\_RX\_BD\_DRIBBLE\_OFFSET 4
- #define ETH\_RX\_BD\_TOOBIG\_OFFSET 3
- #define ETH\_RX\_BD\_TOOSHORT\_OFFSET 2
- #define ETH\_RX\_BD\_CRC\_OFFSET 1
- #define ETH\_RX\_BD\_COLLISION\_OFFSET 0
- #define ETH\_ALEN 6
- #define ETHERTYPE\_PUP 0x0200
- #define ETHERTYPE\_IP 0x0800
- #define ETHERTYPE\_ARP 0x0806
- #define ETHERTYPE\_REVARP 0x8035
- #define ETHER\_ADDR\_LEN ETH\_ALEN
- #define ETHER\_TYPE\_LEN 2
- #define ETHER\_CRC\_LEN 4
- #define ETHER\_HDR\_LEN ETH\_HLEN
- #define ETHER\_MIN\_LEN (ETH\_ZLEN + ETHER\_CRC\_LEN)
- #define ETHER\_MAX\_LEN (ETH\_FRAME\_LEN + ETHER\_CRC\_LEN)
- #define ETHER\_IS\_VALID\_LEN(foo) ((foo) >= ETHER\_MIN\_LEN && (foo) <= ETHER\_MAX\_LEN)
- #define ETHERTYPE\_TRAIL 0x1000
- #define ETHERTYPE\_NTRAILER 16
- #define ETHERMTU ETH\_DATA\_LEN
- #define ETHERMIN (ETHER\_MIN\_LEN-ETHER\_HDR\_LEN-ETHER\_CRC\_LEN)
- #define ETH\_TXSTATE\_IDLE 0
- #define ETH\_TXSTATE\_WAIT4BD 10
- #define ETH\_TXSTATE\_READFIFO 20
- #define ETH\_TXSTATE\_TRANSMIT 30
- #define ETH\_RXSTATE\_IDLE 0
- #define ETH\_RXSTATE\_WAIT4BD 10
- #define ETH\_RXSTATE\_RECV 20
- #define ETH\_RXSTATE\_WRITEFIFO 30
- #define ETH\_RTX\_FILE 0
- #define ETH\_RTX\_SOCKET 1
- #define ETH\_RTX\_VAPI 2
- #define ETH\_MAXPL 0x10000

## Enumerations

- enum { [ETH\\_VAPI\\_DATA](#) = 0, [ETH\\_VAPI\\_CTRL](#), [ETH\\_NUM\\_VAPI\\_IDS](#) }

## Functions

- static void [eth\\_vapi\\_read](#) (unsigned long id, unsigned long data, void \*dat)
- static void [eth\\_write32](#) ([oraddr\\_t](#) addr, [uint32\\_t](#) value, void \*dat)
- static [uint32\\_t](#) [eth\\_read32](#) ([oraddr\\_t](#) addr, void \*dat)
- static void [eth\\_controller\\_tx\\_clock](#) (void \*)
- static void [eth\\_controller\\_rx\\_clock](#) (void \*)
- static [ssize\\_t](#) [eth\\_read\\_rx\\_file](#) (struct [eth\\_device](#) \*, void \*, [size\\_t](#))
- static void [eth\\_skip\\_rx\\_file](#) (struct [eth\\_device](#) \*, [off\\_t](#))
- static void [eth\\_rx\\_next\\_packet](#) (struct [eth\\_device](#) \*)
- static void [eth\\_write\\_tx\\_bd\\_num](#) (struct [eth\\_device](#) \*, unsigned long value)
- static void [eth\\_reset](#) (void \*dat)
- static void [eth\\_status](#) (void \*dat)
- static void [eth\\_enabled](#) (union [param\\_val](#) val, void \*dat)
- static void [eth\\_baseaddr](#) (union [param\\_val](#) val, void \*dat)
- static void [eth\\_dma](#) (union [param\\_val](#) val, void \*dat)
- static void [eth\\_irq](#) (union [param\\_val](#) val, void \*dat)
- static void [eth\\_rtx\\_type](#) (union [param\\_val](#) val, void \*dat)
- static void [eth\\_rx\\_channel](#) (union [param\\_val](#) val, void \*dat)
- static void [eth\\_tx\\_channel](#) (union [param\\_val](#) val, void \*dat)
- static void [eth\\_rxfile](#) (union [param\\_val](#) val, void \*dat)
- static void [eth\\_txfile](#) (union [param\\_val](#) val, void \*dat)
- static void [eth\\_sockif](#) (union [param\\_val](#) val, void \*dat)
- static void [eth\\_vapi\\_id](#) (union [param\\_val](#) val, void \*dat)
- static void \* [eth\\_sec\\_start](#) (void)
- static void [eth\\_sec\\_end](#) (void \*dat)
- void [reg\\_ethernet\\_sec](#) ()





## 6.120.1 Define Documentation

- 6.120.1.1 `#define ETH_ADDR_SPACE 0x1000`
- 6.120.1.2 `#define ETH_ALEN 6`
- 6.120.1.3 `#define ETH_BD_BASE 0x400`
- 6.120.1.4 `#define ETH_BD_COUNT 0x100`
- 6.120.1.5 `#define ETH_BD_SPACE (4 * ETH_BD_COUNT)`
- 6.120.1.6 `#define ETH_CMODER_PASSALL_OFFSET 0`
- 6.120.1.7 `#define ETH_CMODER_RXFLOW_OFFSET 1`
- 6.120.1.8 `#define ETH_CMODER_TXFLOW_OFFSET 2`
- 6.120.1.9 `#define ETH_COLLCONF (4 * 0x07)`
- 6.120.1.10 `#define ETH_COLLCONF_COLLVALID_OFFSET 0`
- 6.120.1.11 `#define ETH_COLLCONF_COLLVALID_WIDTH 6`
- 6.120.1.12 `#define ETH_COLLCONF_MAXRET_OFFSET 16`
- 6.120.1.13 `#define ETH_COLLCONF_MAXRET_WIDTH 4`
- 6.120.1.14 `#define ETH_CTRLMODER (4 * 0x09)`
- 6.120.1.15 `#define ETH_DMA_RX_TX 0x800`
- 6.120.1.16 `#define ETH_HASH0 (4 * 0x12)`
- 6.120.1.17 `#define ETH_HASH1 (4 * 0x13)`
- 6.120.1.18 `#define ETH_INT_MASK (4 * 0x02)`
- 6.120.1.19 `#define ETH_INT_MASK_BUSY_M_OFFSET 4`
- 6.120.1.20 `#define ETH_INT_MASK_RXB_M_OFFSET 2`
- 6.120.1.21 `#define ETH_INT_MASK_RXC_M_OFFSET 6`
- 6.120.1.22 `#define ETH_INT_MASK_RXE_M_OFFSET 3`
- 6.120.1.23 `#define ETH_INT_MASK_TXB_M_OFFSET 0`
- 6.120.1.24 `#define ETH_INT_MASK_TXC_M_OFFSET 5`
- 6.120.1.25 `#define ETH_INT_MASK_TXE_M_OFFSET 1`
- 6.120.1.26 `#define ETH_INT_SOURCE (4 * 0x01)`
- 6.120.1.27 `#define ETH_INT_SOURCE_BUSY_OFFSET 4`
- 6.120.1.28 `#define ETH_INT_SOURCE_RXB_OFFSET 2`
- 6.120.1.29 `#define ETH_INT_SOURCE_RXC_OFFSET 6`
- 6.120.1.30 `#define ETH_INT_SOURCE_RXE_OFFSET 3`

**ETH\_VAPI\_CTRL**  
**ETH\_NUM\_VAPI\_IDS**

### 6.120.3 Function Documentation

#### 6.120.3.1 static void eth\_baseaddr (union param\_val val, void \* dat) [static]

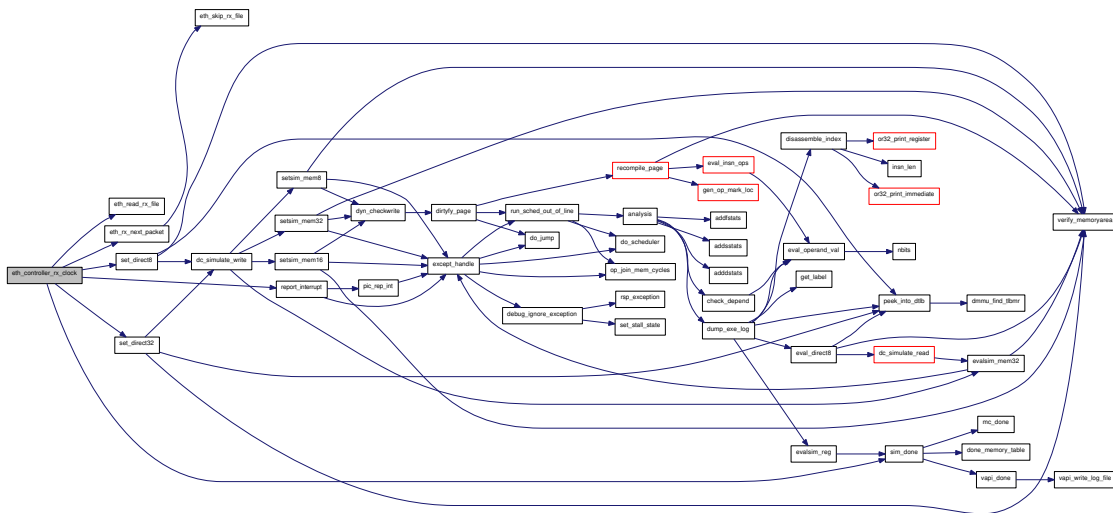
Set the Ethernet interface base address

**Parameters:**

- ← *val* The value to use
- ← *dat* The config data structure

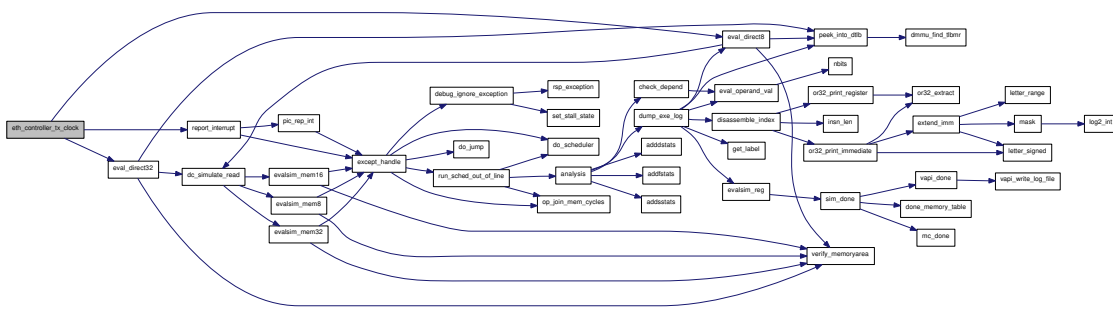
#### 6.120.3.2 static void eth\_controller\_rx\_clock (void \* dat) [static]

Here is the call graph for this function:



#### 6.120.3.3 static void eth\_controller\_tx\_clock (void \* dat) [static]

Here is the call graph for this function:



**6.120.3.4** `static void eth_dma (union param_val val, void * dat)` [static]

Set the Ethernet DMA port

This is not currently supported, so a warning message is printed.

**Parameters:**

- ← *val* The value to use
- ← *dat* The `config` data structure

**6.120.3.5** `static void eth_enabled (union param_val val, void * dat)` [static]

Enable or disable the Ethernet interface

**Parameters:**

- ← *val* The value to use
- ← *dat* The `config` data structure

**6.120.3.6** `static void eth_irq (union param_val val, void * dat)` [static]

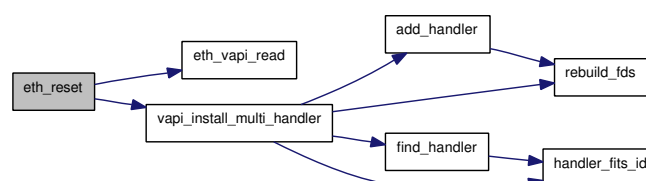
Set the Ethernet IRQ

**Parameters:**

- ← *val* The value to use
- ← *dat* The `config` data structure

**6.120.3.7** `static uint32_t eth_read32 (oraddr_t addr, void * dat)` [static]**6.120.3.8** `static ssize_t eth_read_rx_file (struct eth_device * eth, void * buf, size_t count)` [static]**6.120.3.9** `static void eth_reset (void * dat)` [static]

Here is the call graph for this function:



**6.120.3.10** `static void eth_rtx_type (union param_val val, void * dat)` [static]

Set the Ethernet interface type

Currently two types are supported, file and socket. Use of the socket requires a compile time option.

**Parameters:**

← *val* The value to use. 0 for file, 1 for socket.

← *dat* The `config` data structure

**6.120.3.11** `static void eth_rx_channel (union param_val val, void * dat)` [static]

Set the Ethernet DMA Rx `channel`

External DMA is not currently supported, so a warning message is printed.

**Parameters:**

← *val* The value to use

← *dat* The `config` data structure

**6.120.3.12** `static void eth_rx_next_packet (struct eth_device * eth)` [static]

Here is the call graph for this function:

**6.120.3.13** `static void eth_rxfile (union param_val val, void * dat)` [static]

Set the Ethernet DMA Rx file

Free any previously allocated value.

**Parameters:**

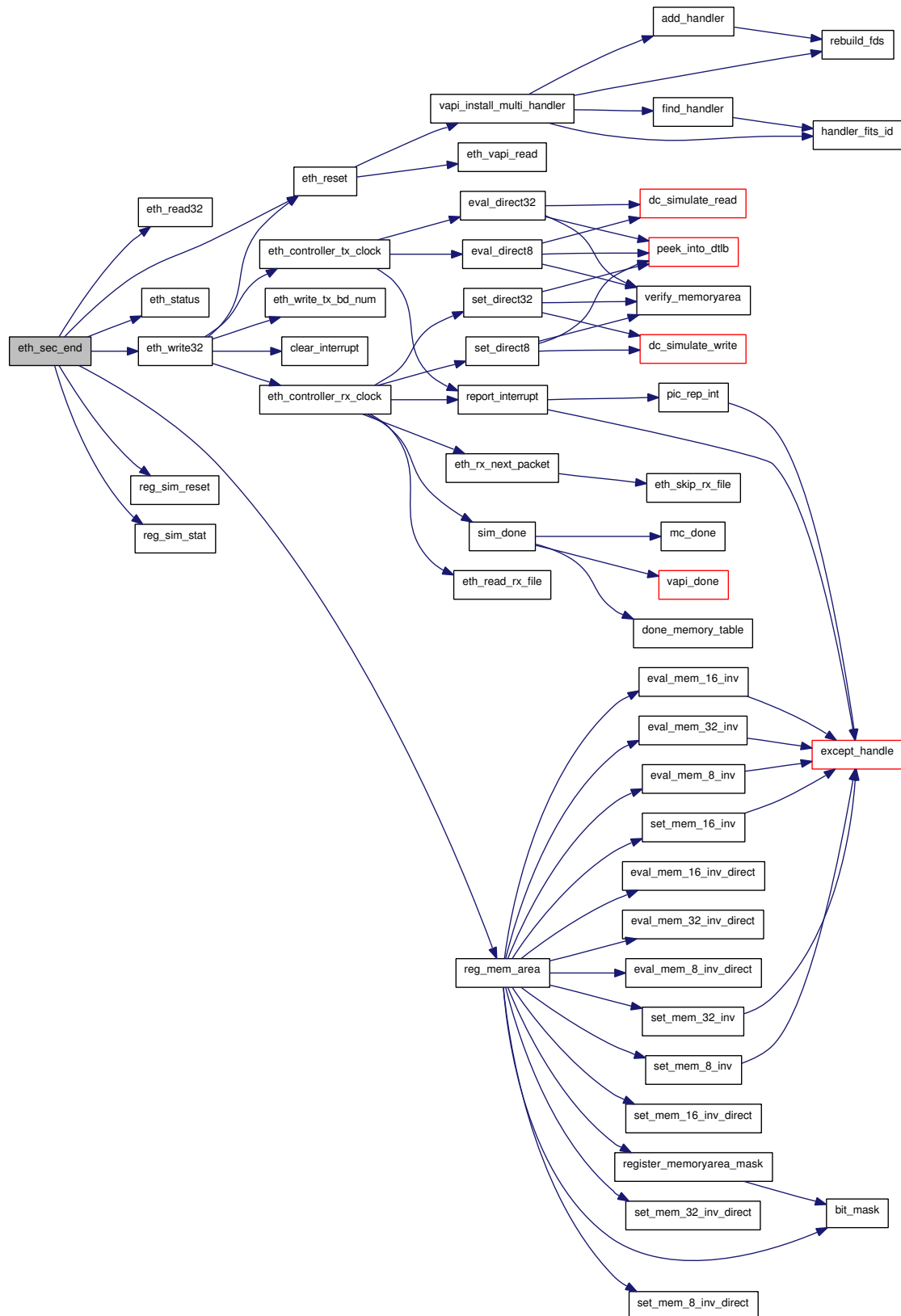
← *val* The value to use

← *dat* The `config` data structure



### 6.120.3.14 static void eth\_sec\_end (void \* dat) [static]

Here is the call graph for this function:



**6.120.3.15** `static void* eth_sec_start (void)` [static]

Initialize a new Ethernet configuration

ALL parameters are set explicitly to default values.

**6.120.3.16** `static void eth_skip_rx_file (struct eth_device *eth, off_t count)` [static]**6.120.3.17** `static void eth_sockif (union param_val val, void *dat)` [static]

Set the Ethernet socket interface

Free any previously allocated value. This is only meaningful if the socket interface is configured.

**Parameters:**

← *val* The value to use

← *dat* The `config` data structure

**6.120.3.18** `static void eth_status (void *dat)` [static]**6.120.3.19** `static void eth_tx_channel (union param_val val, void *dat)` [static]

Set the Ethernet DMA Tx `channel`

External DMA is not currently supported, so a warning message is printed.

**Parameters:**

← *val* The value to use

← *dat* The `config` data structure

**6.120.3.20** `static void eth_txfile (union param_val val, void *dat)` [static]

Set the Ethernet DMA Tx file

Free any previously allocated value.

**Parameters:**

← *val* The value to use

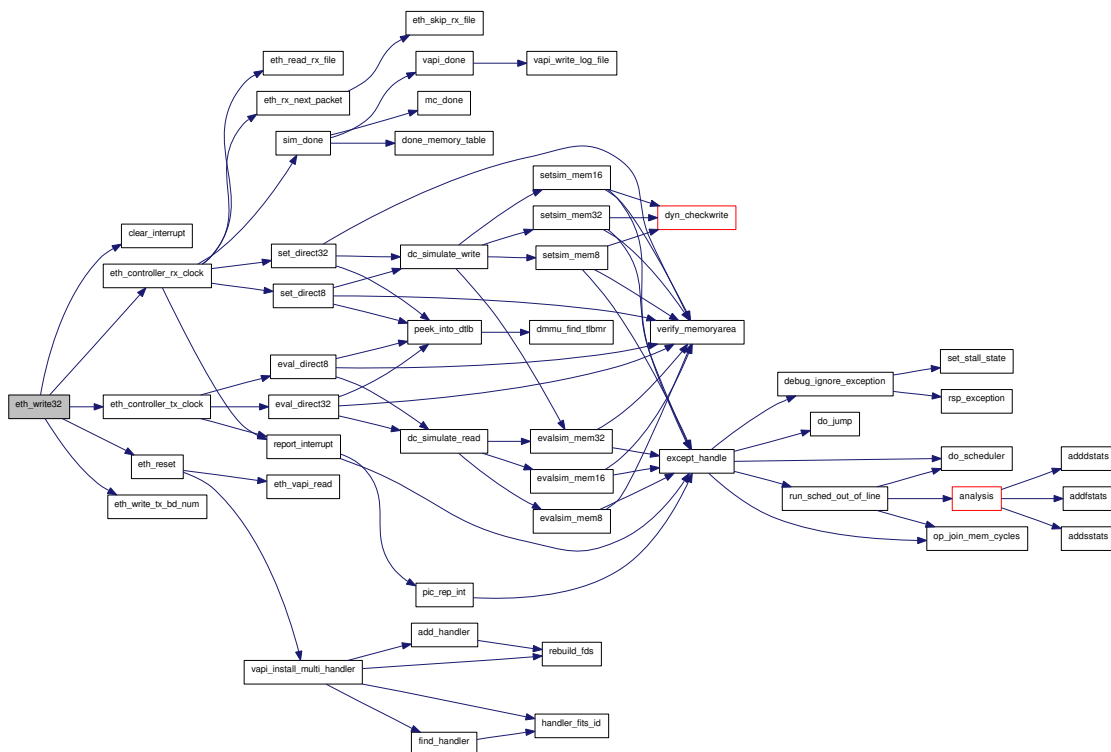
← *dat* The `config` data structure

**6.120.3.21** `static void eth_vapi_id (union param_val val, void * dat)` [static]

**6.120.3.22** `static void eth_vapi_read (unsigned long id, unsigned long data, void * dat)`  
[static]

**6.120.3.23** `static void eth_write32 (oraddr_t addr, uint32_t value, void * dat)` [static]

Here is the call graph for this function:



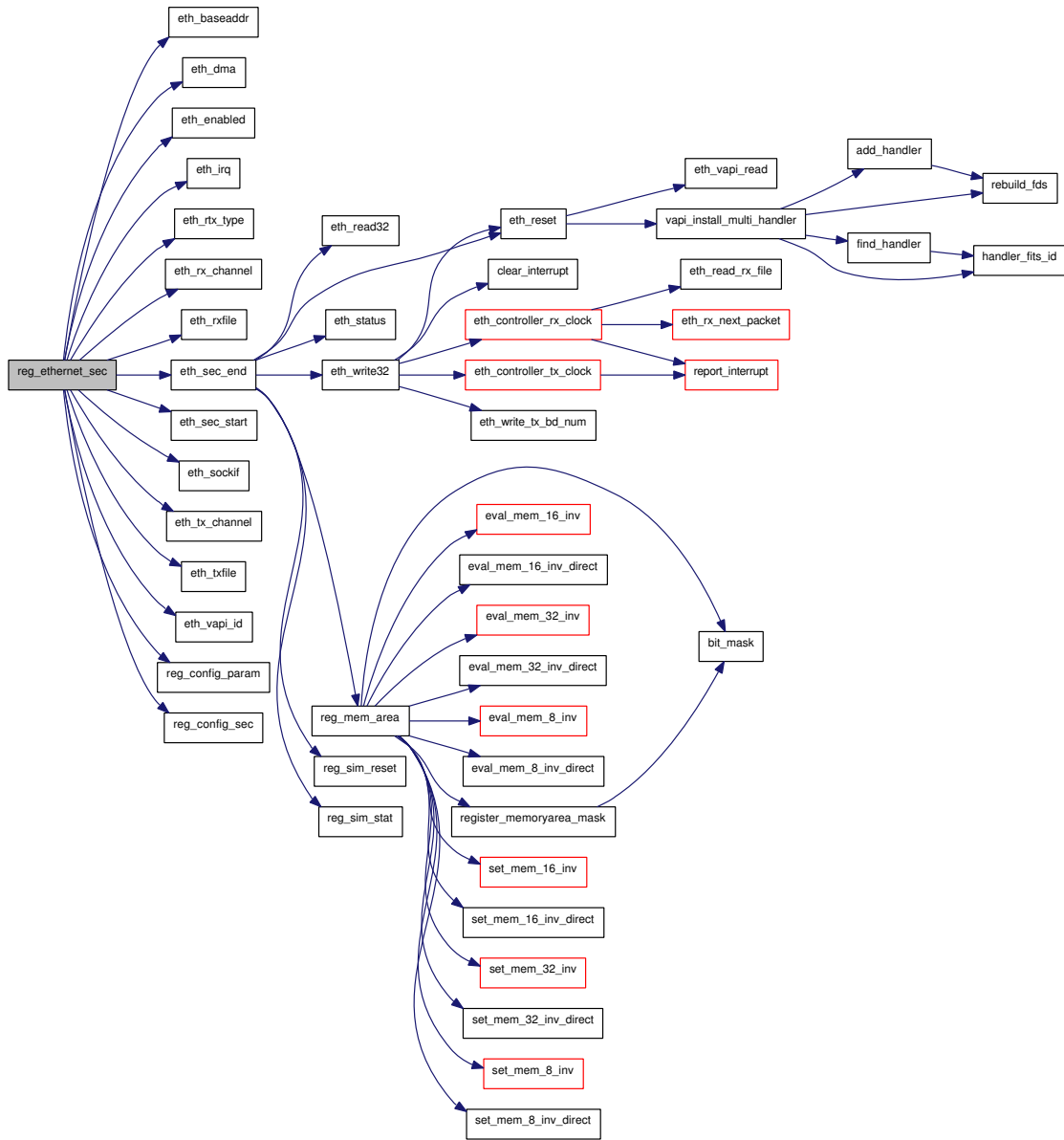
**6.120.3.24** `static void eth_write_tx_bd_num (struct eth_device * eth, unsigned long value)`  
[static]

**6.120.3.25** `void reg_ethernet_sec ()`

Register a new Ethernet configuration

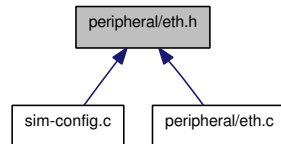


Here is the call graph for this function:



## 6.121 peripheral/eth.h File Reference

This graph shows which files directly or indirectly include this file:



### Functions

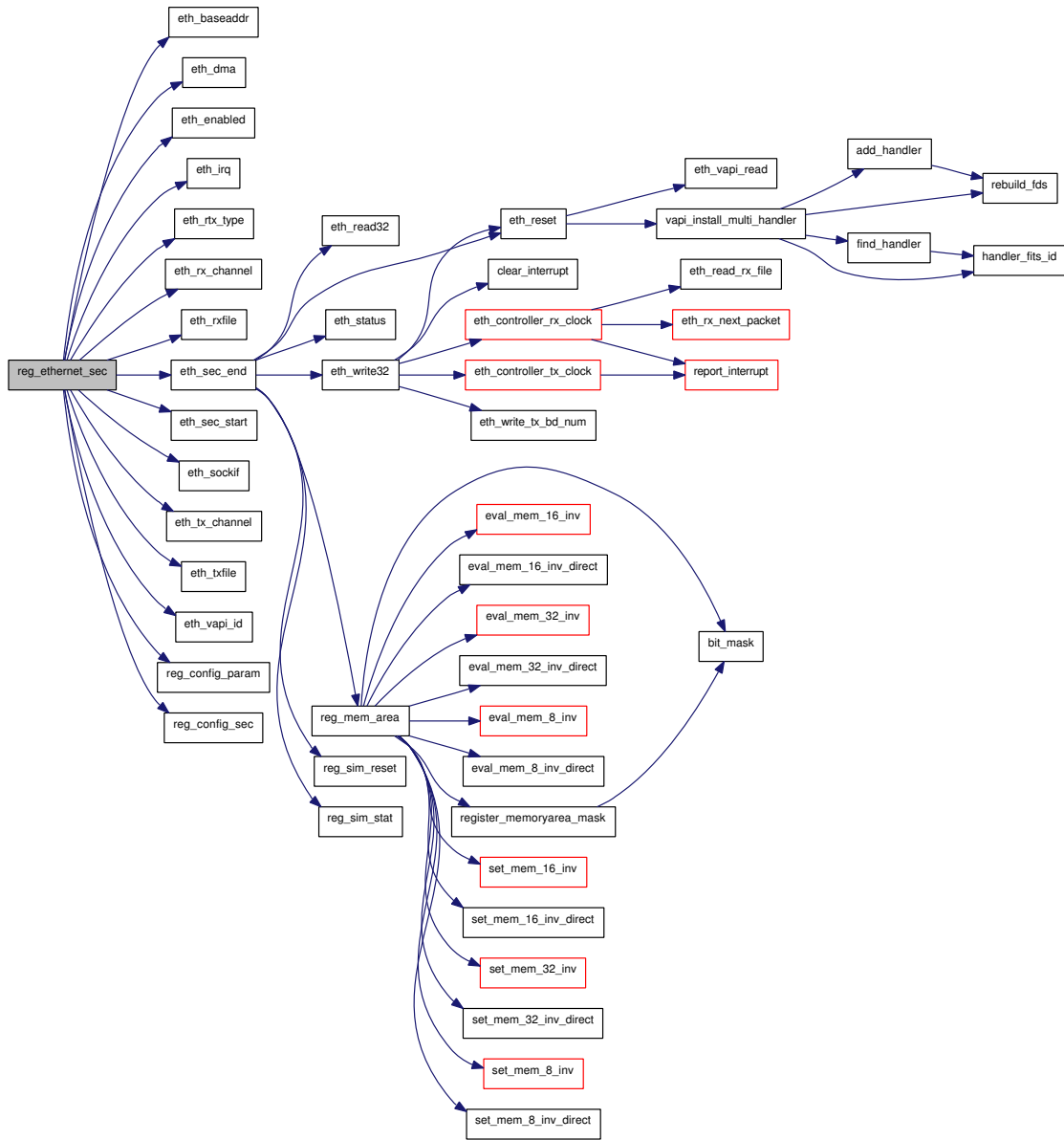
- void [reg\\_ethernet\\_sec](#) ()

#### 6.121.1 Function Documentation

##### 6.121.1.1 void [reg\\_ethernet\\_sec](#) ()

Register a new Ethernet configuration

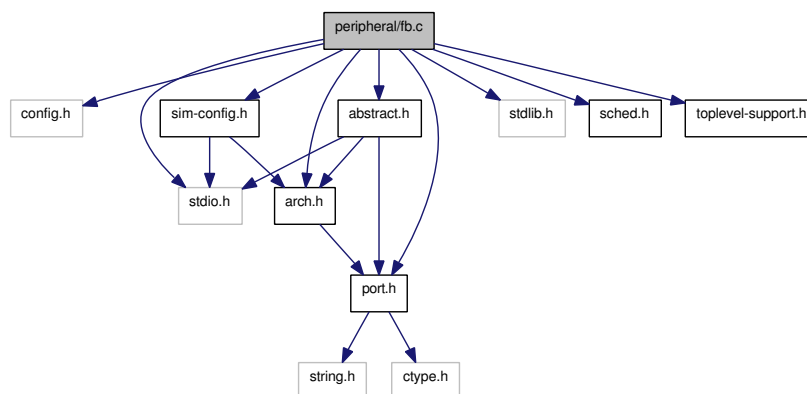
Here is the call graph for this function:



## 6.122 peripheral/fb.c File Reference

```
#include "config.h"
#include "port.h"
#include <stdlib.h>
#include <stdio.h>
#include "arch.h"
#include "sim-config.h"
#include "abstract.h"
#include "sched.h"
#include "toplevel-support.h"
```

Include dependency graph for fb.c:



### Data Structures

- struct [fb\\_state](#)

### Defines

- #define [FB\\_SIZEX](#) 640
- #define [FB\\_SIZEY](#) 480
- #define [CAM\\_SIZEX](#) 352
- #define [CAM\\_SIZEY](#) 288
- #define [REFRESH\\_DIVIDER](#) 20
- #define [FB\\_CTRL](#) 0x0000
- #define [FB\\_BUFADDR](#) 0x0004
- #define [FB\\_CAMBUFADDR](#) 0x0008
- #define [FB\\_CAMPOSADDR](#) 0x000c
- #define [FB\\_PAL](#) 0x0400
- #define [FB\\_WRAP](#) (512\*1024)
- #define [CNV16\(x\)](#) (x)
- #define [CNV32\(x\)](#) (x)

## Functions

- static void `change_buf_addr` (struct `fb_state` \*fb, `oraddr_t` addr)
- static void `fb_write32` (`oraddr_t` addr, `uint32_t` value, void \*dat)
- static `oraddr_t` `fb_read32` (`oraddr_t` addr, void \*dat)
- static int `fb_dump_image8` (struct `fb_state` \*fb, char \*filename)
- static int `fb_dump_image24` (struct `fb_state` \*fb, char \*filename)
- static void `fb_job` (void \*dat)
- static void `fb_reset` (void \*dat)
- static void `fb_enabled` (union `param_val` val, void \*dat)
- static void `fb_baseaddr` (union `param_val` val, void \*dat)
- static void `fb_refresh_rate` (union `param_val` val, void \*dat)
- static void `fb_filename` (union `param_val` val, void \*dat)
- static void \* `fb_sec_start` ()
- static void `fb_sec_end` (void \*dat)
- void `reg_fb_sec` ()

### 6.122.1 Define Documentation

6.122.1.1 `#define CAM_SIZEX 352`

6.122.1.2 `#define CAM_SIZEY 288`

6.122.1.3 `#define CNV16(x) (x)`

6.122.1.4 `#define CNV32(x) (x)`

6.122.1.5 `#define FB_BUFADDR 0x0004`

6.122.1.6 `#define FB_CAMBUFADDR 0x0008`

6.122.1.7 `#define FB_CAMPOSADDR 0x000c`

6.122.1.8 `#define FB_CTRL 0x0000`

6.122.1.9 `#define FB_PAL 0x0400`

6.122.1.10 `#define FB_SIZEX 640`

6.122.1.11 `#define FB_SIZEY 480`

6.122.1.12 `#define FB_WRAP (512*1024)`

6.122.1.13 `#define REFRESH_DIVIDER 20`

Relative amount of time spent in refresh



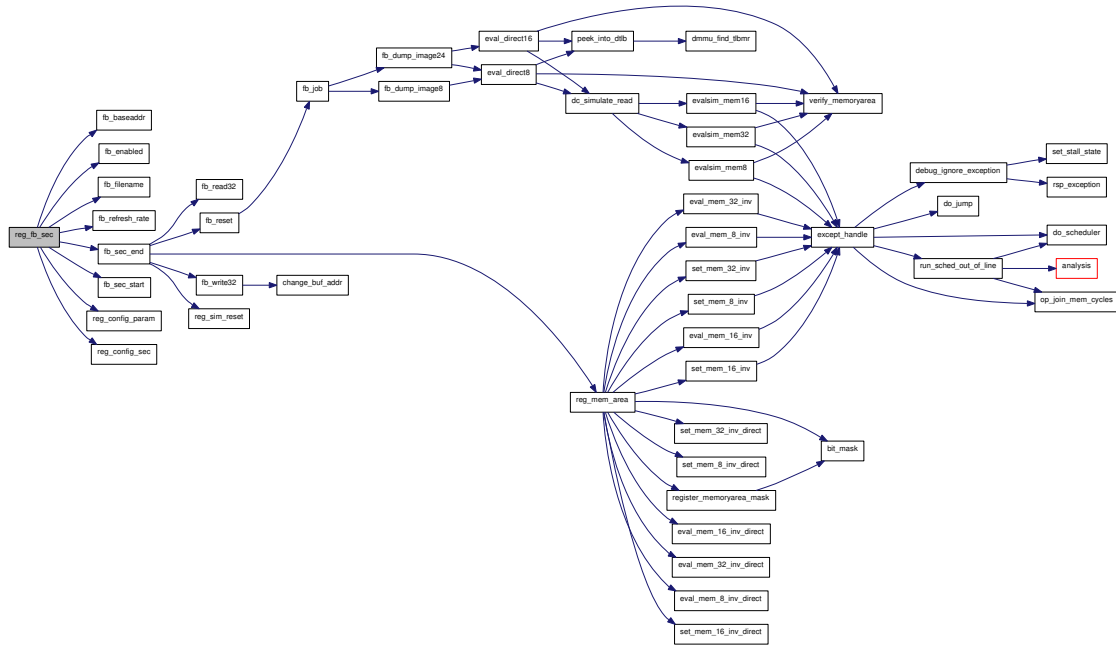






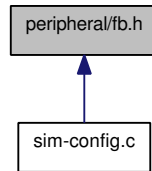
6.122.2.14 void reg\_fb\_sec ()

Here is the call graph for this function:



## 6.123 peripheral/fb.h File Reference

This graph shows which files directly or indirectly include this file:



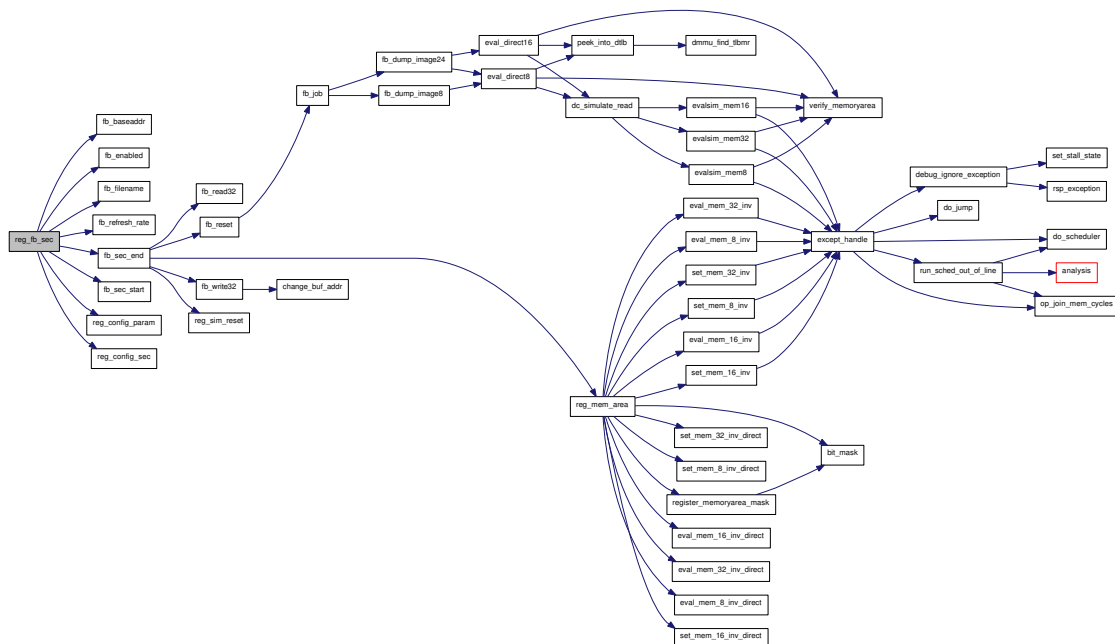
### Functions

- void [reg\\_fb\\_sec \(\)](#)

### 6.123.1 Function Documentation

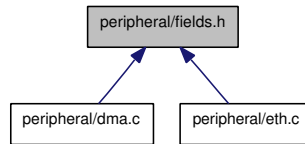
#### 6.123.1.1 void reg\_fb\_sec ()

Here is the call graph for this function:



## 6.124 peripheral/fields.h File Reference

This graph shows which files directly or indirectly include this file:



### Defines

- #define **FLAG\_SHIFT**(reg\_name, flag\_name) (reg\_name##\_##flag\_name##\_OFFSET)
- #define **FLAG\_MASK**(reg\_name, flag\_name) (1LU << reg\_name##\_##flag\_name##\_OFFSET)
- #define **TEST\_FLAG**(reg\_value, reg\_name, flag\_name) (((reg\_value) >> reg\_name##\_##flag\_name##\_OFFSET) & 1LU)
- #define **SET\_FLAG**(reg\_value, reg\_name, flag\_name) { (reg\_value) |= 1LU << reg\_name##\_##flag\_name##\_OFFSET; }
- #define **CLEAR\_FLAG**(reg\_value, reg\_name, flag\_name) { (reg\_value) &= ~(1LU << reg\_name##\_##flag\_name##\_OFFSET); }
- #define **ASSIGN\_FLAG**(reg\_value, reg\_name, flag\_name, flag\_value)
- #define **FIELD\_SHIFT**(reg\_name, field\_name) (reg\_name##\_##field\_name##\_OFFSET)
- #define **FIELD\_MASK**(reg\_name, field\_name) ((~(~0LU << reg\_name##\_##field\_name##\_WIDTH)) << reg\_name##\_##field\_name##\_OFFSET)
- #define **GET\_FIELD**(reg\_value, reg\_name, field\_name) (((reg\_value) >> reg\_name##\_##field\_name##\_OFFSET) & (~(~0LU << reg\_name##\_##field\_name##\_WIDTH)))
- #define **SET\_FIELD**(reg\_value, reg\_name, field\_name, field\_value)

### 6.124.1 Define Documentation

#### 6.124.1.1 #define ASSIGN\_FLAG(reg\_value, reg\_name, flag\_name, flag\_value)

**Value:**

```
{ \
    (reg_value) = flag_value ? ((reg_value) | (1LU << reg_name##_##flag_name##_OFFSET)) : ((reg_value) & ~
```

6.124.1.2 **#define CLEAR\_FLAG(reg\_value, reg\_name, flag\_name) { (reg\_value) &= ~(1LU << reg\_name##\_##flag\_name##\_OFFSET); }**

6.124.1.3 **#define FIELD\_MASK(reg\_name, field\_name) ((~(~0LU << reg\_name##\_##field\_name##\_WIDTH)) << reg\_name##\_##field\_name##\_OFFSET)**

6.124.1.4 **#define FIELD\_SHIFT(reg\_name, field\_name) (reg\_name##\_##field\_name##\_OFFSET)**

6.124.1.5 **#define FLAG\_MASK(reg\_name, flag\_name) (1LU << reg\_name##\_##flag\_name##\_OFFSET)**

6.124.1.6 **#define FLAG\_SHIFT(reg\_name, flag\_name) (reg\_name##\_##flag\_name##\_OFFSET)**

6.124.1.7 **#define GET\_FIELD(reg\_value, reg\_name, field\_name) (((reg\_value) >> reg\_name##\_##field\_name##\_OFFSET) & (~(~0LU << reg\_name##\_##field\_name##\_WIDTH)))**

6.124.1.8 **#define SET\_FIELD(reg\_value, reg\_name, field\_name, field\_value)**

**Value:**

```
{ \
    (reg_value) = ((reg_value) & ~((~(~0LU << reg_name##_##field_name##_WIDTH)) << reg_name##_##field_name##_OFFSET)) | ((field_value) << reg_name##_##field_name##_OFFSET); }
```

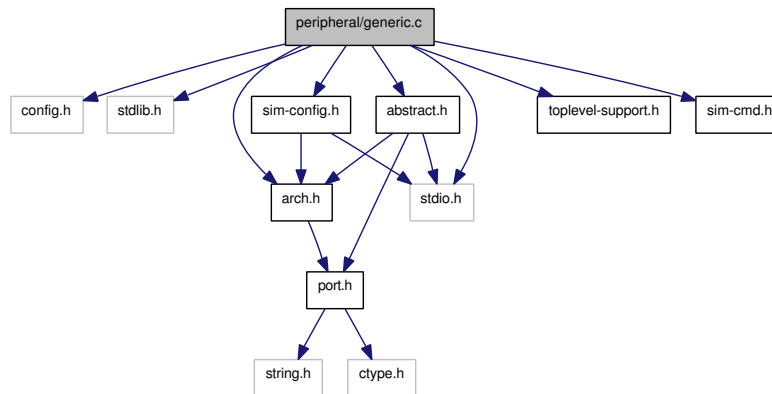
6.124.1.9 **#define SET\_FLAG(reg\_value, reg\_name, flag\_name) { (reg\_value) |= 1LU << reg\_name##\_##flag\_name##\_OFFSET; }**

6.124.1.10 **#define TEST\_FLAG(reg\_value, reg\_name, flag\_name) (((reg\_value) >> reg\_name##\_##flag\_name##\_OFFSET) & 1LU)**

## 6.125 peripheral/generic.c File Reference

```
#include "config.h"
#include <stdlib.h>
#include <stdio.h>
#include "arch.h"
#include "sim-config.h"
#include "abstract.h"
#include "toplevel-support.h"
#include "sim-cmd.h"
```

Include dependency graph for generic.c:



### Data Structures

- struct [dev\\_generic](#)

### Functions

- static unsigned long int [htoml](#) (unsigned long int host\_val)
- static unsigned short int [htoms](#) (unsigned short int host\_val)
- static unsigned long int [mtohl](#) (unsigned long int model\_val)
- static unsigned short int [mtohs](#) (unsigned short int model\_val)
- static unsigned long int [ext\\_read](#) (unsigned long int addr, unsigned long int mask)
- static void [ext\\_write](#) (unsigned long int addr, unsigned long int mask, unsigned long int value)
- static uint8\_t [generic\\_read\\_byte](#) (oraddr\_t addr, void \*dat)
- static void [generic\\_write\\_byte](#) (oraddr\_t addr, uint8\_t value, void \*dat)
- static uint16\_t [generic\\_read\\_hw](#) (oraddr\_t addr, void \*dat)
- static void [generic\\_write\\_hw](#) (oraddr\_t addr, uint16\_t value, void \*dat)
- static uint32\_t [generic\\_read\\_word](#) (oraddr\_t addr, void \*dat)
- static void [generic\\_write\\_word](#) (oraddr\_t addr, uint32\_t value, void \*dat)
- static void [generic\\_reset](#) (void \*dat)
- static void [generic\\_status](#) (void \*dat)

- static void `generic_enabled` (union `param_val` val, void \*dat)
- static void `generic_byte_enabled` (union `param_val` val, void \*dat)
- static void `generic_hw_enabled` (union `param_val` val, void \*dat)
- static void `generic_word_enabled` (union `param_val` val, void \*dat)
- static void `generic_name` (union `param_val` val, void \*dat)
- static void `generic_baseaddr` (union `param_val` val, void \*dat)
- static void `generic_size` (union `param_val` val, void \*dat)
- static void \* `generic_sec_start` ()
- static void `generic_sec_end` (void \*dat)
- void `reg_generic_sec` (void)

## 6.125.1 Function Documentation

**6.125.1.1** static unsigned long int `ext_read` (unsigned long int *addr*, unsigned long int *mask*)  
[static]

**6.125.1.2** static void `ext_write` (unsigned long int *addr*, unsigned long int *mask*, unsigned long int *value*) [static]

**6.125.1.3** static void `generic_baseaddr` (union `param_val` *val*, void \* *dat*) [static]

**6.125.1.4** static void `generic_byte_enabled` (union `param_val` *val*, void \* *dat*) [static]

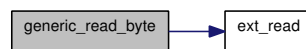
**6.125.1.5** static void `generic_enabled` (union `param_val` *val*, void \* *dat*) [static]

**6.125.1.6** static void `generic_hw_enabled` (union `param_val` *val*, void \* *dat*) [static]

**6.125.1.7** static void `generic_name` (union `param_val` *val*, void \* *dat*) [static]

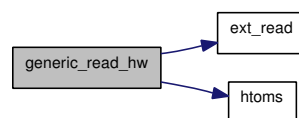
**6.125.1.8** static uint8\_t `generic_read_byte` (oraddr\_t *addr*, void \* *dat*) [static]

Here is the call graph for this function:



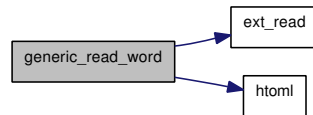
**6.125.1.9** static uint16\_t `generic_read_hw` (oraddr\_t *addr*, void \* *dat*) [static]

Here is the call graph for this function:



### 6.125.1.10 static uint32\_t generic\_read\_word (oraddr\_t addr, void \* dat) [static]

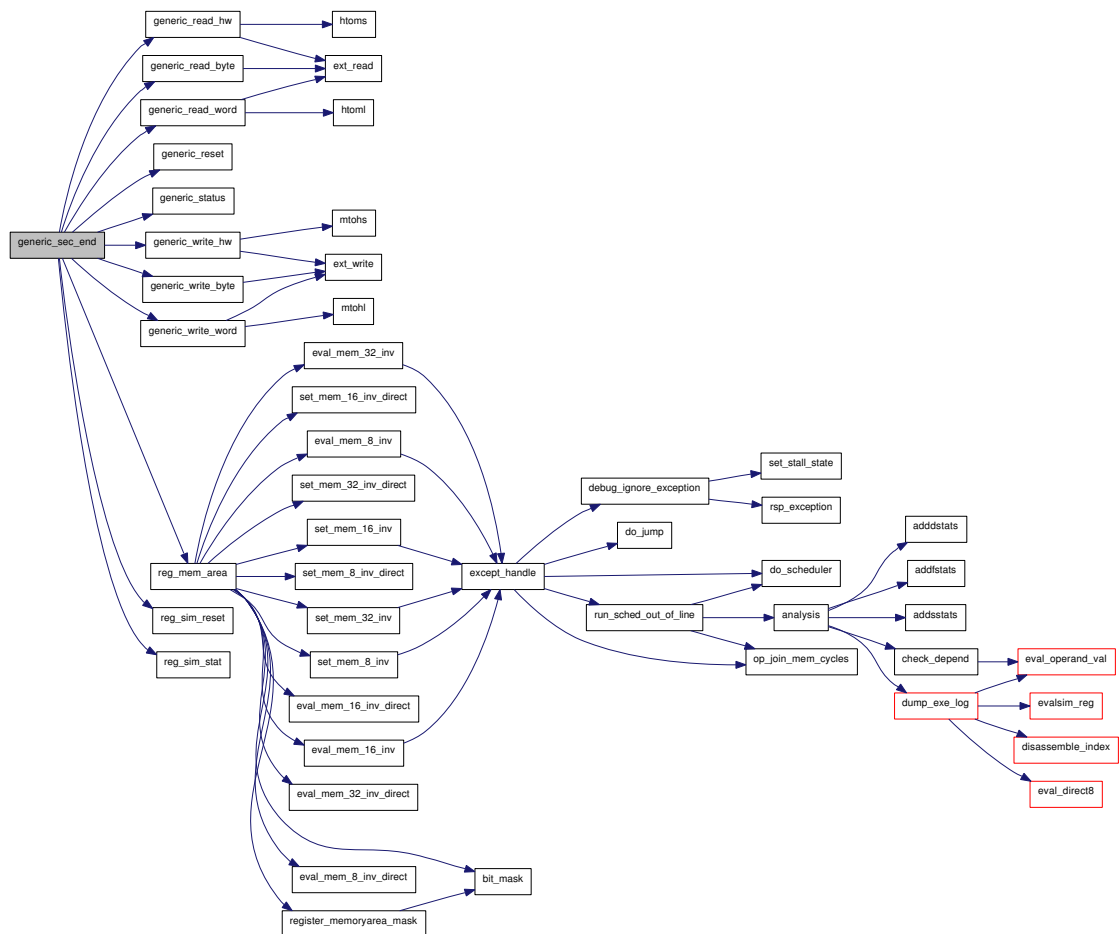
Here is the call graph for this function:



### 6.125.1.11 static void generic\_reset (void \* dat) [static]

### 6.125.1.12 static void generic\_sec\_end (void \* dat) [static]

Here is the call graph for this function:



**6.125.1.13** `static void* generic_sec_start ()` [static]

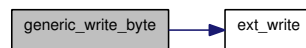
**6.125.1.14** `static void generic_size (union param_val val, void * dat)` [static]

**6.125.1.15** `static void generic_status (void * dat)` [static]

**6.125.1.16** `static void generic_word_enabled (union param_val val, void * dat)` [static]

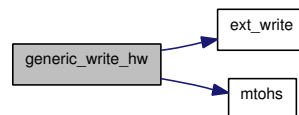
**6.125.1.17** `static void generic_write_byte (oraddr_t addr, uint8_t value, void * dat)` [static]

Here is the call graph for this function:



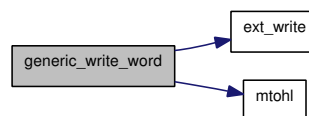
**6.125.1.18** `static void generic_write_hw (oraddr_t addr, uint16_t value, void * dat)` [static]

Here is the call graph for this function:



**6.125.1.19** `static void generic_write_word (oraddr_t addr, uint32_t value, void * dat)` [static]

Here is the call graph for this function:





6.125.1.20 static unsigned long int htoml (unsigned long int *host\_val*) [static]

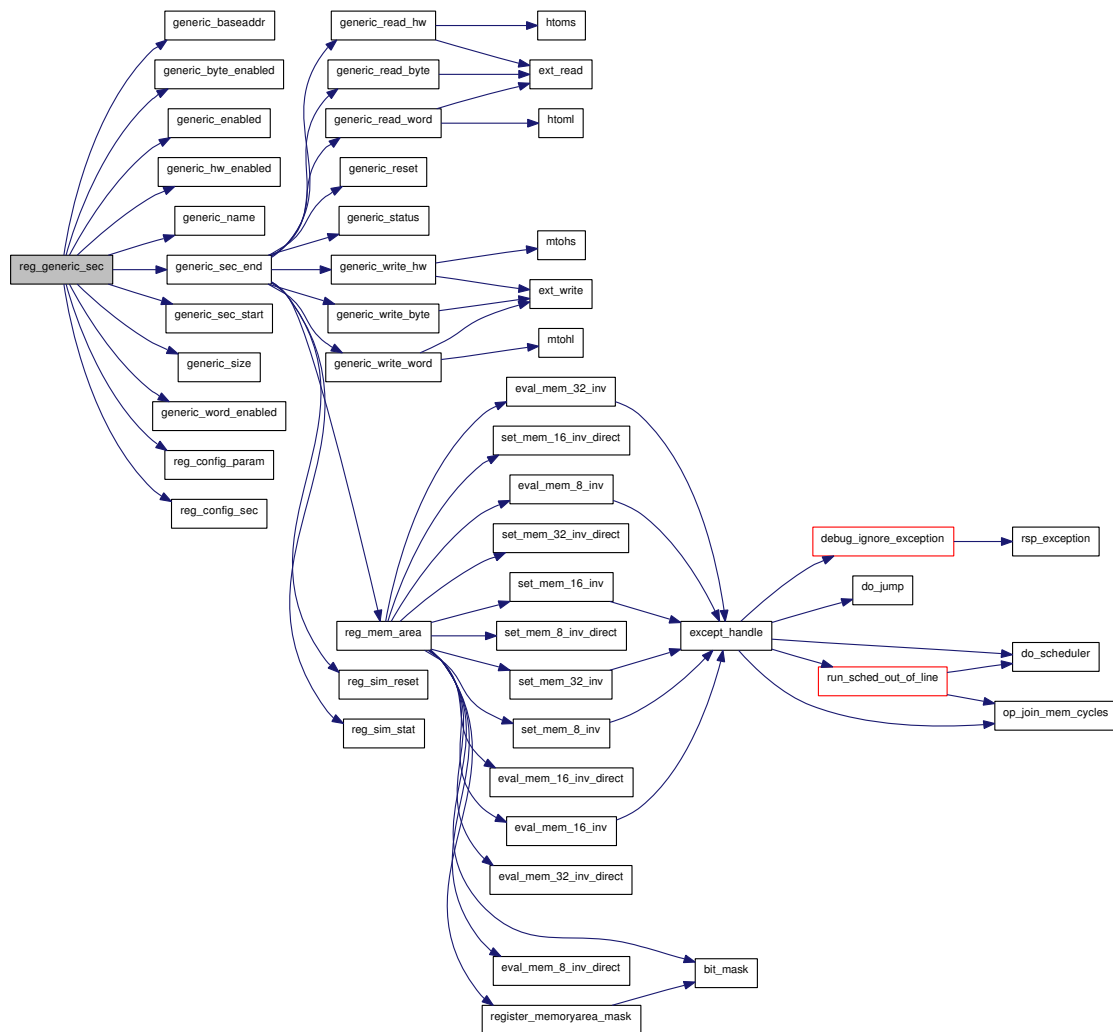
6.125.1.21 static unsigned short int htoms (unsigned short int *host\_val*) [static]

6.125.1.22 static unsigned long int mtohl (unsigned long int *model\_val*) [static]

6.125.1.23 static unsigned short int mtohs (unsigned short int *model\_val*) [static]

6.125.1.24 void reg\_generic\_sec (void)

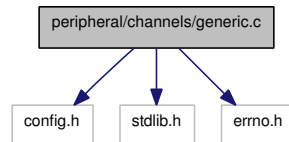
Here is the call graph for this function:



## 6.126 peripheral/channels/generic.c File Reference

```
#include "config.h"  
#include <stdlib.h>  
#include <errno.h>
```

Include dependency graph for generic.c:



### Functions

- int [generic\\_open](#) (void \*data)
- void [generic\\_close](#) (void \*data)
- void [generic\\_free](#) (void \*data)

#### 6.126.1 Function Documentation

6.126.1.1 void [generic\\_close](#) (void \* *data*)

6.126.1.2 void [generic\\_free](#) (void \* *data*)

6.126.1.3 int [generic\\_open](#) (void \* *data*)

## 6.127 peripheral/generic.h File Reference

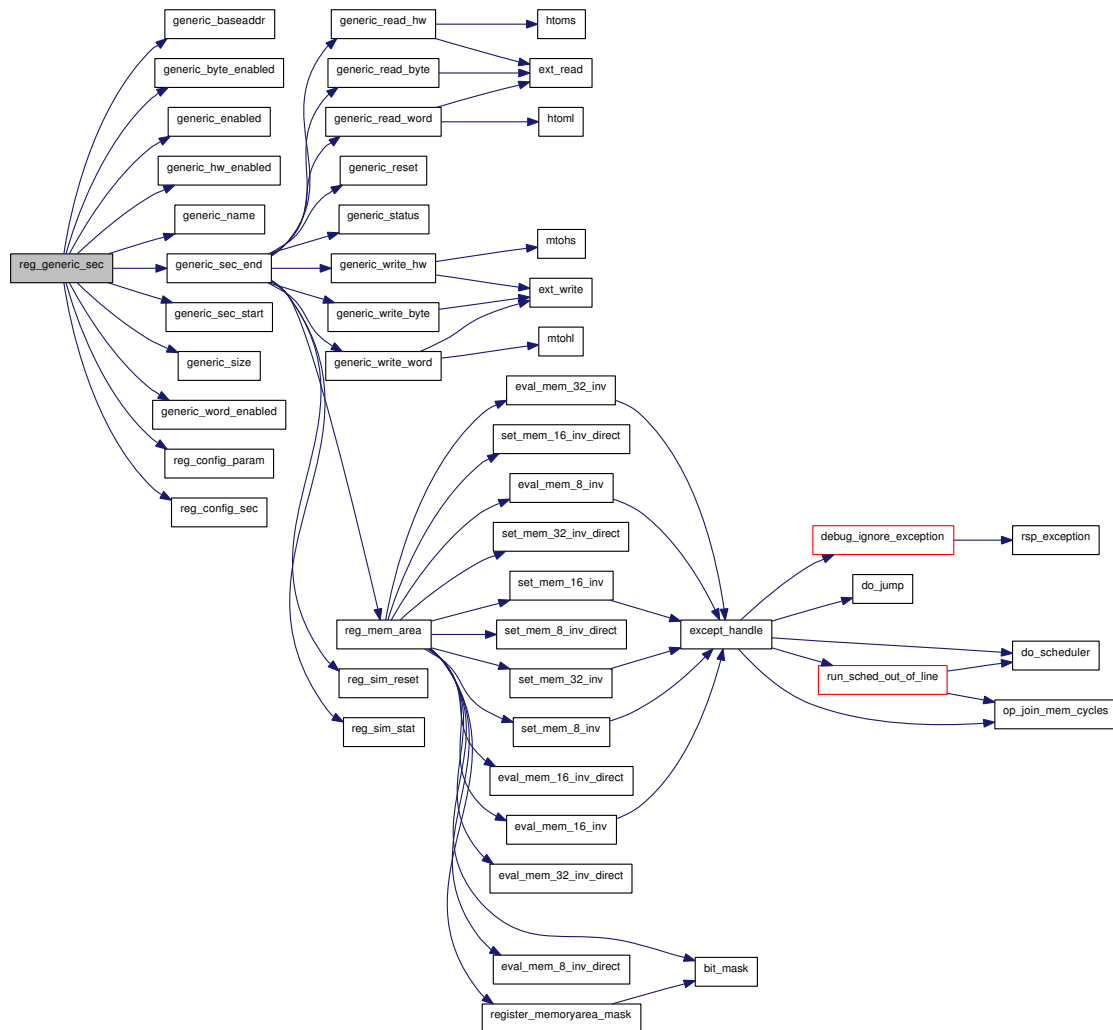
### Functions

- void [reg\\_generic\\_sec](#) ()

#### 6.127.1 Function Documentation

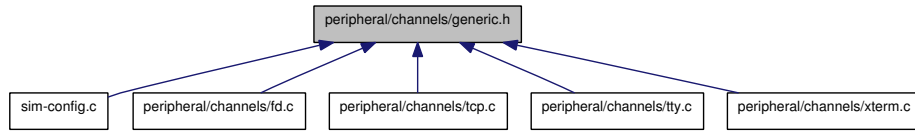
##### 6.127.1.1 void [reg\\_generic\\_sec](#) ()

Here is the call graph for this function:



## 6.128 peripheral/channels/generic.h File Reference

This graph shows which files directly or indirectly include this file:



### Functions

- int [generic\\_open](#) (void \*data)
- void [generic\\_close](#) (void \*data)
- void [generic\\_free](#) (void \*data)

#### 6.128.1 Function Documentation

**6.128.1.1** void [generic\\_close](#) (void \* *data*)

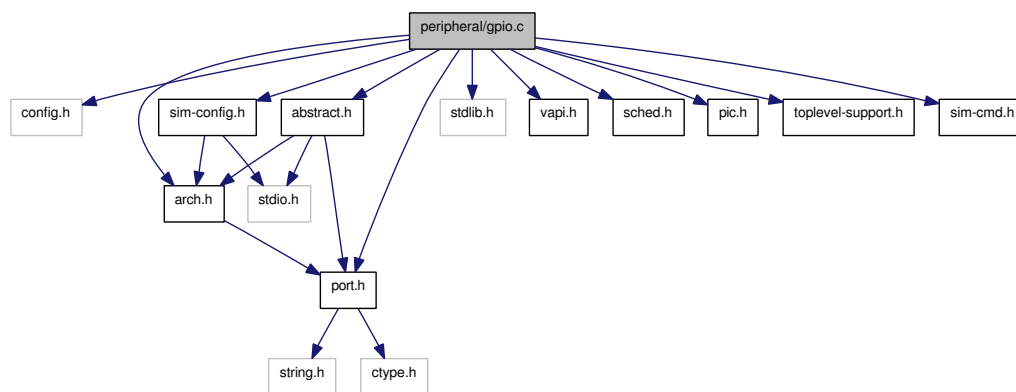
**6.128.1.2** void [generic\\_free](#) (void \* *data*)

**6.128.1.3** int [generic\\_open](#) (void \* *data*)

## 6.129 peripheral/gpio.c File Reference

```
#include "config.h"
#include "port.h"
#include <stdlib.h>
#include "sim-config.h"
#include "arch.h"
#include "vapi.h"
#include "sched.h"
#include "pic.h"
#include "abstract.h"
#include "toplevel-support.h"
#include "sim-cmd.h"
```

Include dependency graph for gpio.c:



### Data Structures

- struct [gpio\\_device](#)

### Defines

- #define [GPIO\\_ADDR\\_SPACE](#) 0x20
- #define [RGPIO\\_IN](#) 0x00
- #define [RGPIO\\_OUT](#) 0x04
- #define [RGPIO\\_OE](#) 0x08
- #define [RGPIO\\_INTE](#) 0x0C
- #define [RGPIO\\_PTRIG](#) 0x10
- #define [RGPIO\\_AUX](#) 0x14
- #define [RGPIO\\_CTRL](#) 0x18
- #define [RGPIO\\_INTS](#) 0x1C
- #define [RGPIO\\_CTRL\\_ECLK](#) 0x00000001
- #define [RGPIO\\_CTRL\\_NEC](#) 0x00000002

- #define `RGPIO_CTRL_INTE` 0x00000004
- #define `RGPIO_CTRL_INTS` 0x00000008

## Enumerations

- enum {  
  
    `GPIO_VAPI_DATA` = 0, `GPIO_VAPI_AUX`, `GPIO_VAPI_CLOCK`, `GPIO_VAPI_RGPIO_OE`,  
  
    `GPIO_VAPI_RGPIO_INTE`, `GPIO_VAPI_RGPIO_PTRIG`, `GPIO_VAPI_RGPIO_AUX`, `GPIO_VAPI_RGPIO_CTRL`,  
  
    `GPIO_NUM_VAPI_IDS` }

## Functions

- static void `gpio_vapi_read` (unsigned long id, unsigned long data, void \*dat)
- static void `gpio_external_clock` (unsigned long value, struct `gpio_device` \*gpio)
- static void `gpio_device_clock` (struct `gpio_device` \*gpio)
- static void `gpio_clock` (void \*dat)
- static void `gpio_reset` (void \*dat)
- static void `gpio_status` (void \*dat)
- static uint32\_t `gpio_read32` (oraddr\_t addr, void \*dat)
- static void `gpio_write32` (oraddr\_t addr, uint32\_t value, void \*dat)
- static void `gpio_do_int` (void \*dat)
- static void `gpio_baseaddr` (union `param_val` val, void \*dat)
- static void `gpio_irq` (union `param_val` val, void \*dat)
- static void `gpio_base_vapi_id` (union `param_val` val, void \*dat)
- static void `gpio_enabled` (union `param_val` val, void \*dat)
- static void \* `gpio_sec_start` (void)
- static void `gpio_sec_end` (void \*dat)
- void `reg_gpio_sec` (void)

## 6.129.1 Define Documentation

- 6.129.1.1 `#define GPIO_ADDR_SPACE 0x20`
- 6.129.1.2 `#define RGPIO_AUX 0x14`
- 6.129.1.3 `#define RGPIO_CTRL 0x18`
- 6.129.1.4 `#define RGPIO_CTRL_ECLK 0x00000001`
- 6.129.1.5 `#define RGPIO_CTRL_INTE 0x00000004`
- 6.129.1.6 `#define RGPIO_CTRL_INTS 0x00000008`
- 6.129.1.7 `#define RGPIO_CTRL_NEC 0x00000002`
- 6.129.1.8 `#define RGPIO_IN 0x00`
- 6.129.1.9 `#define RGPIO_INTE 0x0C`
- 6.129.1.10 `#define RGPIO_INTS 0x1C`
- 6.129.1.11 `#define RGPIO_OE 0x08`
- 6.129.1.12 `#define RGPIO_OUT 0x04`
- 6.129.1.13 `#define RGPIO_PTRIG 0x10`

## 6.129.2 Enumeration Type Documentation

### 6.129.2.1 anonymous enum

Enumerator:

*GPIO\_VAPI\_DATA*

*GPIO\_VAPI\_AUX*

*GPIO\_VAPI\_CLOCK*

*GPIO\_VAPI\_RGPIO\_OE*

*GPIO\_VAPI\_RGPIO\_INTE*

*GPIO\_VAPI\_RGPIO\_PTRIG*

*GPIO\_VAPI\_RGPIO\_AUX*

*GPIO\_VAPI\_RGPIO\_CTRL*

*GPIO\_NUM\_VAPI\_IDS*

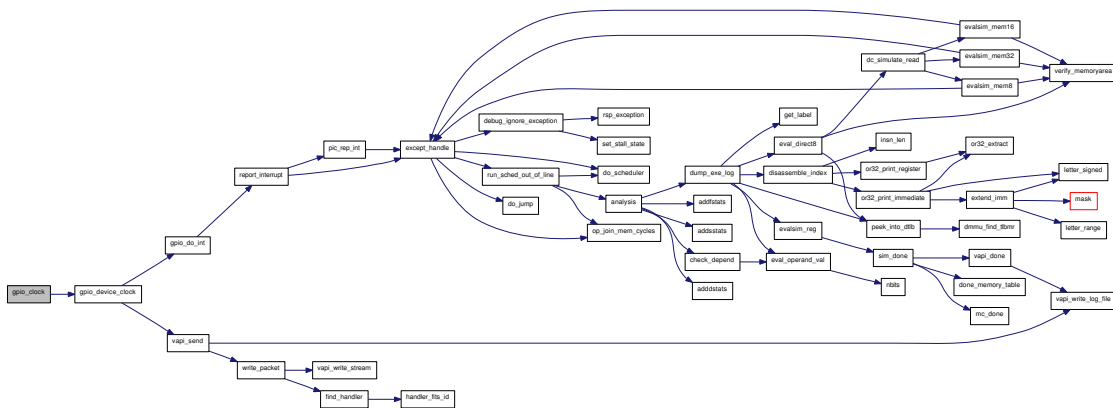
## 6.129.3 Function Documentation

**6.129.3.1** `static void gpio_base_vapi_id (union param_val val, void * dat)` [static]

**6.129.3.2** `static void gpio_baseaddr (union param_val val, void * dat)` [static]

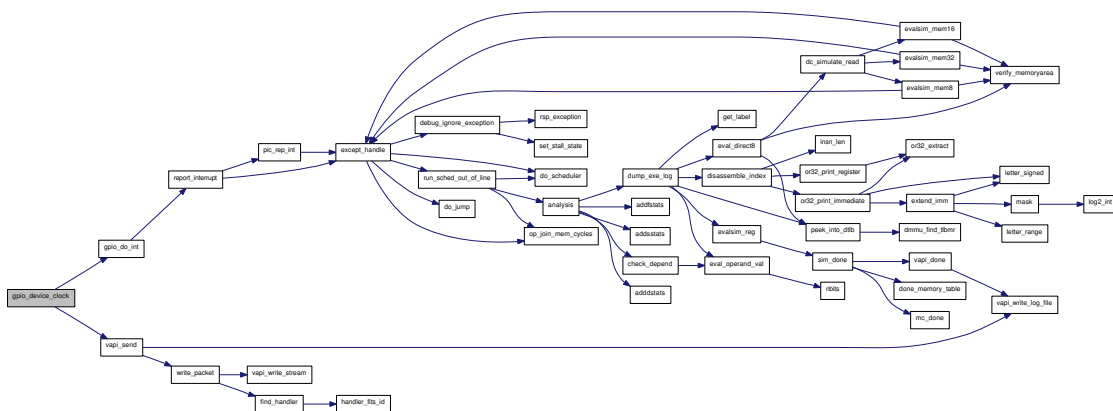
**6.129.3.3** `static void gpio_clock (void * dat)` [static]

Here is the call graph for this function:



**6.129.3.4** `static void gpio_device_clock (struct gpio_device * gpio)` [static]

Here is the call graph for this function:







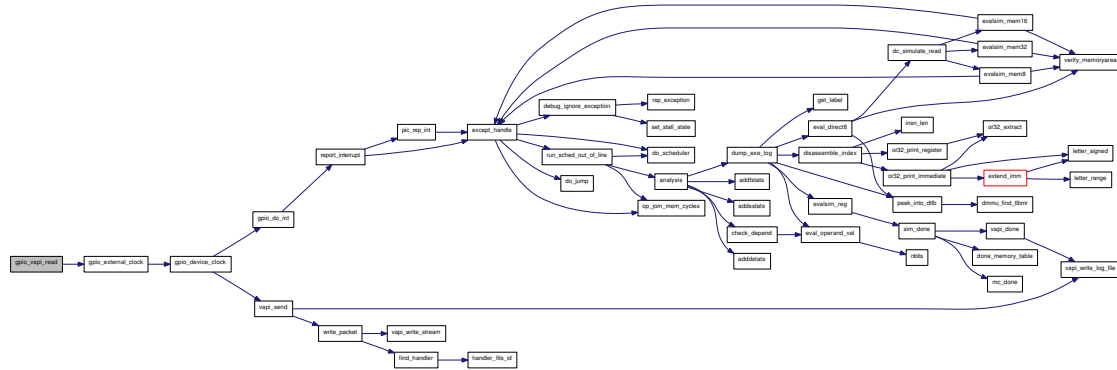


6.129.3.12 `static void* gpio_sec_start (void)` [static]

6.129.3.13 `static void gpio_status (void * dat)` [static]

6.129.3.14 `static void gpio_vapi_read (unsigned long id, unsigned long data, void * dat)` [static]

Here is the call graph for this function:



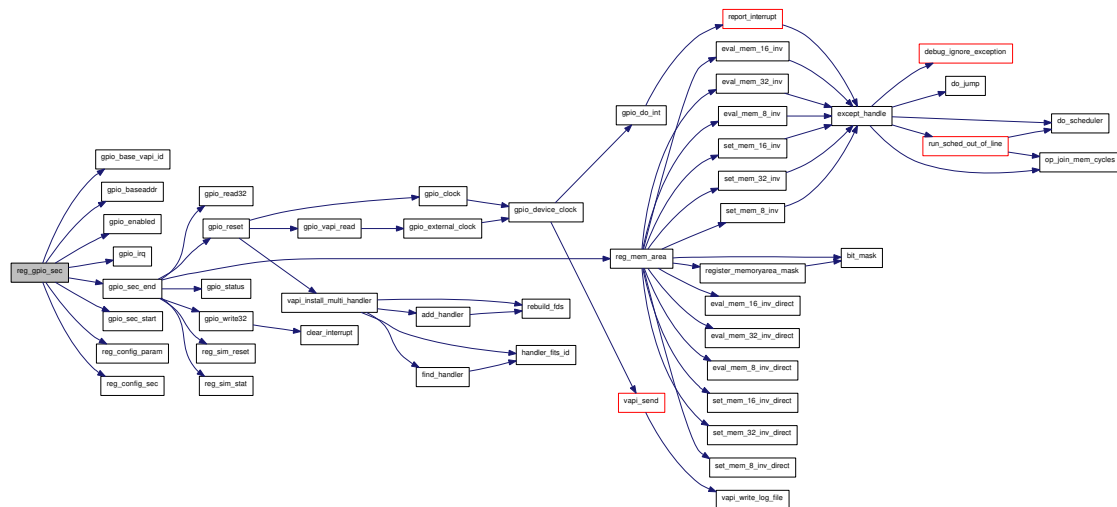
6.129.3.15 `static void gpio_write32 (oraddr_t addr, uint32_t value, void * dat)` [static]

Here is the call graph for this function:



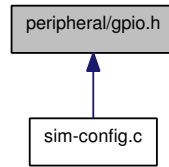
6.129.3.16 `void reg_gpio_sec (void)`

Here is the call graph for this function:



## 6.130 peripheral/gpio.h File Reference

This graph shows which files directly or indirectly include this file:



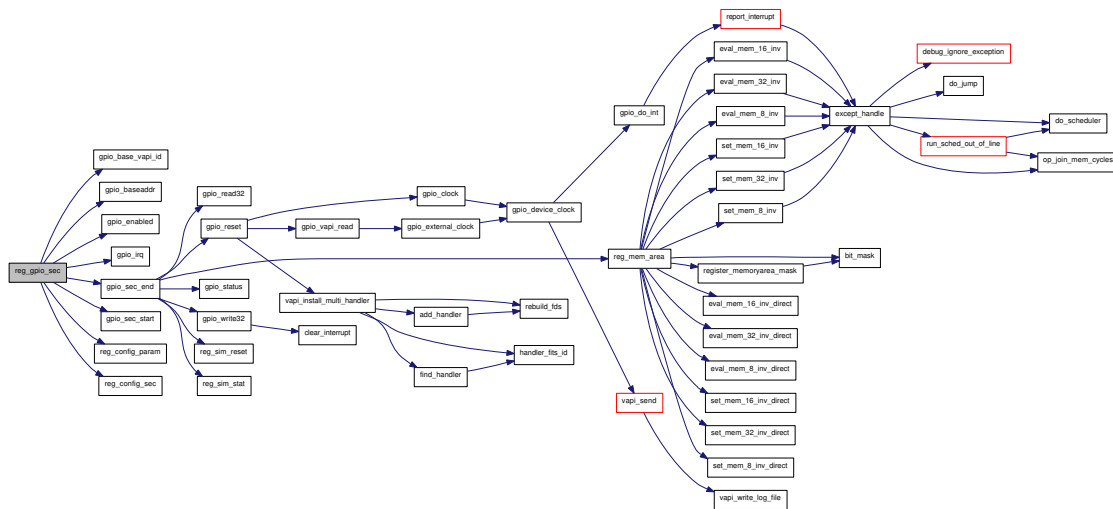
### Functions

- void [reg\\_gpio\\_sec \(\)](#)

#### 6.130.1 Function Documentation

##### 6.130.1.1 void [reg\\_gpio\\_sec \(\)](#)

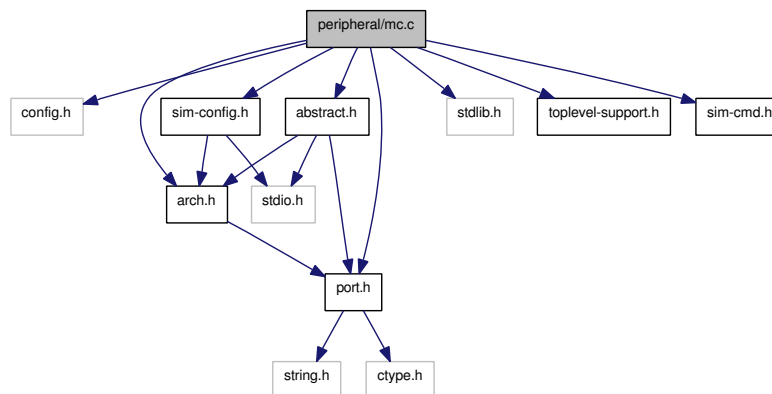
Here is the call graph for this function:



## 6.131 peripheral/mc.c File Reference

```
#include "config.h"
#include "port.h"
#include <stdlib.h>
#include "arch.h"
#include "abstract.h"
#include "sim-config.h"
#include "toplevel-support.h"
#include "sim-cmd.h"
```

Include dependency graph for mc.c:



### Data Structures

- struct [mc\\_area](#)
- struct [mc](#)

### Defines

- #define [N\\_CE](#) 8
- #define [MC\\_CSR](#) 0x00
- #define [MC\\_POC](#) 0x04
- #define [MC\\_BA\\_MASK](#) 0x08
- #define [MC\\_CSC](#)(i) (0x10 + (i) \* 8)
- #define [MC\\_TMS](#)(i) (0x14 + (i) \* 8)
- #define [MC\\_ADDR\\_SPACE](#) (MC\_CSC(N\_CE))
- #define [MC\\_POC\\_EN\\_BW\\_OFFSET](#) 0
- #define [MC\\_POC\\_EN\\_BW\\_WIDTH](#) 2
- #define [MC\\_POC\\_EN\\_MEMTYPE\\_OFFSET](#) 2
- #define [MC\\_POC\\_EN\\_MEMTYPE\\_WIDTH](#) 2
- #define [MC\\_CSC\\_EN\\_OFFSET](#) 0
- #define [MC\\_CSC\\_MEMTYPE\\_OFFSET](#) 1

- #define MC\_CSC\_MEMTYPE\_WIDTH 2
- #define MC\_CSC\_BW\_OFFSET 4
- #define MC\_CSC\_BW\_WIDTH 2
- #define MC\_CSC\_MS\_OFFSET 6
- #define MC\_CSC\_MS\_WIDTH 2
- #define MC\_CSC\_WP\_OFFSET 8
- #define MC\_CSC\_BAS\_OFFSET 9
- #define MC\_CSC\_KRO\_OFFSET 10
- #define MC\_CSC\_PEN\_OFFSET 11
- #define MC\_CSC\_SEL\_OFFSET 16
- #define MC\_CSC\_SEL\_WIDTH 8
- #define MC\_CSC\_MEMTYPE\_SDRAM 0
- #define MC\_CSC\_MEMTYPE\_SSRAM 1
- #define MC\_CSC\_MEMTYPE\_ASYNC 2
- #define MC\_CSC\_MEMTYPE\_SYNC 3
- #define MC\_CSR\_VALID 0xFF000703LU
- #define MC\_POC\_VALID 0x0000000FLU
- #define MC\_BA\_MASK\_VALID 0x000003FFLU
- #define MC\_CSC\_VALID 0x00FF0FFFU
- #define MC\_TMS\_SDRAM\_VALID 0x0FFF83FFLU
- #define MC\_TMS\_SSRAM\_VALID 0x00000000LU
- #define MC\_TMS\_ASYNC\_VALID 0x03FFFFFFLU
- #define MC\_TMS\_SYNC\_VALID 0x01FFFFFFLU
- #define MC\_TMS\_VALID 0xFFFFFFFU
- #define MC\_TMS\_SDRAM\_TRFC\_OFFSET 24
- #define MC\_TMS\_SDRAM\_TRFC\_WIDTH 4
- #define MC\_TMS\_SDRAM\_TRP\_OFFSET 20
- #define MC\_TMS\_SDRAM\_TRP\_WIDTH 4
- #define MC\_TMS\_SDRAM\_TRCD\_OFFSET 17
- #define MC\_TMS\_SDRAM\_TRCD\_WIDTH 4
- #define MC\_TMS\_SDRAM\_TWR\_OFFSET 15
- #define MC\_TMS\_SDRAM\_TWR\_WIDTH 2
- #define MC\_TMS\_SDRAM\_WBL\_OFFSET 9
- #define MC\_TMS\_SDRAM\_OM\_OFFSET 7
- #define MC\_TMS\_SDRAM\_OM\_WIDTH 2
- #define MC\_TMS\_SDRAM\_CL\_OFFSET 4
- #define MC\_TMS\_SDRAM\_CL\_WIDTH 3
- #define MC\_TMS\_SDRAM\_BT\_OFFSET 3
- #define MC\_TMS\_SDRAM\_BL\_OFFSET 0
- #define MC\_TMS\_SDRAM\_BL\_WIDTH 3
- #define MC\_TMS\_ASYNC\_TWWD\_OFFSET 20
- #define MC\_TMS\_ASYNC\_TWWD\_WIDTH 6
- #define MC\_TMS\_ASYNC\_TWD\_OFFSET 16
- #define MC\_TMS\_ASYNC\_TWD\_WIDTH 4
- #define MC\_TMS\_ASYNC\_TWPW\_OFFSET 12
- #define MC\_TMS\_ASYNC\_TWPW\_WIDTH 4
- #define MC\_TMS\_ASYNC\_TRDZ\_OFFSET 8
- #define MC\_TMS\_ASYNC\_TRDZ\_WIDTH 4
- #define MC\_TMS\_ASYNC\_TRDV\_OFFSET 0
- #define MC\_TMS\_ASYNC\_TRDV\_WIDTH 8

- #define `MC_TMS_SYNC_TTO_OFFSET` 16
- #define `MC_TMS_SYNC_TTO_WIDTH` 9
- #define `MC_TMS_SYNC_TWR_OFFSET` 12
- #define `MC_TMS_SYNC_TWR_WIDTH` 4
- #define `MC_TMS_SYNC_TRDZ_OFFSET` 8
- #define `MC_TMS_SYNC_TRDZ_WIDTH` 4
- #define `MC_TMS_SYNC_TRDV_OFFSET` 0
- #define `MC_TMS_SYNC_TRDV_WIDTH` 8

## Functions

- void `set_csc_tms` (int cs, uint32\_t csc, uint32\_t tms, struct `mc` \*mc)
- void `mc_write_word` (oraddr\_t addr, uint32\_t value, void \*dat)
- uint32\_t `mc_read_word` (oraddr\_t addr, void \*dat)
- void `mc_reset` (void \*dat)
- void `mc_done` ()
- void `mc_status` (void \*dat)
- void `mc_reg_mem_area` (struct `dev_memarea` \*mem, unsigned int cs, int mc)
- static void `mc_enabled` (union `param_val` val, void \*dat)
- static void `mc_baseaddr` (union `param_val` val, void \*dat)
- static void `mc_poc` (union `param_val` val, void \*dat)
- static void `mc_index` (union `param_val` val, void \*dat)
- static void \* `mc_sec_start` ()
- static void `mc_sec_end` (void \*dat)
- void `reg_mc_sec` (void)

## Variables

- static struct `mc` \* `mcs` = NULL
- static struct `mc_area` \* `mc_areas` = NULL





### 6.131.1 Define Documentation

6.131.1.1 `#define MC_ADDR_SPACE (MC_CSC(N_CE))`

6.131.1.2 `#define MC_BA_MASK 0x08`

6.131.1.3 `#define MC_BA_MASK_VALID 0x000003FFLU`

6.131.1.4 `#define MC_CSC(i) (0x10 + (i) * 8)`

6.131.1.5 `#define MC_CSC_BAS_OFFSET 9`

6.131.1.6 `#define MC_CSC_BW_OFFSET 4`

6.131.1.7 `#define MC_CSC_BW_WIDTH 2`

6.131.1.8 `#define MC_CSC_EN_OFFSET 0`

6.131.1.9 `#define MC_CSC_KRO_OFFSET 10`

6.131.1.10 `#define MC_CSC_MEMTYPE_ASYNC 2`

6.131.1.11 `#define MC_CSC_MEMTYPE_OFFSET 1`

6.131.1.12 `#define MC_CSC_MEMTYPE_SDRAM 0`

6.131.1.13 `#define MC_CSC_MEMTYPE_SSRAM 1`

6.131.1.14 `#define MC_CSC_MEMTYPE_SYNC 3`

6.131.1.15 `#define MC_CSC_MEMTYPE_WIDTH 2`

6.131.1.16 `#define MC_CSC_MS_OFFSET 6`

6.131.1.17 `#define MC_CSC_MS_WIDTH 2`

6.131.1.18 `#define MC_CSC_PEN_OFFSET 11`

6.131.1.19 `#define MC_CSC_SEL_OFFSET 16`

6.131.1.20 `#define MC_CSC_SEL_WIDTH 8`

6.131.1.21 `#define MC_CSC_VALID 0x00FF0FFFLLU`

6.131.1.22 `#define MC_CSC_WP_OFFSET 8`

6.131.1.23 `#define MC_CSR 0x00`

6.131.1.24 `#define MC_CSR_VALID 0xFF000703LU`

6.131.1.25 `#define MC_POC 0x04`

6.131.1.26 `#define MC_POC_EN_BW_OFFSET 0`

6.131.1.27 `#define MC_POC_EN_BW_WIDTH 2`

6.131.1.28 `#define MC_POC_EN_MEMTYPE_OFFSET 2`

6.131.1.29 `#define MC_POC_EN_MEMTYPE_WIDTH 2`

6.131.1.30 `#define MC_POC_VALID 0x0000000FLU`

**6.131.2.3** `static void mc_enabled (union param_val val, void * dat) [static]`

**6.131.2.4** `static void mc_index (union param_val val, void * dat) [static]`

**6.131.2.5** `static void mc_poc (union param_val val, void * dat) [static]`

Set the power on configuration state

Only the bottom 4 bits are significant. Other bits are truncated with a warning.

**Parameters:**

← *val* The value to use

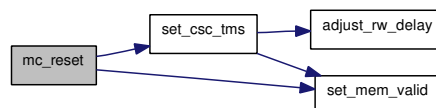
← *dat* The [config](#) data structure

**6.131.2.6** `uint32_t mc_read_word (oraddr_t addr, void * dat)`

**6.131.2.7** `void mc_reg_mem_area (struct dev_memarea * mem, unsigned int cs, int mc)`

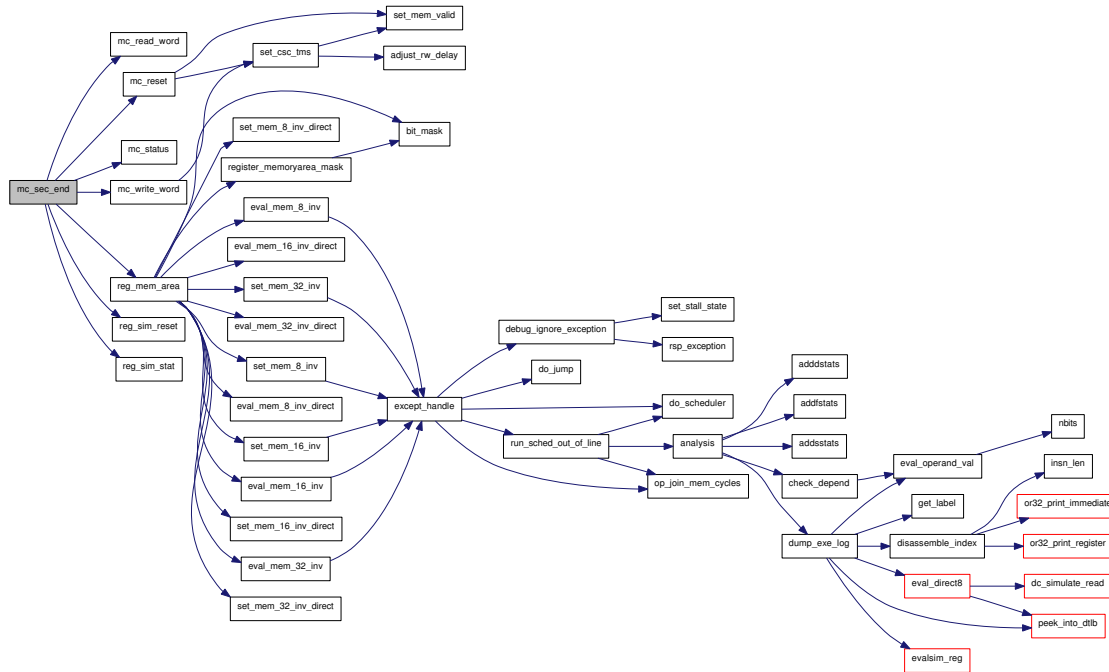
**6.131.2.8** `void mc_reset (void * dat)`

Here is the call graph for this function:



### 6.131.2.9 static void mc\_sec\_end (void \* dat) [static]

Here is the call graph for this function:



### 6.131.2.10 static void\* mc\_sec\_start () [static]

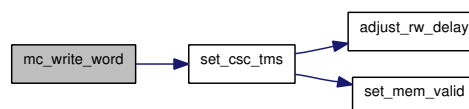
Initialize a new memory controller configuration

ALL parameters are set explicitly to default values.

### 6.131.2.11 void mc\_status (void \* dat)

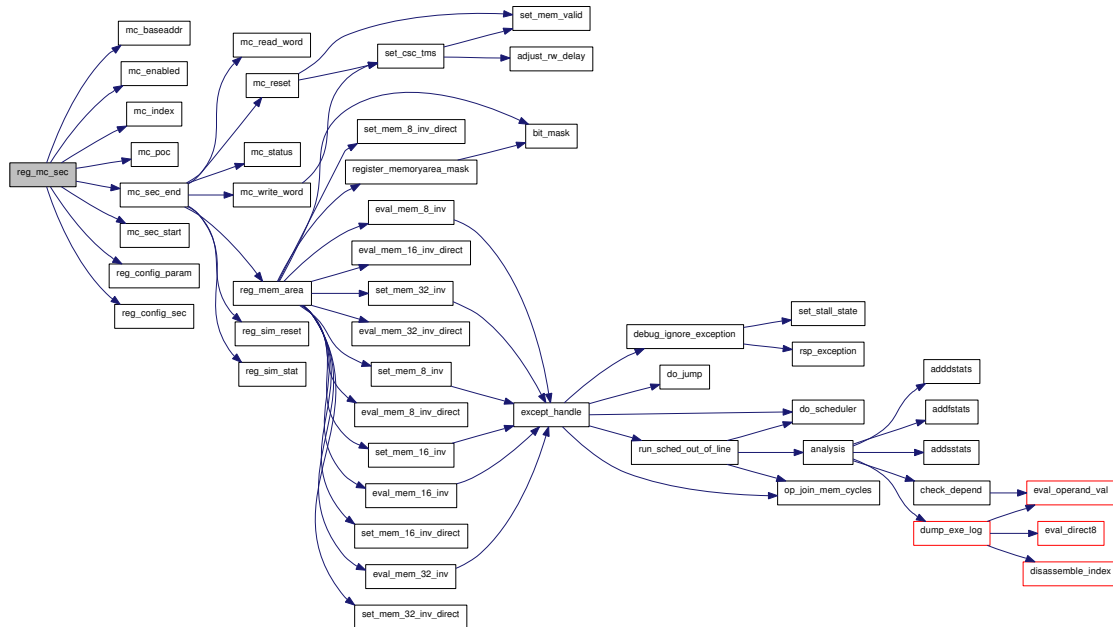
### 6.131.2.12 void mc\_write\_word (oraddr\_t addr, uint32\_t value, void \* dat)

Here is the call graph for this function:



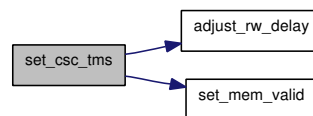
### 6.131.2.13 void reg\_mc\_sec (void)

Here is the call graph for this function:



### 6.131.2.14 void set\_csc\_tms (int cs, uint32\_t csc, uint32\_t tms, struct mc \* mc)

Here is the call graph for this function:



## 6.131.3 Variable Documentation

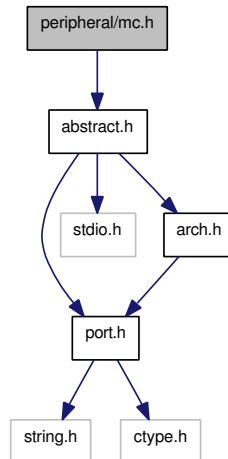
6.131.3.1 struct mc\_area\* mc\_areas = NULL [static]

6.131.3.2 struct mc\* mcs = NULL [static]

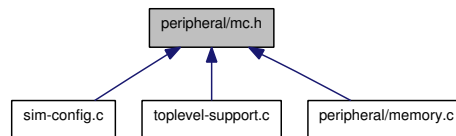
## 6.132 peripheral/mc.h File Reference

```
#include "abstract.h"
```

Include dependency graph for mc.h:



This graph shows which files directly or indirectly include this file:



### Functions

- void `mc_done` ()
- void `reg_mc_sec` ()
- void `mc_reg_mem_area` (struct `dev_memarea` \*mem, unsigned int cs, int mc)

### 6.132.1 Function Documentation

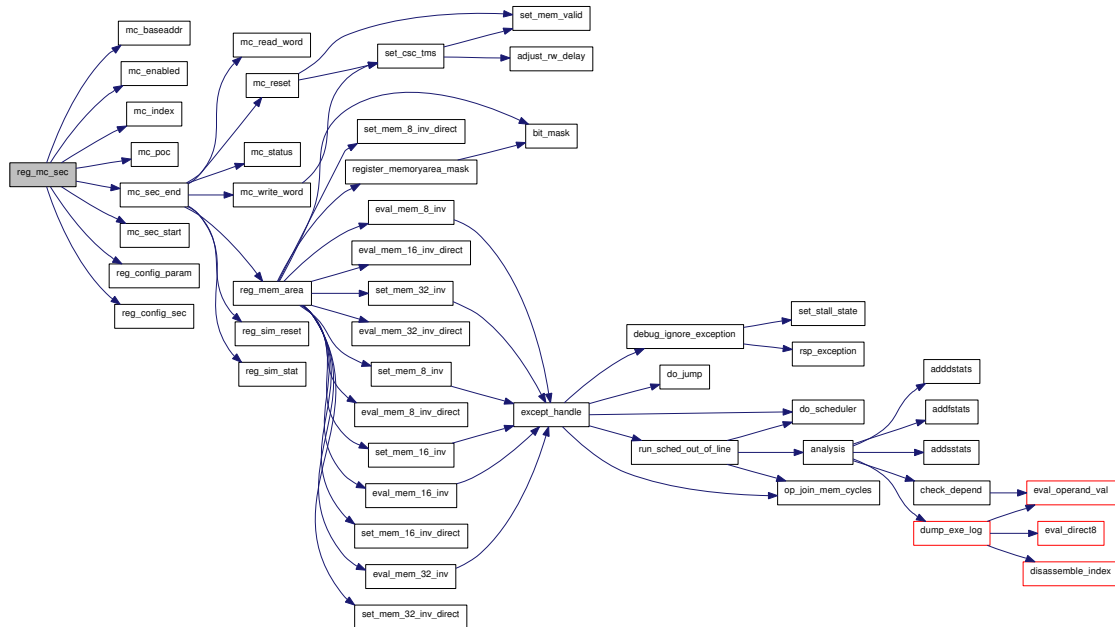
#### 6.132.1.1 void mc\_done ()

Free all allocated memory

6.132.1.2 void mc\_reg\_mem\_area (struct dev\_memarea \* mem, unsigned int cs, int mc)

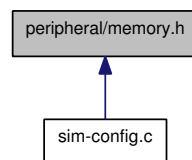
6.132.1.3 void reg\_mc\_sec ()

Here is the call graph for this function:



## 6.133 peripheral/memory.h File Reference

This graph shows which files directly or indirectly include this file:



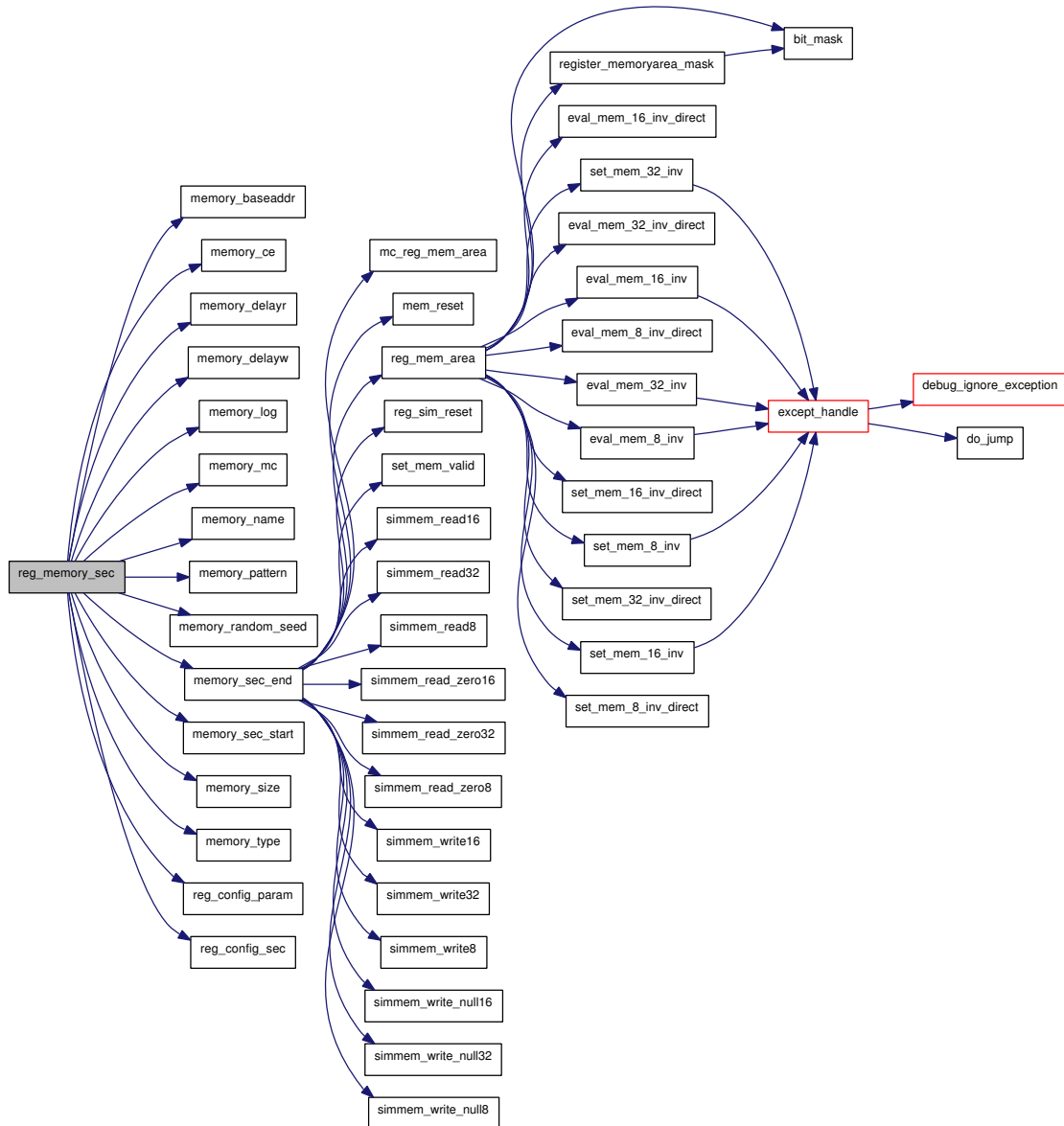
### Functions

- void [reg\\_memory\\_sec](#) ()

## 6.133.1 Function Documentation

### 6.133.1.1 void reg\_memory\_sec ()

Here is the call graph for this function:

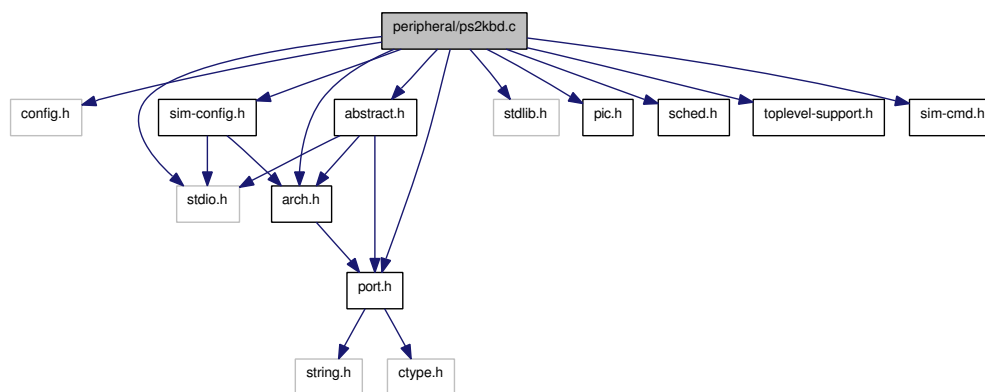




## 6.134 peripheral/ps2kbd.c File Reference

```
#include "config.h"
#include "port.h"
#include <stdlib.h>
#include <stdio.h>
#include "arch.h"
#include "pic.h"
#include "sim-config.h"
#include "abstract.h"
#include "sched.h"
#include "toplevel-support.h"
#include "sim-cmd.h"
```

Include dependency graph for ps2kbd.c:



### Data Structures

- struct [kbd\\_state](#)

### Defines

- #define [KBD\\_CTRL](#) 4
- #define [KBD\\_DATA](#) 0
- #define [KBD\\_SPACE](#) 8
- #define [KBD\\_KCMD\\_RST](#) 0xFF
- #define [KBD\\_KCMD\\_DK](#) 0xF5
- #define [KBD\\_KCMD\\_EK](#) 0xF4
- #define [KBD\\_KCMD\\_ECHO](#) 0xFF
- #define [KBD\\_KCMD\\_SRL](#) 0xED
- #define [KBD\\_KRESP\\_RSTOK](#) 0xAA
- #define [KBD\\_KRESP\\_ECHO](#) 0xEE
- #define [KBD\\_KRESP\\_ACK](#) 0xFA

- #define `KBD_CCMD_RCB` 0x20
- #define `KBD_CCMD_WCB` 0x60
- #define `KBD_CCMD_ST1` 0xAA
- #define `KBD_CCMD_ST2` 0xAB
- #define `KBD_CCMD_DKI` 0xAD
- #define `KBD_CCMD_EKI` 0xAE
- #define `KBD_STATUS_OBF` 0x01
- #define `KBD_STATUS_IBF` 0x02
- #define `KBD_STATUS_SYS` 0x04
- #define `KBD_STATUS_A2` 0x08
- #define `KBD_STATUS_INH` 0x10
- #define `KBD_STATUS_MOBF` 0x20
- #define `KBD_STATUS_TO` 0x40
- #define `KBD_STATUS_PERR` 0x80
- #define `KBD_CCMDBYTE_INT` 0x01
- #define `KBD_CCMDBYTE_INT2` 0x02
- #define `KBD_CCMDBYTE_SYS` 0x04
- #define `KBD_CCMDBYTE_EN` 0x10
- #define `KBD_CCMDBYTE_EN2` 0x20
- #define `KBD_CCMDBYTE_XLAT` 0x40
- #define `KBD_MAX_BUF` 0x100
- #define `KBD_BAUD_RATE` 1200

## Functions

- static void `kbd_put` (struct `kbd_state` \*kbd, unsigned char c)
- static void `scan_decode` (struct `kbd_state` \*kbd, unsigned char c)
- static void `kbd_write8` (`oraddr_t` addr, `uint8_t` value, void \*dat)
- static `uint8_t` `kbd_read8` (`oraddr_t` addr, void \*dat)
- static void `kbd_job` (void \*dat)
- static void `kbd_reset` (void \*dat)
- static void `kbd_info` (void \*dat)
- static void `kbd_enabled` (union `param_val` val, void \*dat)
- static void `kbd_baseaddr` (union `param_val` val, void \*dat)
- static void `kbd_irq` (union `param_val` val, void \*dat)
- static void `kbd_rxfile` (union `param_val` val, void \*dat)
- static void \* `kbd_sec_start` ()
- static void `kbd_sec_end` (void \*dat)
- void `reg_kbd_sec` ()

## Variables

- struct {
  - unsigned char `shift`
  - unsigned char `code`
 } `scan_table` [128]



## 6.134.1 Define Documentation

6.134.1.1 **#define KBD\_BAUD\_RATE 1200**

6.134.1.2 **#define KBD\_CCMD\_DKI 0xAD**

6.134.1.3 **#define KBD\_CCMD\_EKI 0xAE**

6.134.1.4 **#define KBD\_CCMD\_RCB 0x20**

6.134.1.5 **#define KBD\_CCMD\_ST1 0xAA**

6.134.1.6 **#define KBD\_CCMD\_ST2 0xAB**

6.134.1.7 **#define KBD\_CCMD\_WCB 0x60**

6.134.1.8 **#define KBD\_CCMDBYTE\_EN 0x10**

6.134.1.9 **#define KBD\_CCMDBYTE\_EN2 0x20**

6.134.1.10 **#define KBD\_CCMDBYTE\_INT 0x01**

6.134.1.11 **#define KBD\_CCMDBYTE\_INT2 0x02**

6.134.1.12 **#define KBD\_CCMDBYTE\_SYS 0x04**

6.134.1.13 **#define KBD\_CCMDBYTE\_XLAT 0x40**

6.134.1.14 **#define KBD\_CTRL 4**

6.134.1.15 **#define KBD\_DATA 0**

6.134.1.16 **#define KBD\_KCMD\_DK 0xF5**

6.134.1.17 **#define KBD\_KCMD\_ECHO 0xFF**

6.134.1.18 **#define KBD\_KCMD\_EK 0xF4**

6.134.1.19 **#define KBD\_KCMD\_RST 0xFF**

6.134.1.20 **#define KBD\_KCMD\_SRL 0xED**

6.134.1.21 **#define KBD\_KRESP\_ACK 0xFA**

6.134.1.22 **#define KBD\_KRESP\_ECHO 0xEE**

6.134.1.23 **#define KBD\_KRESP\_RSTOK 0xAA**

6.134.1.24 **#define KBD\_MAX\_BUF 0x100**

6.134.1.25 **#define KBD\_SPACE 8**

6.134.1.26 **#define KBD\_STATUS\_A2 0x08**

6.134.1.27 **#define KBD\_STATUS\_BF 0x02**

6.134.1.28 **#define KBD\_STATUS\_INH 0x10**

6.134.1.29 **#define KBD\_STATUS\_MOBF 0x20**

6.134.1.30 **#define KBD\_STATUS\_OBF 0x01**

**6.134.2.6** `static void kbd_put (struct kbd_state * kbd, unsigned char c)` [static]

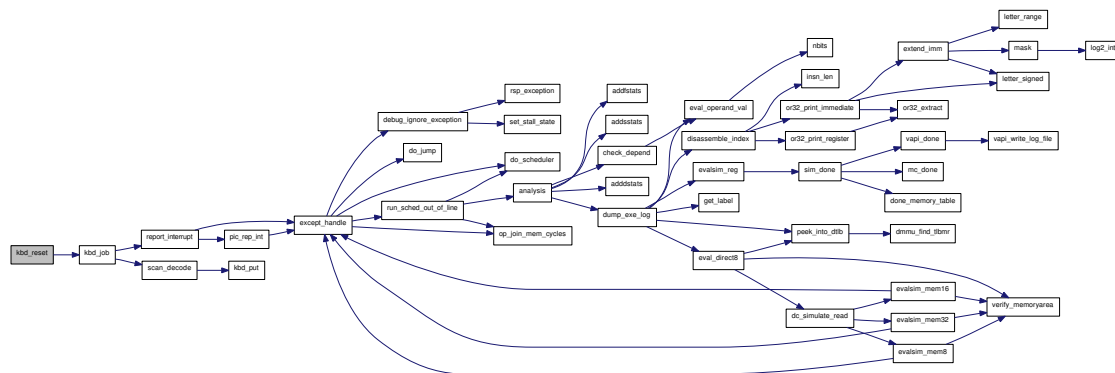
**6.134.2.7** `static uint8_t kbd_read8 (oraddr_t addr, void * dat)` [static]

Here is the call graph for this function:



**6.134.2.8** `static void kbd_reset (void * dat)` [static]

Here is the call graph for this function:



**6.134.2.9** `static void kbd_rxfile (union param_val val, void * dat)` [static]

Set the keyboard input file

Free any previously allocated value.

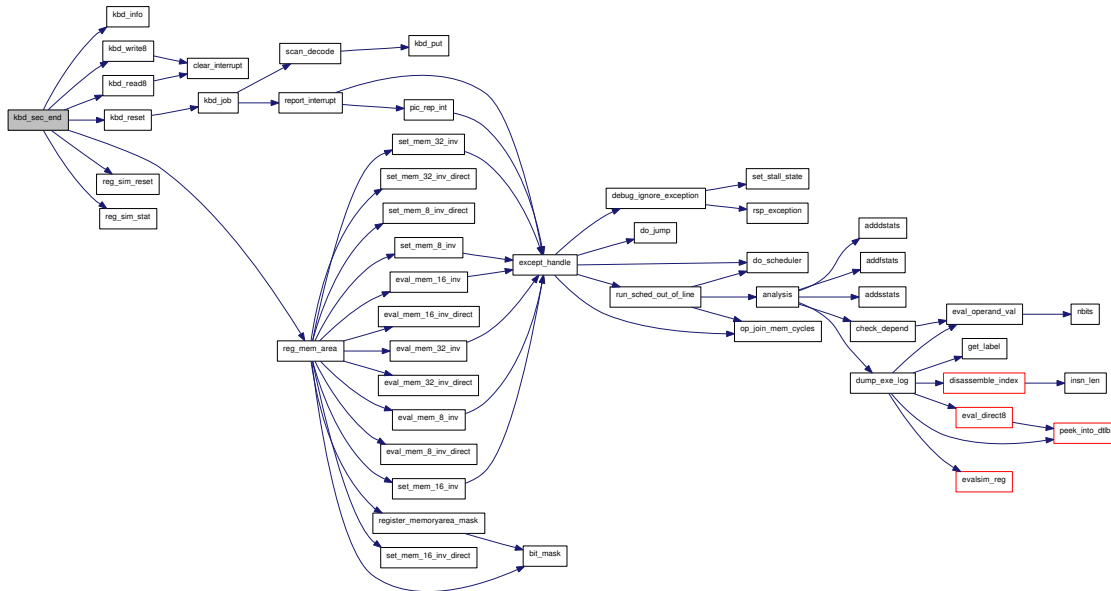
#### Parameters:

← *val* The value to use

← *dat* The `config` data structure

### 6.134.2.10 static void kbd\_sec\_end (void \* dat) [static]

Here is the call graph for this function:



### 6.134.2.11 static void\* kbd\_sec\_start () [static]

Initialize a new keyboard configuration

ALL parameters are set explicitly to default values.

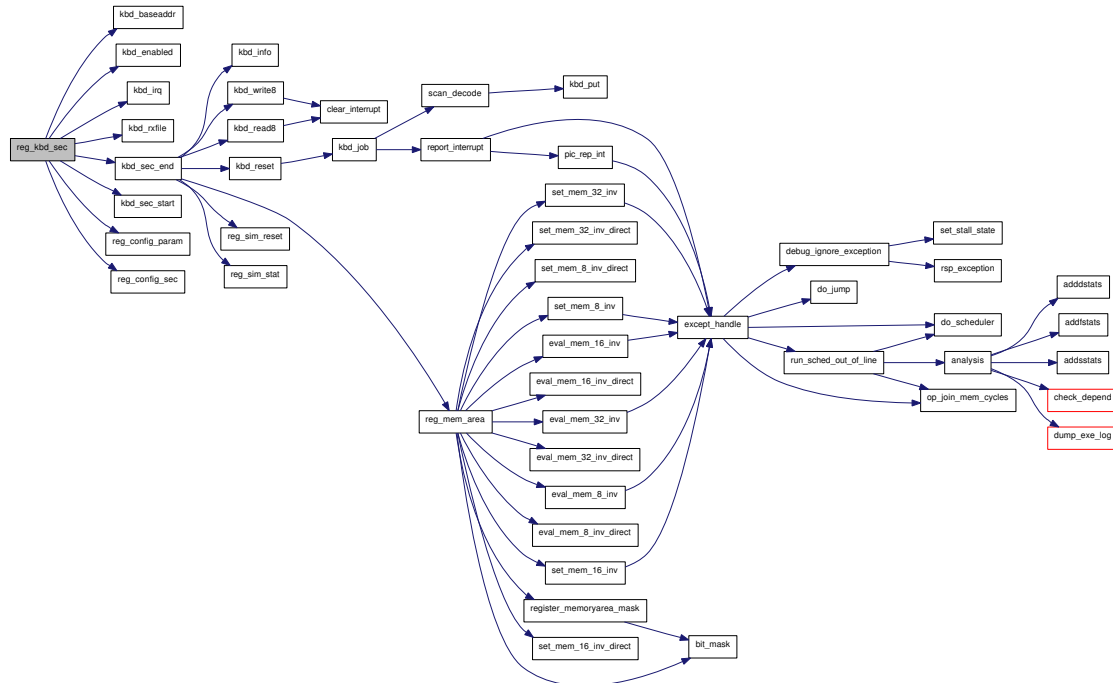
### 6.134.2.12 static void kbd\_write8 (oraddr\_t addr, uint8\_t value, void \* dat) [static]

Here is the call graph for this function:



### 6.134.2.13 void reg\_kbd\_sec ()

Here is the call graph for this function:



### 6.134.2.14 static void scan\_decode (struct kbd\_state \* kbd, unsigned char c) [static]

Here is the call graph for this function:



## 6.134.3 Variable Documentation

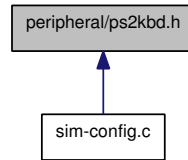
### 6.134.3.1 unsigned char code

### 6.134.3.2 const { ... } scan\_table[128] [static]

### 6.134.3.3 unsigned char shift

## 6.135 peripheral/ps2kbd.h File Reference

This graph shows which files directly or indirectly include this file:



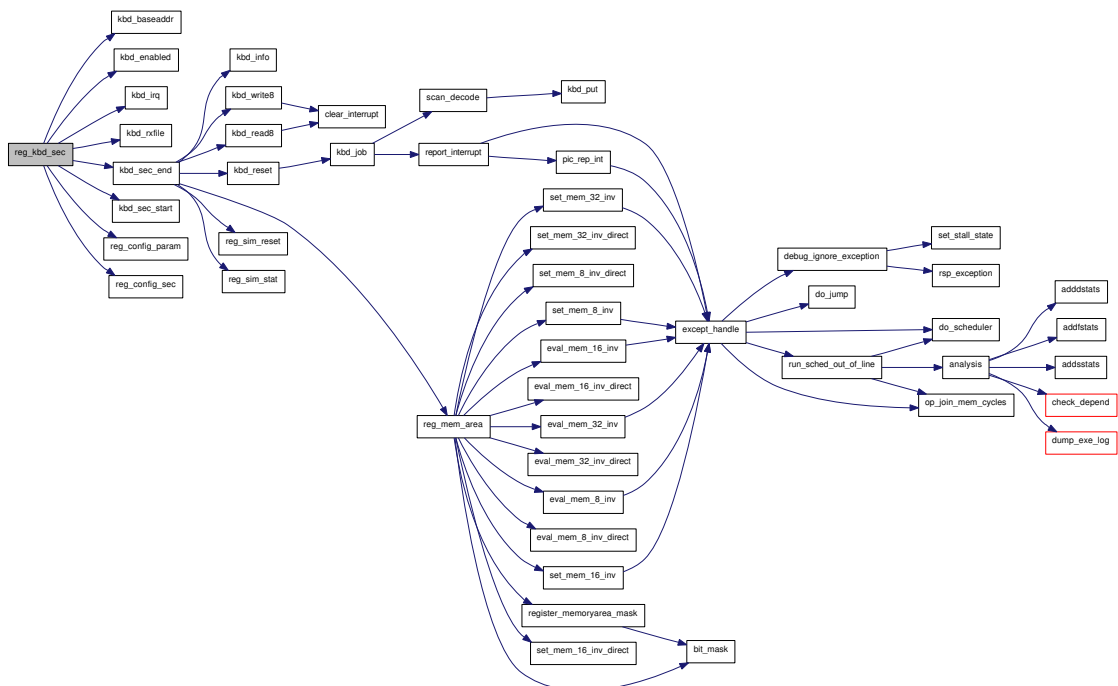
### Functions

- void [reg\\_kbd\\_sec](#) ()

### 6.135.1 Function Documentation

#### 6.135.1.1 void [reg\\_kbd\\_sec](#) ()

Here is the call graph for this function:

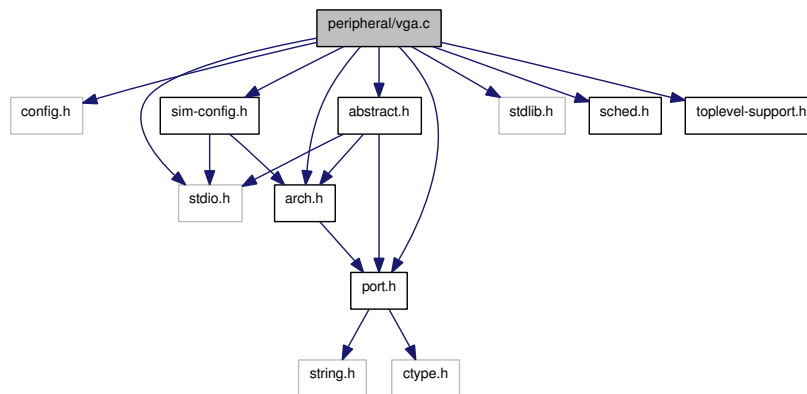




## 6.136 peripheral/vga.c File Reference

```
#include "config.h"
#include "port.h"
#include <stdlib.h>
#include <stdio.h>
#include "arch.h"
#include "sim-config.h"
#include "abstract.h"
#include "sched.h"
#include "toplevel-support.h"
```

Include dependency graph for vga.c:



### Data Structures

- struct [vga\\_state](#)
- struct [BMP\\_HEADER](#)
- struct [INFOHEADER](#)

### Defines

- #define [VGA\\_CTRL](#) 0x00
- #define [VGA\\_STAT](#) 0x04
- #define [VGA\\_HTIM](#) 0x08
- #define [VGA\\_VTIM](#) 0x0c
- #define [VGA\\_HVLEN](#) 0x10
- #define [VGA\\_VBARA](#) 0x14
- #define [VGA\\_VBARB](#) 0x18
- #define [VGA\\_CLUTA](#) 0x800
- #define [VGA\\_CLUTB](#) 0xc00
- #define [VGA\\_MASK](#) 0xff
- #define [VGA\\_ADDR\\_SPACE](#) 1024

- #define `VGA_CTRL_VEN` 0x00000001
- #define `VGA_CTRL_CD` 0x00000300
- #define `VGA_CTRL_PC` 0x00000400

## Functions

- void `vga_write32` (`oraddr_t` addr, `uint32_t` value, void \*dat)
- `uint32_t` `vga_read32` (`oraddr_t` addr, void \*dat)
- static int `vga_dump_image` (char \*filename, struct `vga_state` \*vga)
- void `vga_job` (void \*dat)
- void `vga_reset` (void \*dat)
- static void `vga_enabled` (union `param_val` val, void \*dat)
- static void `vga_baseaddr` (union `param_val` val, void \*dat)
- static void `vga_irq` (union `param_val` val, void \*dat)
- static void `vga_refresh_rate` (union `param_val` val, void \*dat)
- static void `vga_filename` (union `param_val` val, void \*dat)
- static void \* `vga_sec_start` ()
- static void `vga_sec_end` (void \*dat)
- void `reg_vga_sec` ()

## 6.136.1 Define Documentation

6.136.1.1 **#define VGA\_ADDR\_SPACE 1024**

6.136.1.2 **#define VGA\_CLUTA 0x800**

6.136.1.3 **#define VGA\_CLUTB 0xc00**

6.136.1.4 **#define VGA\_CTRL 0x00**

6.136.1.5 **#define VGA\_CTRL\_CD 0x00000300**

6.136.1.6 **#define VGA\_CTRL\_PC 0x00000400**

6.136.1.7 **#define VGA\_CTRL\_VEN 0x00000001**

6.136.1.8 **#define VGA\_HTIM 0x08**

6.136.1.9 **#define VGA\_HVLEN 0x10**

6.136.1.10 **#define VGA\_MASK 0xff**

6.136.1.11 **#define VGA\_STAT 0x04**

6.136.1.12 **#define VGA\_VBARA 0x14**

6.136.1.13 **#define VGA\_VBARB 0x18**

6.136.1.14 **#define VGA\_VTIM 0x0c**

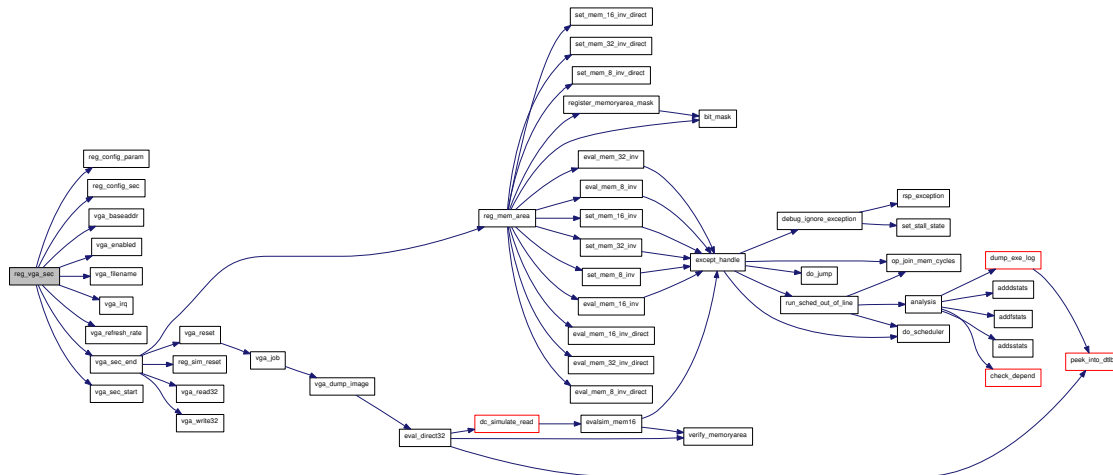
## 6.136.2 Function Documentation

6.136.2.1 **void reg\_vga\_sec ()**

Create a new VGA configuration

ALL parameters are set explicitly to default values. Alternative naming for file parameter supported.

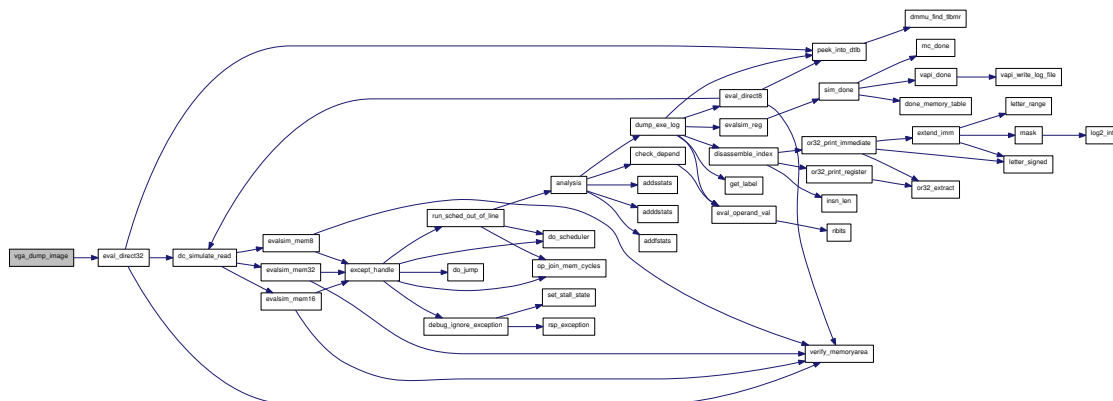
Here is the call graph for this function:



**6.136.2.2** `static void vga_baseaddr (union param_val val, void * dat) [static]`

**6.136.2.3** `static int vga_dump_image (char * filename, struct vga_state * vga) [static]`

Here is the call graph for this function:



**6.136.2.4** `static void vga_enabled (union param_val val, void * dat) [static]`

**6.136.2.5** `static void vga_filename (union param_val val, void * dat) [static]`

Set the VGA output file

Free any previously allocated value.

**Parameters:**

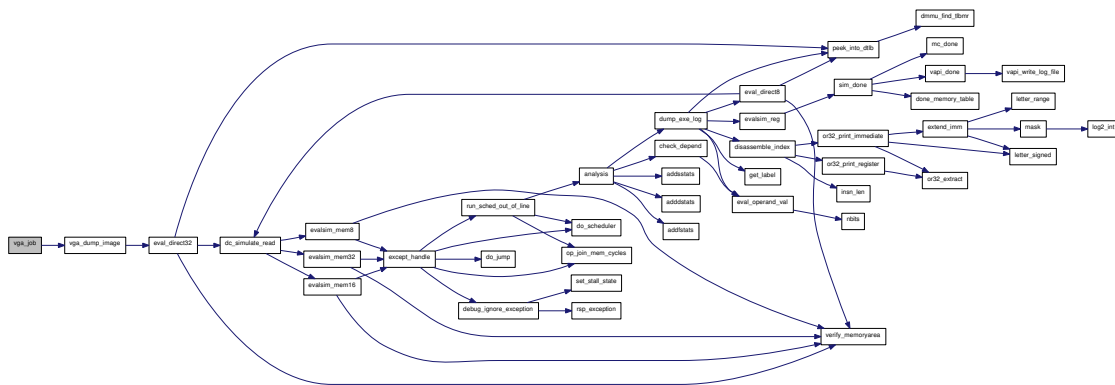
← *val* The value to use

← *dat* The `config` data structure

6.136.2.6 static void vga\_irq (union param\_val val, void \* dat) [static]

6.136.2.7 void vga\_job (void \* dat)

Here is the call graph for this function:

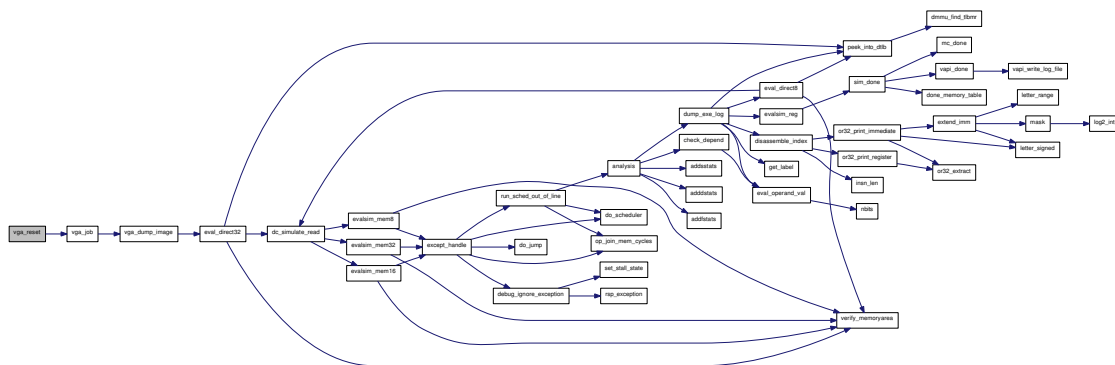


6.136.2.8 uint32\_t vga\_read32 (oraddr\_t addr, void \* dat)

6.136.2.9 static void vga\_refresh\_rate (union param\_val val, void \* dat) [static]

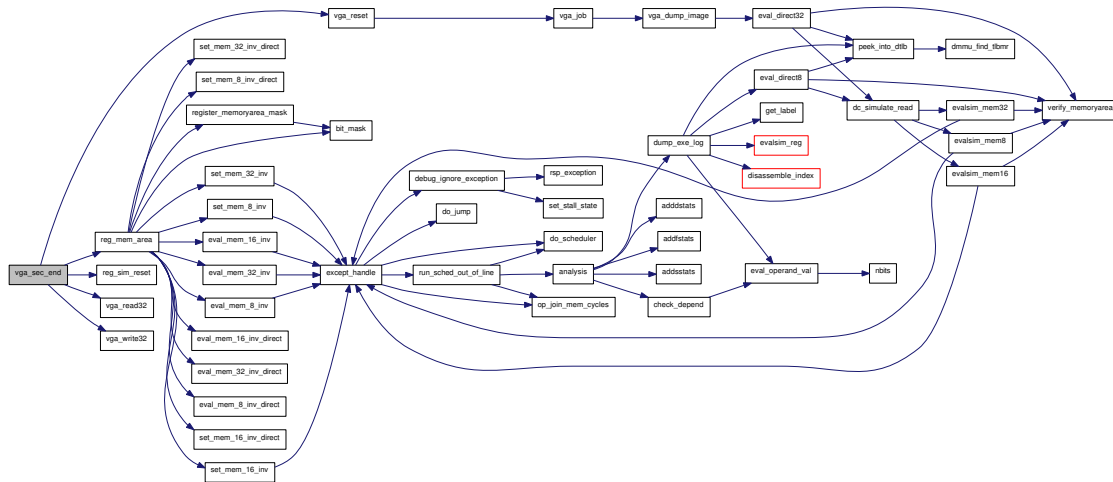
6.136.2.10 void vga\_reset (void \* dat)

Here is the call graph for this function:



### 6.136.2.11 static void vga\_sec\_end (void \* dat) [static]

Here is the call graph for this function:



### 6.136.2.12 static void\* vga\_sec\_start () [static]

Initialize a new VGA configuration

ALL parameters are set explicitly to default values.

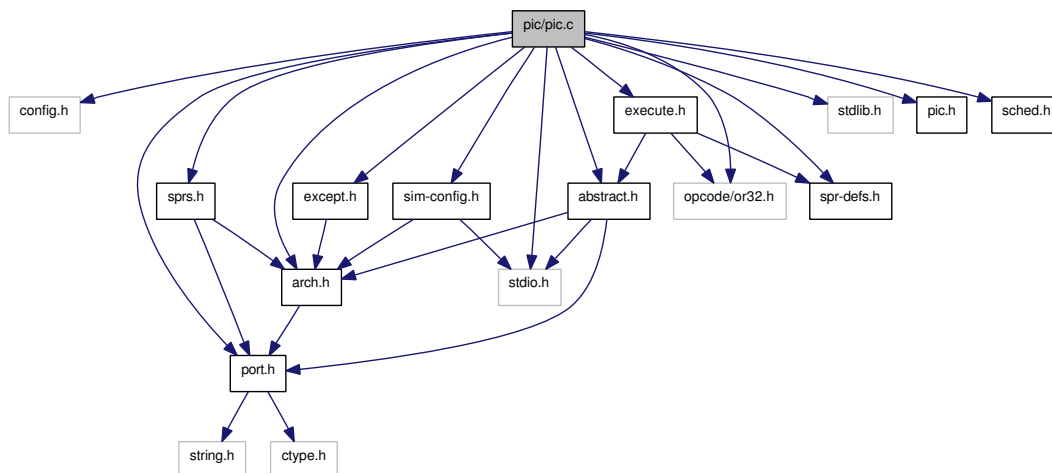
### 6.136.2.13 void vga\_write32 (oraddr\_t addr, uint32\_t value, void \* dat)



## 6.138 pic/pic.c File Reference

```
#include "config.h"
#include "port.h"
#include <stdlib.h>
#include <stdio.h>
#include "arch.h"
#include "abstract.h"
#include "pic.h"
#include "opcode/or32.h"
#include "spr-defs.h"
#include "execute.h"
#include "except.h"
#include "sprs.h"
#include "sim-config.h"
#include "sched.h"
```

Include dependency graph for pic.c:



### Functions

- void [pic\\_reset](#) (void)
- static void [pic\\_rep\\_int](#) (void \*dat)
- void [pic\\_ints\\_en](#) (void)
- void [report\\_interrupt](#) (int line)
- void [clear\\_interrupt](#) (int line)
- static void [pic\\_enabled](#) (union [param\\_val](#) val, void \*dat)
- static void [pic\\_edge\\_trigger](#) (union [param\\_val](#) val, void \*dat)
- void [reg\\_pic\\_sec](#) ()



## Variables

- struct pic `pic_state_int` = { 1, 1 }
- struct pic \* `pic_state` = &`pic_state_int`

## 6.138.1 Function Documentation

### 6.138.1.1 void `clear_interrupt` (int *line*)

### 6.138.1.2 static void `pic_edge_trigger` (union `param_val val`, void \* *dat*) [static]

Enable or disable edge triggering of interrupts

#### Parameters:

- ← *val* The value to use
- ← *dat* The `config` data structure (not used here)

### 6.138.1.3 static void `pic_enabled` (union `param_val val`, void \* *dat*) [static]

Enable or disable the programmable interrupt controller

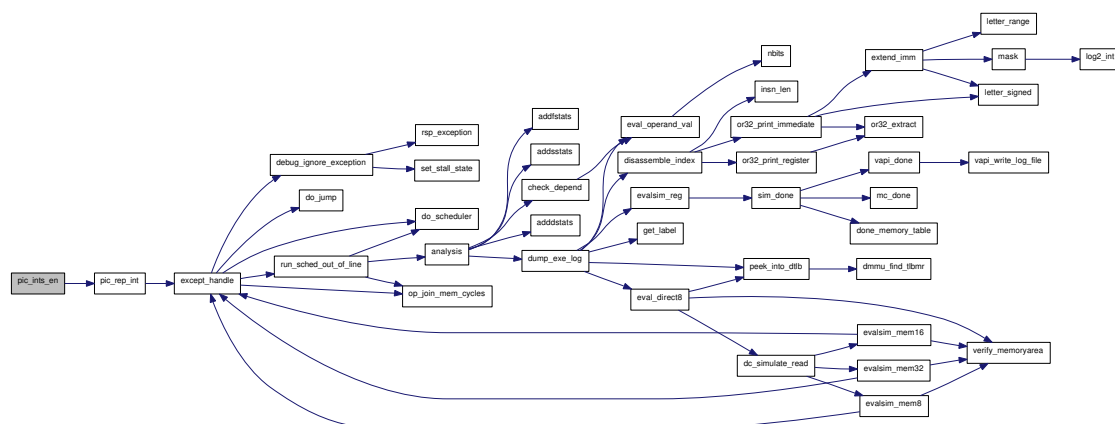
Set the corresponding field in the UPR

#### Parameters:

- ← *val* The value to use
- ← *dat* The `config` data structure (not used here)

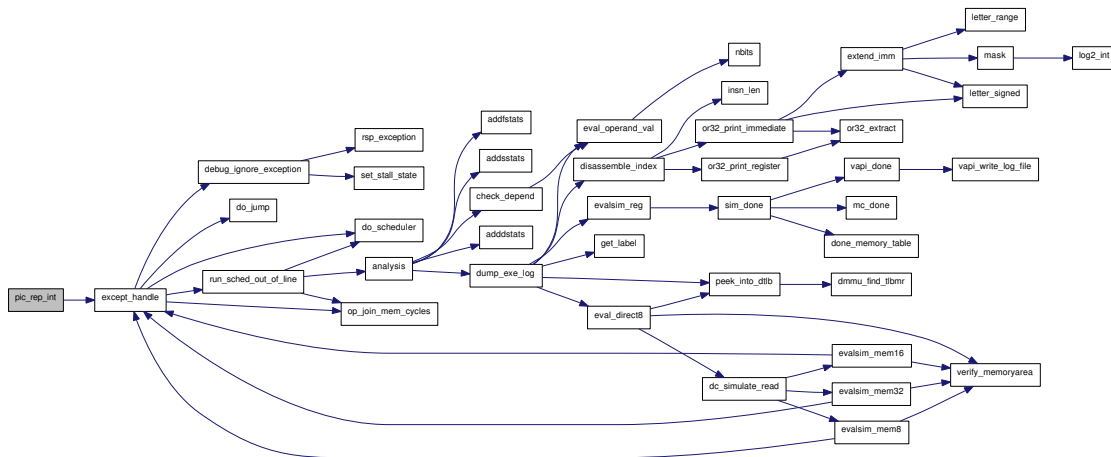
### 6.138.1.4 void `pic_ints_en` (void)

Here is the call graph for this function:



### 6.138.1.5 static void pic\_rep\_int (void \* dat) [static]

Here is the call graph for this function:



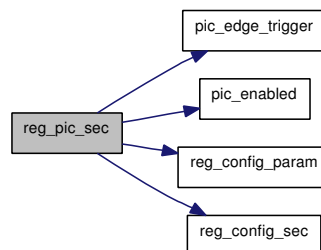
### 6.138.1.6 void pic\_reset (void)

### 6.138.1.7 void reg\_pic\_sec ()

Initialize a new interrupt controller configuration

ALL parameters are set explicitly to default values in [init\\_defconfig\(\)](#)

Here is the call graph for this function:



### 6.138.1.8 void report\_interrupt (int line)

Here is the call graph for this function:



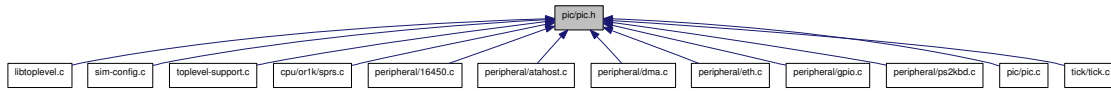
## 6.138.2 Variable Documentation

### 6.138.2.1 struct pic\* pic\_state = &pic\_state\_int

### 6.138.2.2 struct pic pic\_state\_int = { 1, 1 }

## 6.139 pic/pic.h File Reference

This graph shows which files directly or indirectly include this file:



### Functions

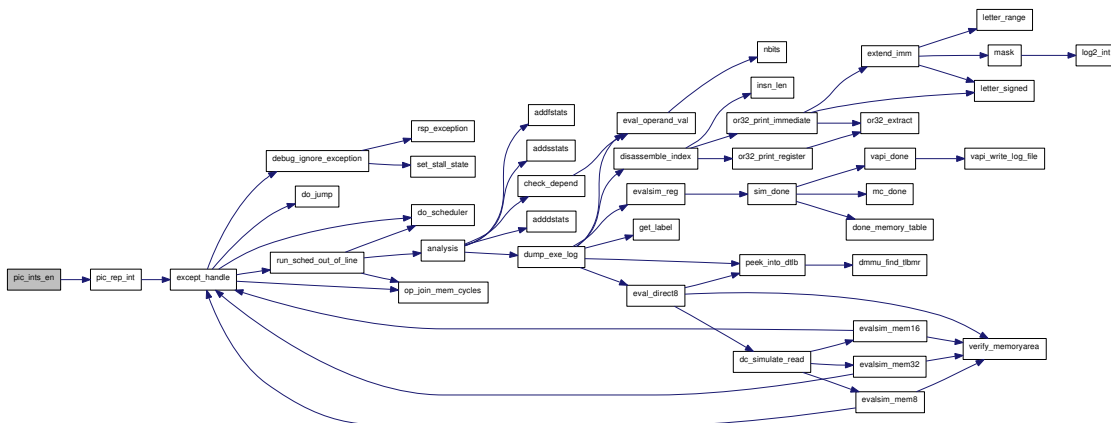
- void [pic\\_reset](#) ()
- void [report\\_interrupt](#) (int line)
- void [clear\\_interrupt](#) (int line)
- void [pic\\_ints\\_en](#) ()
- void [reg\\_pic\\_sec](#) ()

### 6.139.1 Function Documentation

#### 6.139.1.1 void clear\_interrupt (int line)

#### 6.139.1.2 void pic\_ints\_en ()

Here is the call graph for this function:



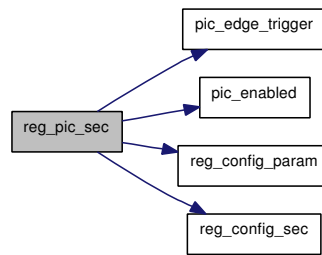
#### 6.139.1.3 void pic\_reset ()

#### 6.139.1.4 void reg\_pic\_sec ()

Initialize a new interrupt controller configuration

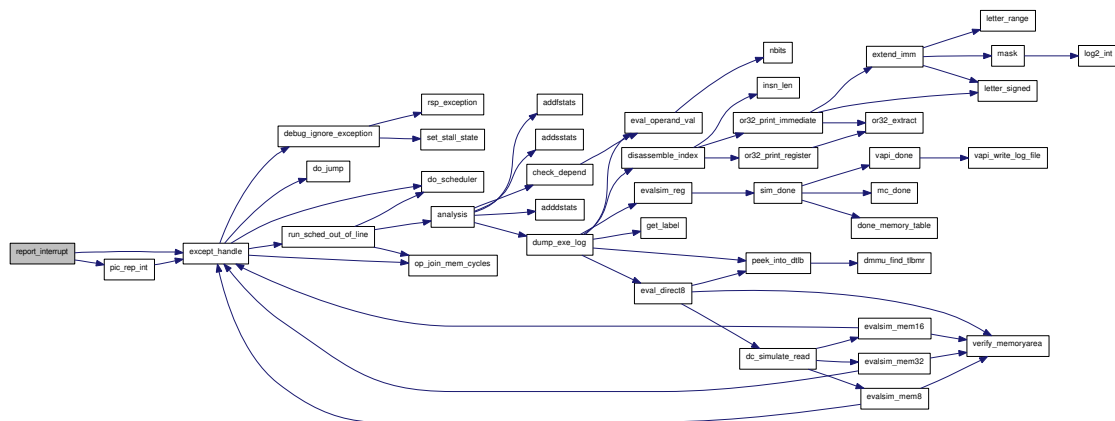
ALL parameters are set explicitly to default values in [init\\_defconfig\(\)](#)

Here is the call graph for this function:



### 6.139.1.5 void report\_interrupt (int line)

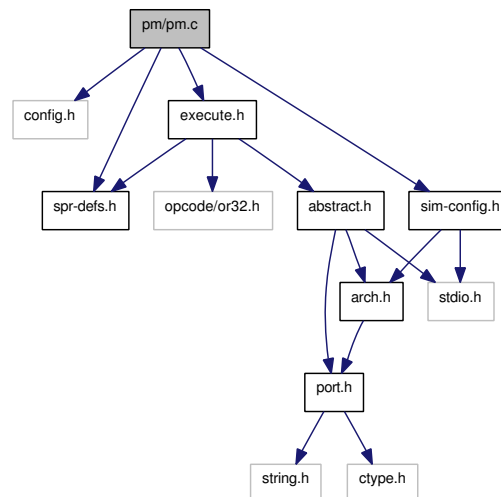
Here is the call graph for this function:



## 6.140 pm/pm.c File Reference

```
#include "config.h"
#include "spr-defs.h"
#include "execute.h"
#include "sim-config.h"
```

Include dependency graph for pm.c:



### Functions

- void [pm\\_reset](#) ()
- static void [pm\\_enabled](#) (union [param\\_val](#) val, void \*dat)
- void [reg\\_pm\\_sec](#) ()

### 6.140.1 Function Documentation

#### 6.140.1.1 static void [pm\\_enabled](#) (union [param\\_val](#) val, void \*dat) [static]

Enable or disable power management

Set the corresponding field in the UPR

#### Parameters:

- ← *val* The value to use
- ← *dat* The [config](#) data structure (not used here)

#### 6.140.1.2 void [pm\\_reset](#) ()

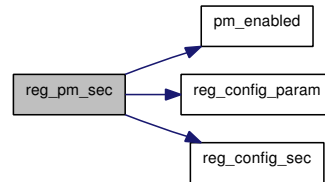
Reset power management

Initializes PMR register by clearing it.

### 6.140.1.3 void reg\_pm\_sec ()

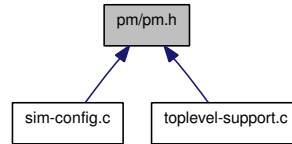
Set up a new power management configuration section

Here is the call graph for this function:



## 6.141 pm/pm.h File Reference

This graph shows which files directly or indirectly include this file:



### Functions

- void [pm\\_reset](#) ()
- void [reg\\_pm\\_sec](#) ()

#### 6.141.1 Function Documentation

##### 6.141.1.1 void `pm_reset` ()

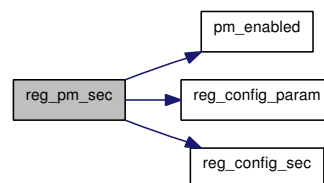
Reset power management

Initializes PMR register by clearing it.

##### 6.141.1.2 void `reg_pm_sec` ()

Set up a new power management configuration section

Here is the call graph for this function:

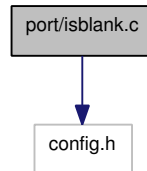




## 6.142 port/isblank.c File Reference

```
#include "config.h"
```

Include dependency graph for isblank.c:



### Functions

- `int isblank (int c)`

#### 6.142.1 Function Documentation

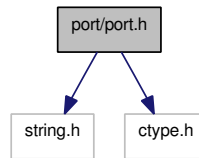
##### 6.142.1.1 `int isblank (int c)`

## 6.143 port/port.h File Reference

```
#include <string.h>
```

```
#include <ctype.h>
```

Include dependency graph for port.h:



### Defines

- #define [PRIx16](#) "x"
- #define [PRIx8](#) "x"

### Functions

- char \* [strndup](#) (const char \*s, size\_t n)
- int [isblank](#) (int c)

#### 6.143.1 Define Documentation

6.143.1.1 #define [PRIx16](#) "x"

6.143.1.2 #define [PRIx8](#) "x"

#### 6.143.2 Function Documentation

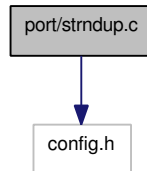
6.143.2.1 int [isblank](#) (int *c*)

6.143.2.2 char\* [strndup](#) (const char \* *s*, size\_t *n*)

## 6.144 port/strndup.c File Reference

```
#include "config.h"
```

Include dependency graph for strndup.c:



### Functions

- char \* [strndup](#) (const char \*s, size\_t n)

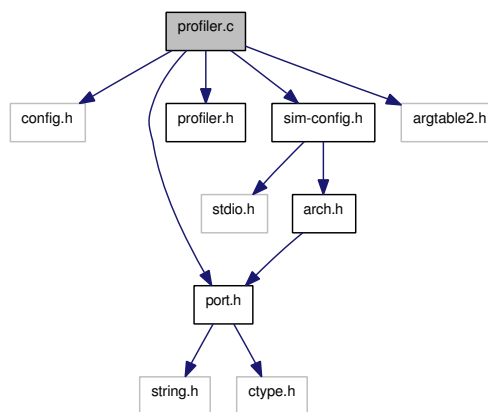
#### 6.144.1 Function Documentation

##### 6.144.1.1 char\* strndup (const char \* s, size\_t n)

## 6.145 profiler.c File Reference

```
#include "config.h"
#include "port.h"
#include "profiler.h"
#include "sim-config.h"
#include "argtable2.h"
```

Include dependency graph for profiler.c:



### Data Structures

- struct [stack\\_struct](#)

### Defines

- #define [MAX\\_STACK](#) 1024

### Functions

- int [prof\\_acquire](#) (const char \*fprofname)
- static void [prof\\_print](#) ()
- void [prof\\_set](#) (int \_quiet, int \_cumulative)
- int [main\\_profiler](#) (int argc, char \*argv[], int just\_help)

### Variables

- struct [func\\_struct](#) [prof\\_func](#) [MAX\_FUNCS]
- int [prof\\_nfuncs](#) = 0
- int [prof\\_cycles](#) = 0
- static struct [stack\\_struct](#) [stack](#) [MAX\_STACK]
- static int [nstack](#) = 0
- static int [maxstack](#) = 0

- static int `ntotcalls` = 0
- static int `nfuncalls` = 0
- static int `cumulative` = 0
- static int `quiet` = 0
- static FILE \* `fprof` = 0

## 6.145.1 Define Documentation

### 6.145.1.1 `#define MAX_STACK 1024`

Maximum stack frames that can be profiled

## 6.145.2 Function Documentation

### 6.145.2.1 `int main_profiler (int argc, char * argv[], int just_help)`

Parse the arguments for the profiling utility

Updated by Jeremy Bennett to use `argtable2`. Also has an option just to print help, for use with the CLI.

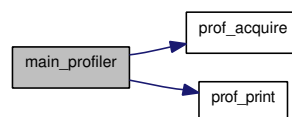
#### Parameters:

- ← *argc* Number of command args
- ← *argv* Vector of the command args
- ← *just\_help* If 1 (true), ignore *argc* & *argv* and just print out the help message without parsing args

#### Returns:

- 0 on success, 1 on failure

Here is the call graph for this function:



### 6.145.2.2 `int prof_acquire (const char * fprofname)`

Acquire data from profiler file

#### Parameters:

- ← *fprofname* Data file to analyse

#### Returns:

- 0 on success, return code otherwise

**6.145.2.3** `static void prof_print ()` [static]

**6.145.2.4** `void prof_set (int _quiet, int _cumulative)`

### 6.145.3 Variable Documentation

**6.145.3.1** `int cumulative = 0` [static]

Whether we are in cumulative mode

**6.145.3.2** `FILE* fprof = 0` [static]

File to read from

**6.145.3.3** `int maxstack = 0` [static]

Max depth

**6.145.3.4** `int nfunccalls = 0` [static]

Number of covered calls

**6.145.3.5** `int nstack = 0` [static]

Current depth

**6.145.3.6** `int ntotcalls = 0` [static]

Number of total calls

**6.145.3.7** `int prof_cycles = 0`

Global: current cycles

**6.145.3.8** `struct func_struct prof_func[MAX_FUNCS]`

Global: data about functions

**6.145.3.9** `int prof_nfuncs = 0`

Global: total number of functions

**6.145.3.10** `int quiet = 0` [static]

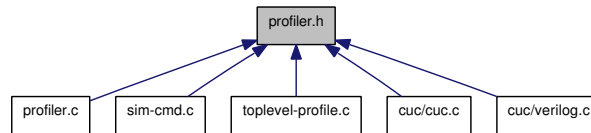
Whether we should not report warnings

**6.145.3.11 struct stack\_struct stack[MAX\_STACK] [static]**

Representation of the stack

## 6.146 profiler.h File Reference

This graph shows which files directly or indirectly include this file:



### Data Structures

- struct [func\\_struct](#)

### Defines

- #define [MAX\\_FUNCS](#) 1024

### Functions

- int [prof\\_acquire](#) (const char \*fprofname)
- void [prof\\_set](#) (int \_quiet, int \_cumulative)
- int [main\\_profiler](#) (int argc, char \*argv[ ], int just\_help)

### Variables

- struct [func\\_struct](#) [prof\\_func](#) [MAX\_FUNCS]
- int [prof\\_nfuncs](#)
- int [prof\\_cycles](#)

#### 6.146.1 Define Documentation

##### 6.146.1.1 #define MAX\_FUNCS 1024

Maximum number of functions that can be profiled

#### 6.146.2 Function Documentation

##### 6.146.2.1 int main\_profiler (int *argc*, char \* *argv*[ ], int *just\_help*)

Parse the arguments for the profiling utility

Updated by Jeremy Bennett to use argtable2. Also has an option just to print help, for use with the CLI.

#### Parameters:

- ← *argc* Number of command args
- ← *argv* Vector of the command args

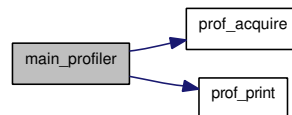


← *just\_help* If 1 (true), ignore argc & argv and just print out the help message without parsing args

**Returns:**

0 on success, 1 on failure

Here is the call graph for this function:

**6.146.2.2 int prof\_acquire (const char \* *fprofname*)**

Acquire data from profiler file

**Parameters:**

← *fprofname* Data file to analyse

**Returns:**

0 on success, return code otherwise

**6.146.2.3 void prof\_set (int *\_quiet*, int *\_cumulative*)****6.146.3 Variable Documentation****6.146.3.1 int prof\_cycles**

Global: current cycles

**6.146.3.2 struct func\_struct prof\_func[MAX\_FUNCS]**

Global: data about functions

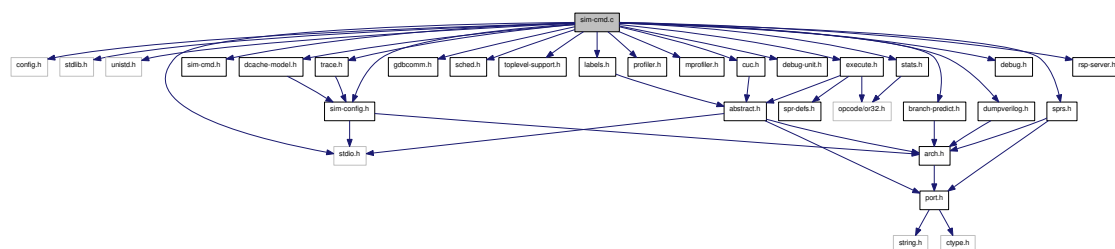
**6.146.3.3 int prof\_nfuncs**

Global: total number of functions

## 6.147 sim-cmd.c File Reference

```
#include "config.h"
#include <stdlib.h>
#include <unistd.h>
#include <stdio.h>
#include "sim-cmd.h"
#include "sim-config.h"
#include "execute.h"
#include "labels.h"
#include "gdbcomm.h"
#include "sched.h"
#include "toplevel-support.h"
#include "dumpverilog.h"
#include "profiler.h"
#include "mprofiler.h"
#include "trace.h"
#include "debug-unit.h"
#include "stats.h"
#include "sprs.h"
#include "dcache-model.h"
#include "branch-predict.h"
#include "debug.h"
#include "cuc.h"
#include "rsp-server.h"
```

Include dependency graph for sim-cmd.c:



## Data Structures

- struct [sim\\_stat](#)
- struct [sim\\_command](#)

## Functions

- void [reg\\_sim\\_stat](#) (void(\*stat\_func)(void \*dat), void \*dat)
- void [reenter\\_int](#) (void \*dat)
- static int [sim\\_cmd\\_quit](#) (int argc, char \*\*argv)
- static int [sim\\_cmd\\_help](#) (int argc, char \*\*argv)
- static int [sim\\_cmd\\_trace](#) (int argc, char \*\*argv)
- static int [sim\\_cmd\\_dm](#) (int argc, char \*\*argv)
- static int [sim\\_cmd\\_dv](#) (int argc, char \*\*argv)
- static int [sim\\_cmd\\_dh](#) (int argc, char \*\*argv)
- static int [sim\\_cmd\\_pm](#) (int argc, char \*\*argv)
- static int [sim\\_cmd\\_cm](#) (int argc, char \*\*argv)
- static int [sim\\_cmd\\_pr](#) (int argc, char \*\*argv)
- static int [sim\\_cmd\\_pc](#) (int argc, char \*\*argv)
- static int [sim\\_cmd\\_breaks](#) (int argc, char \*\*argv)
- static int [sim\\_cmd\\_break](#) (int argc, char \*\*argv)
- static int [sim\\_cmd\\_r](#) (int argc, char \*\*argv)
- static int [sim\\_cmd\\_de](#) (int argc, char \*\*argv)
- static int [sim\\_cmd\\_reset](#) (int argc, char \*\*argv)
- static int [sim\\_cmd\\_hist](#) (int argc, char \*\*argv)
- void [check\\_insn\\_exec](#) (void \*dat)
- void [print\\_insn\\_exec](#) (void \*dat)
- static int [sim\\_cmd\\_run](#) (int argc, char \*\*argv)
- static int [sim\\_cmd\\_stall](#) (int argc, char \*\*argv)
- static int [sim\\_cmd\\_unstall](#) (int argc, char \*\*argv)
- static int [sim\\_cmd\\_stats](#) (int argc, char \*\*argv)
- static int [sim\\_cmd\\_info](#) (int argc, char \*\*argv)
- static int [sim\\_cmd\\_setdbch](#) (int argc, char \*\*argv)
- static int [sim\\_cmd\\_debug](#) (int argc, char \*\*argv)
- static int [sim\\_cmd\\_profile](#) (int argc, char \*\*argv)
- static int [sim\\_cmd\\_mprofile](#) (int argc, char \*\*argv)
- static int [sim\\_cmd\\_cuc](#) (int argc, char \*\*argv)
- static int [sim\\_cmd\\_set](#) (int argc, char \*\*argv)
- static char \* [strip\\_space](#) (char \*str)
- void [handle\\_sim\\_command](#) (void)

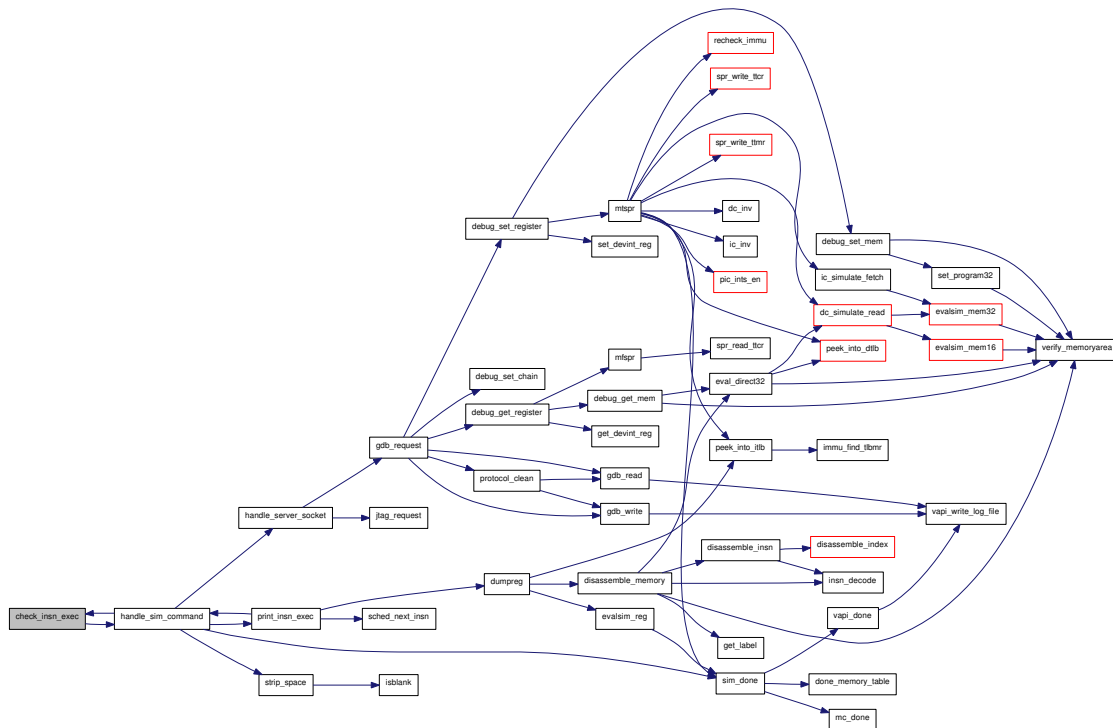
## Variables

- static long long [to\\_insn\\_num](#)
- static struct [sim\\_stat](#) \* [sim\\_stats](#) = NULL
- static struct [sim\\_command](#) [sim\\_commands](#) []

## 6.147.1 Function Documentation

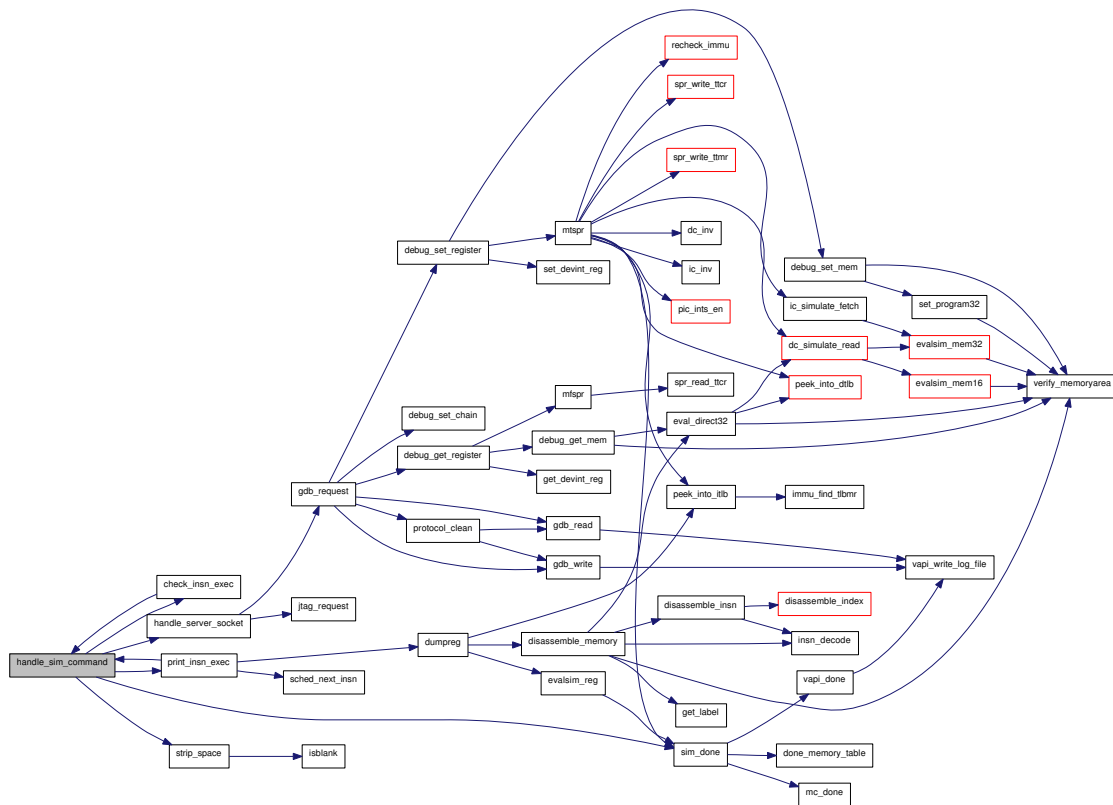
### 6.147.1.1 void check\_insn\_exec (void \* dat)

Here is the call graph for this function:



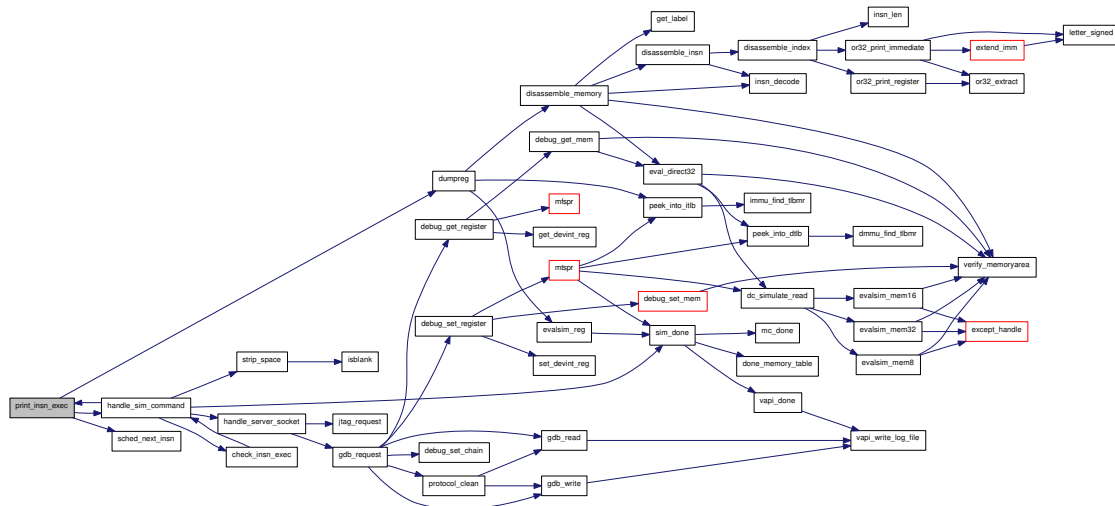
## 6.147.1.2 void handle\_sim\_command (void)

Here is the call graph for this function:



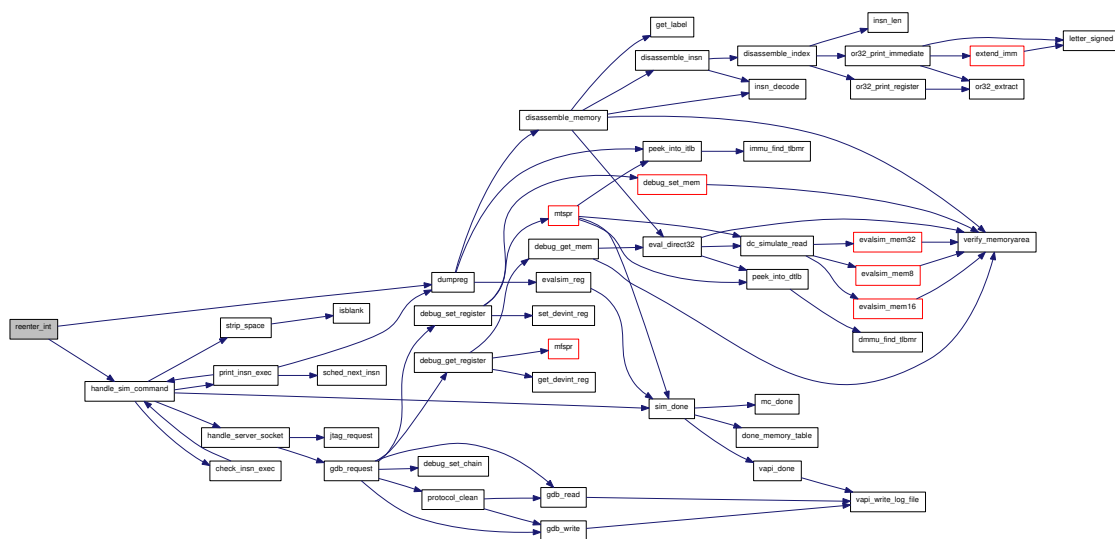
### 6.147.1.3 void print\_insn\_exec (void \* dat)

Here is the call graph for this function:



### 6.147.1.4 void reenter\_int (void \* dat)

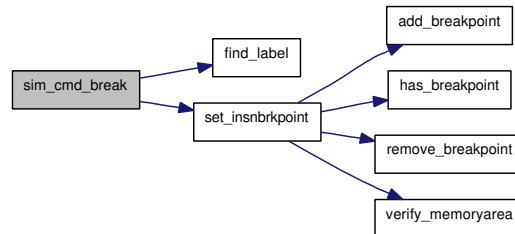
Here is the call graph for this function:



**6.147.1.5** void reg\_sim\_stat (void\*)(void \*dat) stat\_func, void \* dat)

**6.147.1.6** static int sim\_cmd\_break (int argc, char \*\* argv) [static]

Here is the call graph for this function:



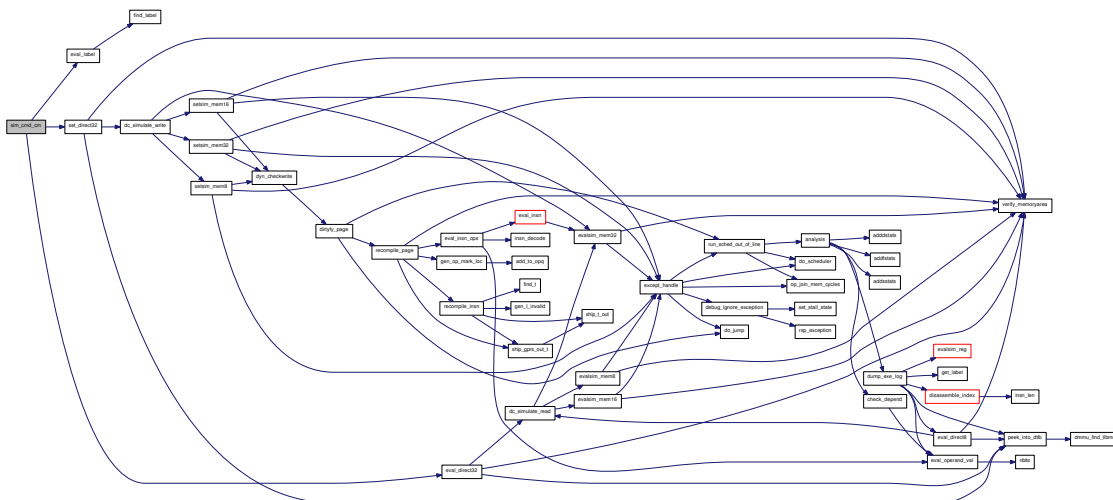
**6.147.1.7** static int sim\_cmd\_breaks (int argc, char \*\* argv) [static]

Here is the call graph for this function:



**6.147.1.8** static int sim\_cmd\_cm (int argc, char \*\* argv) [static]

Here is the call graph for this function:

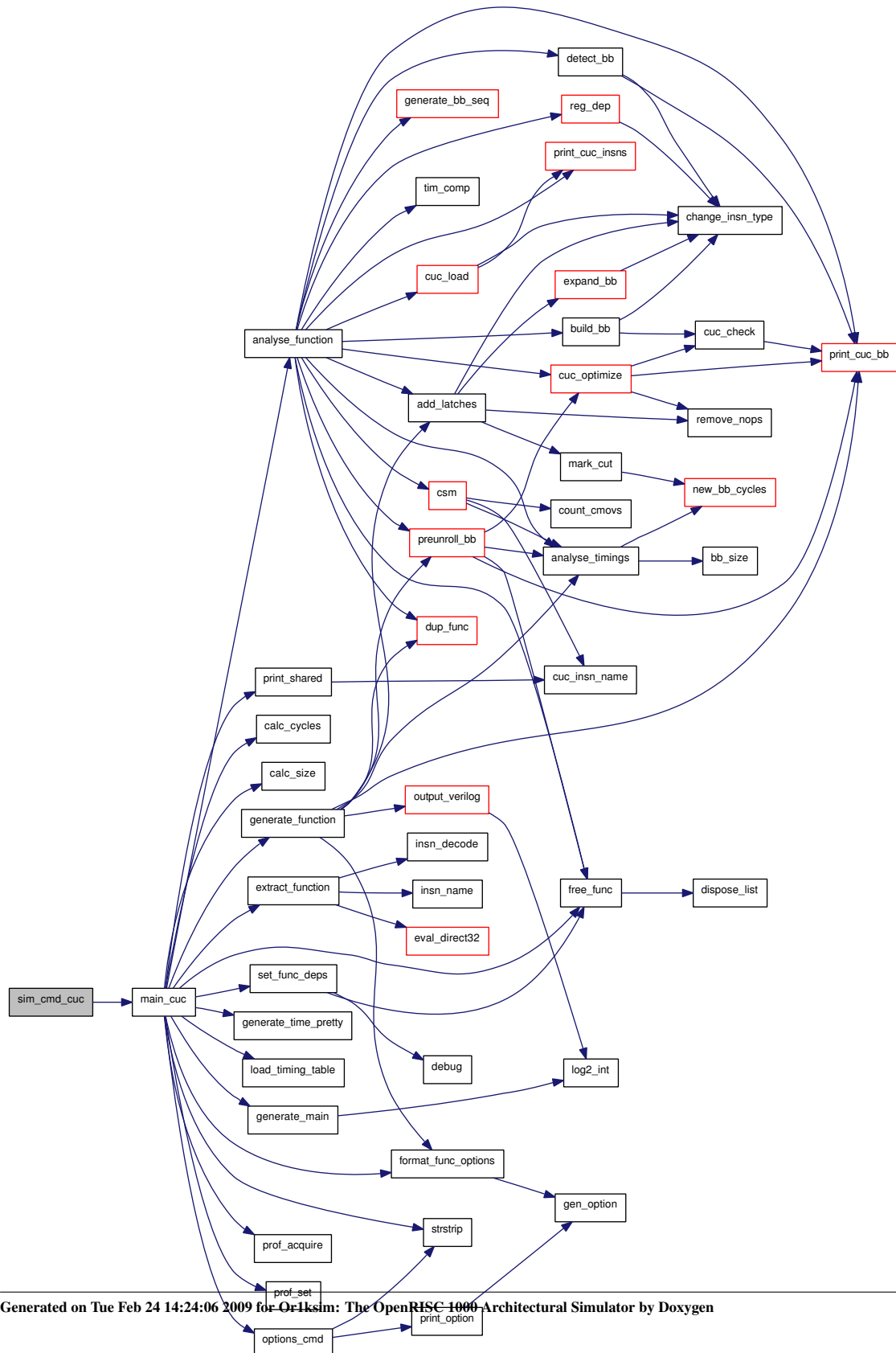






6.147.1.9 static int sim\_cmd\_cuc (int argc, char \*\* argv) [static]

Here is the call graph for this function:





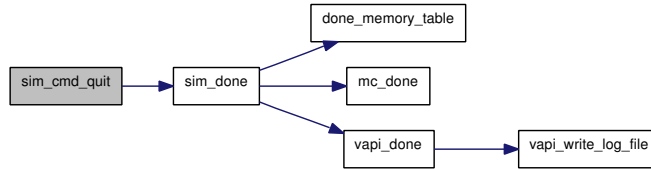






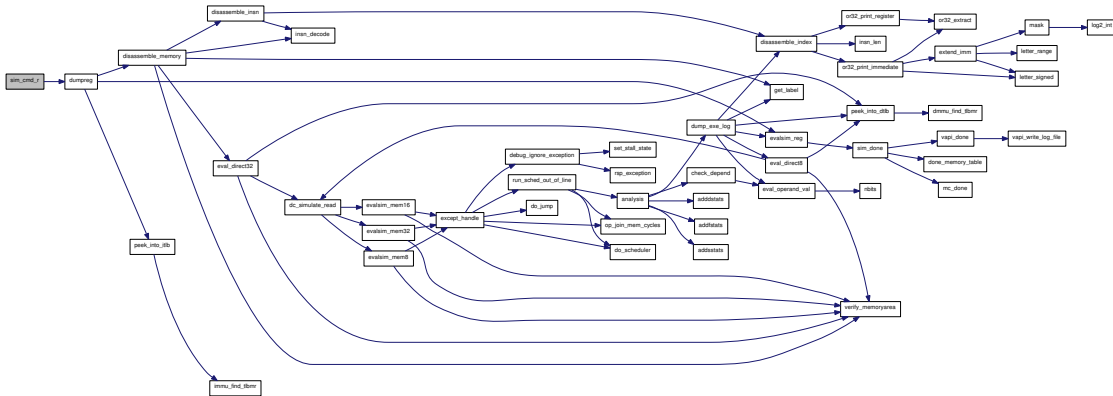
6.147.1.23 static int sim\_cmd\_quit (int argc, char \*\* argv) [static]

Here is the call graph for this function:



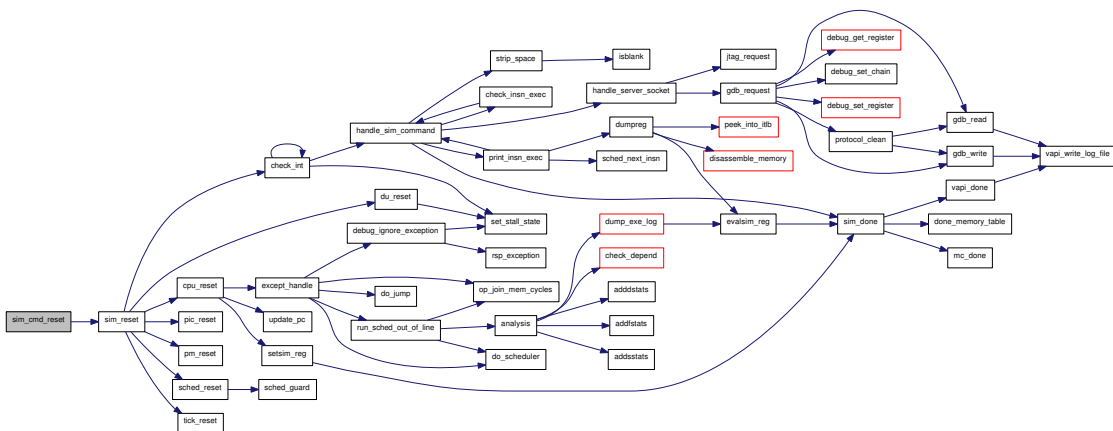
6.147.1.24 static int sim\_cmd\_r (int argc, char \*\* argv) [static]

Here is the call graph for this function:



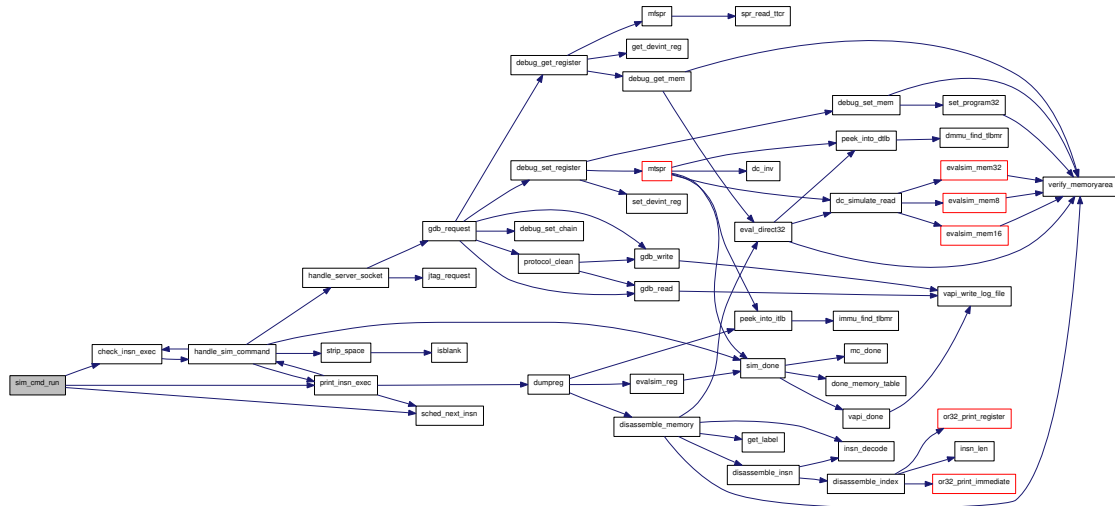
6.147.1.25 static int sim\_cmd\_reset (int argc, char \*\* argv) [static]

Here is the call graph for this function:



**6.147.1.26 static int sim\_cmd\_run (int argc, char \*\* argv) [static]**

Here is the call graph for this function:



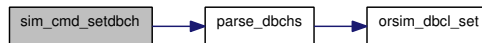
**6.147.1.27 static int sim\_cmd\_set (int argc, char \*\* argv) [static]**

Here is the call graph for this function:



**6.147.1.28 static int sim\_cmd\_setdbch (int argc, char \*\* argv) [static]**

Here is the call graph for this function:



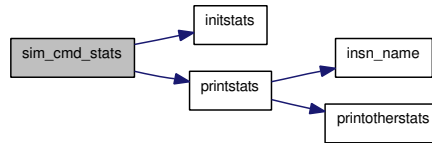
**6.147.1.29 static int sim\_cmd\_stall (int argc, char \*\* argv) [static]**

Here is the call graph for this function:



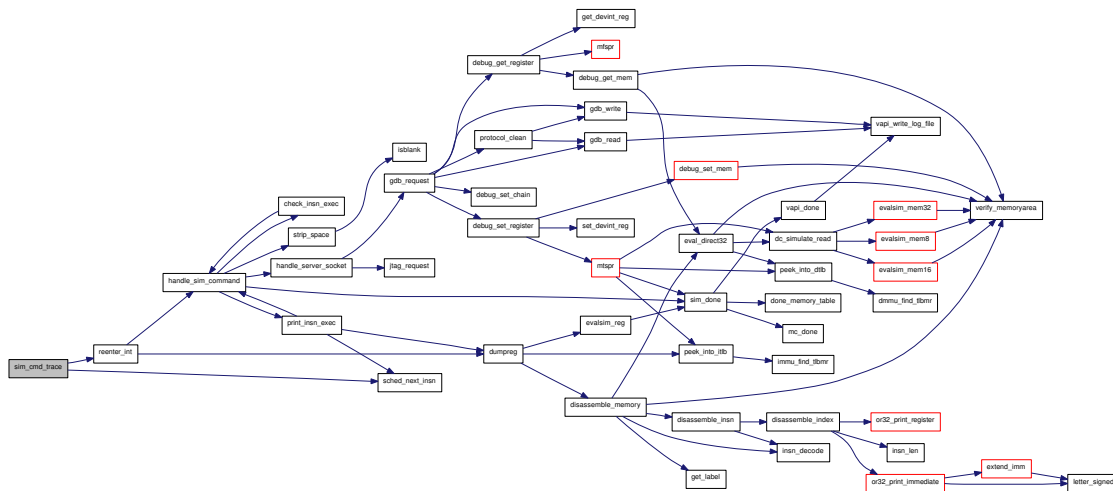
### 6.147.1.30 `static int sim_cmd_stats (int argc, char ** argv) [static]`

Here is the call graph for this function:



### 6.147.1.31 `static int sim_cmd_trace (int argc, char ** argv) [static]`

Here is the call graph for this function:



### 6.147.1.32 `static int sim_cmd_unstall (int argc, char ** argv) [static]`

Here is the call graph for this function:



### 6.147.1.33 `static char* strip_space (char * str) [static]`

Here is the call graph for this function:





## 6.147.2 Variable Documentation

### 6.147.2.1 struct sim\_command sim\_commands[] [static]

**Initial value:**

```
{
  {"q", sim_cmd_quit},
  {"help", sim_cmd_help},
  {"t", sim_cmd_trace},
  {"dm", sim_cmd_dm},
  {"dv", sim_cmd_dv},
  {"dh", sim_cmd_dh},
  {"pm", sim_cmd_pm},
  {"cm", sim_cmd_cm},
  {"pr", sim_cmd_pr},
  {"pc", sim_cmd_pc},
  {"breaks", sim_cmd_breaks},
  {"break", sim_cmd_break},
  {"r", sim_cmd_r},
  {"de", sim_cmd_de},
  {"reset", sim_cmd_reset},
  {"hist", sim_cmd_hist},
  {"stall", sim_cmd_stall},
  {"unstall", sim_cmd_unstall},
  {"stats", sim_cmd_stats},
  {"info", sim_cmd_info},
  {"run", sim_cmd_run},
  {"setdbch", sim_cmd_setdbch},
  {"debug", sim_cmd_debug},
  {"profile", sim_cmd_profile},
  {"mprofile", sim_cmd_mprofile},
  {"cuc", sim_cmd_cuc},
  {"set", sim_cmd_set},
  {NULL, NULL}
}
```

### 6.147.2.2 struct sim\_stat\* sim\_stats = NULL [static]

### 6.147.2.3 long long to\_insn\_num [static]



## 6.149 sim-config.c File Reference

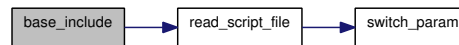
```
#include "config.h"
#include "port.h"
#include <stdlib.h>
#include "sim-config.h"
#include "vapi.h"
#include "cuc.h"
#include "cpu-config.h"
#include "memory.h"
#include "dmmu.h"
#include "immu.h"
#include "dcache-model.h"
#include "icache-model.h"
#include "pic.h"
#include "pm.h"
#include "branch-predict.h"
#include "debug-unit.h"
#include "mc.h"
#include "16450.h"
#include "dma.h"
#include "eth.h"
#include "gpio.h"
#include "vga.h"
#include "fb.h"
#include "ps2kbd.h"
#include "atahost.h"
#include "generic.h"
#include "execute.h"
#include "spr-defs.h"
#include "debug.h"
#include "misc.h"
#include "argtable2.h"
```



## 6.149.1 Function Documentation

### 6.149.1.1 void base\_include (union param\_val val, void \* dat)

Here is the call graph for this function:



### 6.149.1.2 void init\_defconfig (void)

Set default configuration parameters for fixed components

These values are held in the global `config` variable. Parameter orders match the order in the corresponding section registration function and documentation.

Also set some starting values for `runtime` elements.

Here is the call graph for this function:



### 6.149.1.3 int parse\_args (int argc, char \* argv[ ])

Parse the arguments for the standalone simulator

Updated by Jeremy Bennett to use `argtable2`.

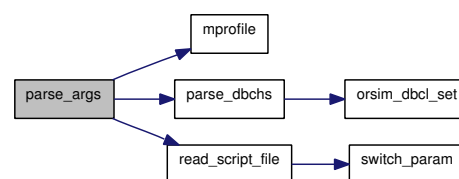
#### Parameters:

- ← *argc* Number of command args
- ← *argv* Vector of the command args

#### Returns:

0 on success, 1 on failure

Here is the call graph for this function:



**6.149.1.4 void print\_config (void)**

Print the current configuration

Here is the call graph for this function:

**6.149.1.5 static void read\_script\_file (const char \**filename*) [static]**

Here is the call graph for this function:









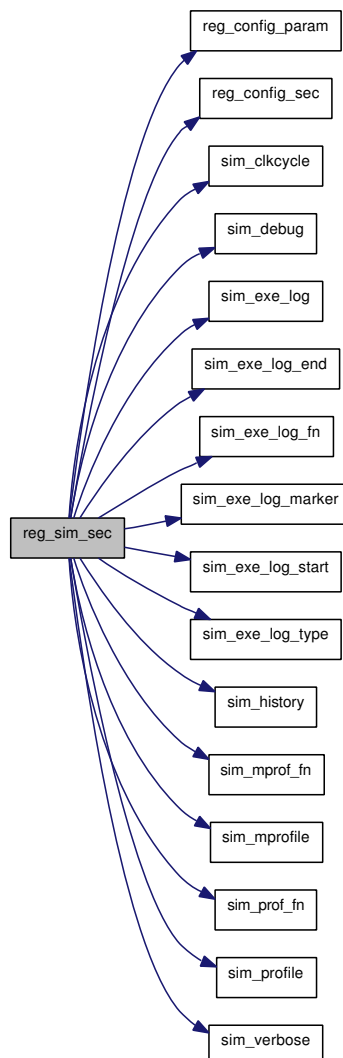
### 6.149.1.9 static void reg\_sim\_sec () [static]

Register the functions to handle a section sim

This section does not allocate dynamically a data structure holding its `config` information. It's all in the global `config.sim` data structure. Therefore it does not need a start and end function to initialize default values (although it might be clearer to do so). The default values are set in `init_defconfig()`.

New preferred parameter names are introduced (`_file` for filenames), but the legacy names (`_fn`) are also present for backwards compatibility

Here is the call graph for this function:

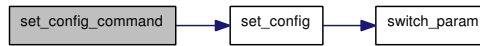


**6.149.1.10** `static int set_config (int argc, char ** argv) [static]`

Here is the call graph for this function:

**6.149.1.11** `void set_config_command (int argc, char ** argv)`

Here is the call graph for this function:

**6.149.1.12** `void sim_clkcycle (union param_val val, void * dat)`

Set the clock cycle time.

Value must be an integer followed by one of ps, ns, us or ms.

If a valid time is not presented, the value is unchanged.

**Parameters:**

← *val* The value to use

← *dat* The `config` data structure (not used here)

**6.149.1.13** `void sim_debug (union param_val val, void * dat)`

Set the simulator debug message level

Value must be in the range 0 (no messages) to 9. Values outside this range are converted to the nearer end of the range with a warning.

**Parameters:**

← *val* The value to use

← *dat* The `config` data structure (not used here)

**6.149.1.14** void sim\_exe\_log (union param\_val val, void \* dat)

**6.149.1.15** void sim\_exe\_log\_end (union param\_val val, void \* dat)

**6.149.1.16** void sim\_exe\_log\_fn (union param\_val val, void \* dat)

**6.149.1.17** void sim\_exe\_log\_marker (union param\_val val, void \* dat)

**6.149.1.18** void sim\_exe\_log\_start (union param\_val val, void \* dat)

**6.149.1.19** void sim\_exe\_log\_type (union param\_val val, void \* dat)

Set the execution log type

Value must be one of default, hardware, simple or software. Invalid values are ignored with a warning.

**Parameters:**

← *val* The value to use

← *dat* The `config` data structure (not used here)

**6.149.1.20** void sim\_history (union param\_val val, void \* dat)

**6.149.1.21** void sim\_mprof\_fn (union param\_val val, void \* dat)

**6.149.1.22** void sim\_mprofile (union param\_val val, void \* dat)

**6.149.1.23** void sim\_prof\_fn (union param\_val val, void \* dat)

**6.149.1.24** void sim\_profile (union param\_val val, void \* dat)

**6.149.1.25** void sim\_verbose (union param\_val val, void \* dat)

**6.149.1.26** static void switch\_param (char \* param, struct config\_param \* cur\_param)  
[static]

## 6.149.2 Variable Documentation

**6.149.2.1** struct config config

**6.149.2.2** struct config\_section\* cur\_section

**6.149.2.3** struct runtime runtime

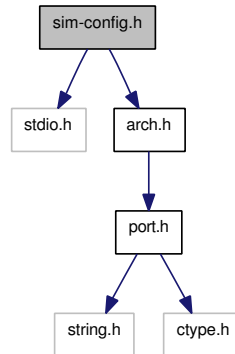
**6.149.2.4** struct config\_section\* sections = NULL

## 6.150 sim-config.h File Reference

```
#include <stdio.h>
```

```
#include "arch.h"
```

Include dependency graph for sim-config.h:



### Data Structures

- struct `config`
- struct `config::pic`
- struct `runtime`
- union `param_val`
- struct `config_section`

### Defines

- #define `MAX_SBUF_LEN` 256
- #define `EXE_LOG_HARDWARE` 0
- #define `EXE_LOG_SIMPLE` 1
- #define `EXE_LOG_SOFTWARE` 2
- #define `STR_SIZE` 256
- #define `CHECK_INT_TIME` 100000
- #define `PRINTF(x...)` `fprintf (runtime.sim.fout, x)`

### Enumerations

- enum `param_t` {  
    `paramt_none` = 0, `paramt_str`, `paramt_word`, `paramt_int`,  
    `paramt_longlong`, `paramt_addr` }

### Functions

- void `set_config_command` (int argc, char \*\*argv)
- void `init_defconfig` (void)

- int `parse_args` (int argc, char \*argv[])
- void `print_config` (void)
- void `reg_config_param` (struct `config_section` \*sec, const char \*param, enum `param_t` type, void(\*param\_cb)(union `param_val`, void \*))
- struct `config_section` \* `reg_config_sec` (const char \*section, void>(\*sec\_start)(void), void(\*sec\_end)(void \*))
- void `reg_config_secs` ()

## Variables

- struct `config config`
- struct `runtime runtime`
- struct `config_section` \* `cur_section`
- int `do_stats`

### 6.150.1 Define Documentation

6.150.1.1 `#define CHECK_INT_TIME 100000`

6.150.1.2 `#define EXE_LOG_HARDWARE 0`

6.150.1.3 `#define EXE_LOG_SIMPLE 1`

6.150.1.4 `#define EXE_LOG_SOFTWARE 2`

6.150.1.5 `#define MAX_SBUF_LEN 256`

6.150.1.6 `#define PRINTF(x...) fprintf (runtime.sim.fout, x)`

6.150.1.7 `#define STR_SIZE 256`

### 6.150.2 Enumeration Type Documentation

6.150.2.1 `enum param_t`

Enum of all possible parameter types

Enumerator:

*paramt\_none*

*paramt\_str*

*paramt\_word*

*paramt\_int*

*paramt\_longlong*

*paramt\_addr*

### 6.150.3 Function Documentation

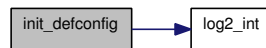
#### 6.150.3.1 void init\_defconfig (void)

Set default configuration parameters for fixed components

These values are held in the global `config` variable. Parameter orders match the order in the corresponding section registration function and documentation.

Also set some starting values for `runtime` elements.

Here is the call graph for this function:



#### 6.150.3.2 int parse\_args (int argc, char \* argv[ ])

Parse the arguments for the standalone simulator

Updated by Jeremy Bennett to use argtable2.

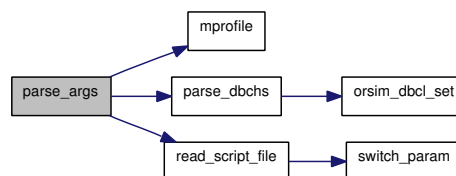
##### Parameters:

- ← *argc* Number of command args
- ← *argv* Vector of the command args

##### Returns:

- 0 on success, 1 on failure

Here is the call graph for this function:



#### 6.150.3.3 void print\_config (void)

Print the current configuration

Here is the call graph for this function:



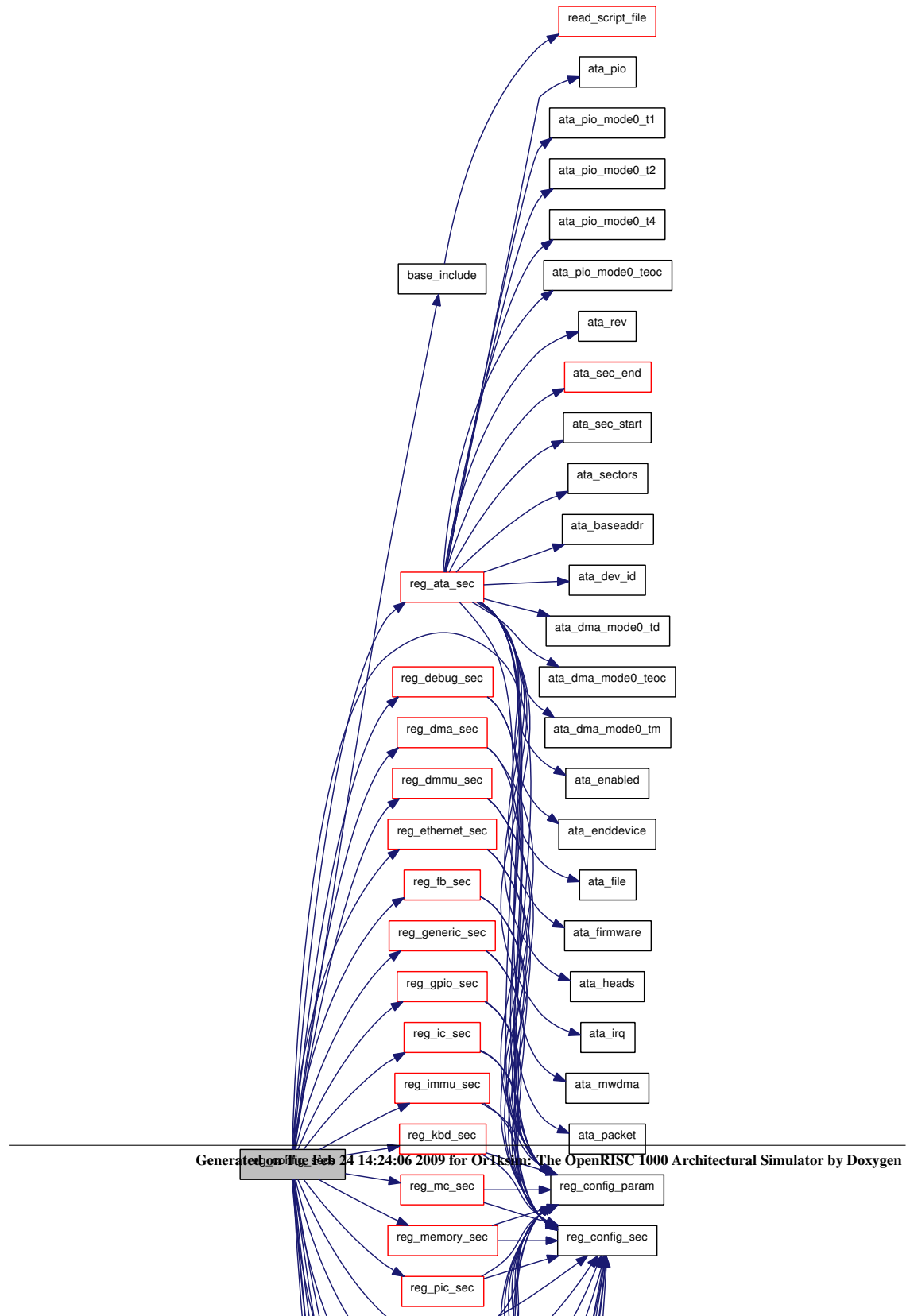


**6.150.3.4** void reg\_config\_param (struct config\_section \* sec, const char \* param, enum param\_t type, void\*(\*)(union param\_val, void \*) param\_cb)

**6.150.3.5** struct config\_section\* reg\_config\_sec (const char \* section, void \*(\*)(void) sec\_start, void\*(\*)(void \*) sec\_end) [read]

**6.150.3.6** void reg\_config\_secs ()

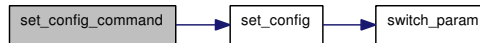
Here is the call graph for this function:





### 6.150.3.7 void set\_config\_command (int argc, char \*\* argv)

Here is the call graph for this function:



## 6.150.4 Variable Documentation

### 6.150.4.1 struct config config

### 6.150.4.2 struct config\_section\* cur\_section

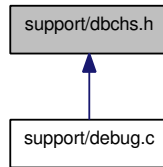
### 6.150.4.3 int do\_stats

Whether we are doing statistical analysis. Globally available

### 6.150.4.4 struct runtime runtime

## 6.151 support/dbchs.h File Reference

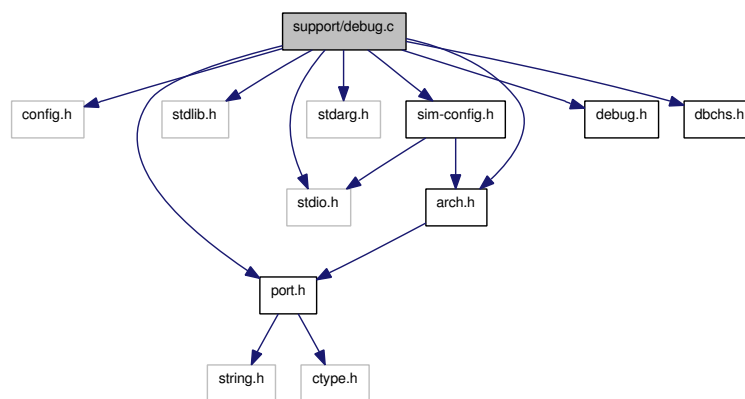
This graph shows which files directly or indirectly include this file:



## 6.152 support/debug.c File Reference

```
#include "config.h"
#include "port.h"
#include <stdlib.h>
#include <stdio.h>
#include <stdarg.h>
#include "arch.h"
#include "sim-config.h"
#include "debug.h"
#include "dbchs.h"
```

Include dependency graph for debug.c:



### Defines

- #define [\\_\\_ORSIM\\_NO\\_DEC\\_DBCH](#)
- #define [DECLARE\\_DEBUG\\_CHANNEL](#)(dbch) char \_\_orsim\_dbch\_##dbch[] = "\0"#dbch;
- #define [DECLARE\\_DEBUG\\_CHANNEL](#)(dbch) \_\_orsim\_dbch\_##dbch,

### Functions

- void [orsim\\_dbg\\_log](#) (enum [\\_\\_ORSIM\\_DEBUG\\_CLASS](#) dbcl, const char \*dbch, const char \*function, const char \*format,...)
- void [orsim\\_dbcl\\_set](#) (enum [\\_\\_ORSIM\\_DEBUG\\_CLASS](#) dbcl, char \*dbch, int on)
- void [orsim\\_dbcl\\_set\\_name](#) (enum [\\_\\_ORSIM\\_DEBUG\\_CLASS](#) dbcl, const char \*dbch, int on)
- void [parse\\_dbchs](#) (const char \*str)
- void [debug](#) (int level, const char \*format,...)

### Variables

- static char \* [\\_\\_orsim\\_dbchs](#) []
- static const char \* [debug\\_classes](#) [] = { "trace", "fixme", "warn", "err" }

## 6.152.1 Define Documentation

6.152.1.1 `#define __ORSIM_NO_DEC_DBCH`

6.152.1.2 `#define DECLARE_DEBUG_CHANNEL(dbch) __orsim_dbch_##dbch,`

6.152.1.3 `#define DECLARE_DEBUG_CHANNEL(dbch) char __orsim_dbch_##dbch[] =  
"\0"#dbch;`

## 6.152.2 Function Documentation

6.152.2.1 `void debug (int level, const char * format, ...)`

Internal debug function

Print the message if the level is greater than or equal to that specified in the configuration.

### Parameters:

- ← *level* The debug level of this message
- ← *format* Varargs format string
- ← ... The varargs required by the string

6.152.2.2 `void orsim_dbcl_set (enum __ORSIM_DEBUG_CLASS dbcl, char * dbch, int on)`

6.152.2.3 `void orsim_dbcl_set_name (enum __ORSIM_DEBUG_CLASS dbcl, const char * dbch,  
int on)`

Here is the call graph for this function:



6.152.2.4 `void orsim_dbg_log (enum __ORSIM_DEBUG_CLASS dbcl, const char * dbch, const  
char * function, const char * format, ...)`

6.152.2.5 `void parse_dbchs (const char * str)`

Here is the call graph for this function:



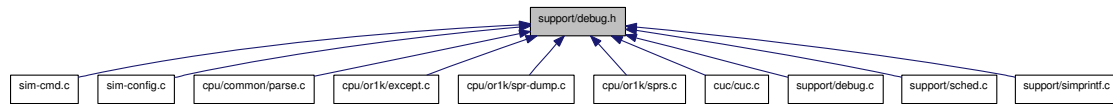
## 6.152.3 Variable Documentation

6.152.3.1 `char* __orsim_dbchs[] [static]`

6.152.3.2 `const char* debug_classes[] = { "trace", "fixme", "warn", "err" } [static]`

## 6.153 support/debug.h File Reference

This graph shows which files directly or indirectly include this file:



### Defines

- #define `__ORSIM_DBG_USE_FUNC` `__FUNCTION__`
- #define `__ORSIM_GET_DEBUGGING_TRACE`(dbch) ((dbch)[0] & (1 << \_\_ORSIM\_DBCL\_TRACE))
- #define `__ORSIM_GET_DEBUGGING_WARN`(dbch) ((dbch)[0] & (1 << \_\_ORSIM\_DBCL\_WARN))
- #define `__ORSIM_GET_DEBUGGING_FIXME`(dbch) ((dbch)[0] & (1 << \_\_ORSIM\_DBCL\_FIXME))
- #define `__ORSIM_GET_DEBUGGING_ERR`(dbch) ((dbch)[0] & (1 << \_\_ORSIM\_DBCL\_ERR))
- #define `__ORSIM_GET_DEBUGGING`(dbcl, dbch) `__ORSIM_GET_DEBUGGING##dbcl`(dbch)
- #define `__ORSIM_DPRINTF`(dbcl, dbch)
- #define `__ORSIM_DEBUG_LOG`(args...) `orsim_dbg_log(__dbcl, __dbch, __ORSIM_DBG_USE_FUNC, args); } } while(0)`
- #define `TRACE`(ch) `__ORSIM_DPRINTF(_TRACE, __orsim_dbch_##ch)`
- #define `FIXME`(ch) `__ORSIM_DPRINTF(_FIXME, __orsim_dbch_##ch)`
- #define `WARN`(ch) `__ORSIM_DPRINTF(_WARN, __orsim_dbch_##ch)`
- #define `ERR`(ch) `__ORSIM_DPRINTF(_ERR, __orsim_dbch_##ch)`
- #define `TRACE` `__ORSIM_DPRINTF(_TRACE, __orsim_dbch__default)`
- #define `FIXME` `__ORSIM_DPRINTF(_FIXME, __orsim_dbch__default)`
- #define `WARN` `__ORSIM_DPRINTF(_WARN, __orsim_dbch__default)`
- #define `ERR` `__ORSIM_DPRINTF(_ERR, __orsim_dbch__default)`
- #define `TRACE_ON`(ch) `__ORSIM_GET_DEBUGGING(_TRACE, __orsim_dbch_##ch)`
- #define `WARN_ON`(ch) `__ORSIM_GET_DEBUGGING(_WARN, __orsim_dbch_##ch)`
- #define `FIXME_ON`(ch) `__ORSIM_GET_DEBUGGING(_FIXME, __orsim_dbch_##ch)`
- #define `ERR_ON`(ch) `__ORSIM_GET_DEBUGGING(_ERR, __orsim_dbch_##ch)`
- #define `DEFAULT_DEBUG_CHANNEL`(dbch)
- #define `DECLARE_DEBUG_CHANNEL`(dbch) `extern char __orsim_dbch_##dbch[ ];`

### Enumerations

- enum `__ORSIM_DEBUG_CLASS` { `__ORSIM_DBCL_TRACE`, `__ORSIM_DBCL_FIXME`, `__ORSIM_DBCL_WARN`, `__ORSIM_DBCL_ERR` }

### Functions

- void `orsim_dbg_log` (enum `__ORSIM_DEBUG_CLASS` dbcl, const char \*dbch, const char \*function, const char \*format,...) `__attribute__((format(printf`
- void `orsim_dbcl_set_name` (enum `__ORSIM_DEBUG_CLASS` dbcl, const char \*dbch, int on)
- void `parse_dbchs` (const char \*str)
- void `debug` (int level, const char \*format,...)

## 6.153.1 Define Documentation

6.153.1.1 **#define** `__ORSIM_DBG_USE_FUNC __FUNCTION__`

6.153.1.2 **#define** `__ORSIM_DEBUG_LOG(args...) orsim_dbg_log(__dbcl, __dbch, __ORSIM_DBG_USE_FUNC, args); } } while(0)`

6.153.1.3 **#define** `__ORSIM_DPRINTF(dbcl, dbch)`

### Value:

```
do { if(__ORSIM_GET_DEBUGGING(dbcl, (dbch))) { \
    const char * const __dbch = dbch; \
    const enum __ORSIM_DEBUG_CLASS __dbcl = __ORSIM_DBCL##dbcl; \
    __ORSIM_DEBUG_LOG
```

6.153.1.4 **#define** `__ORSIM_GET_DEBUGGING(dbcl, dbch) __ORSIM_GET_DEBUGGING##dbcl(dbch)`

6.153.1.5 **#define** `__ORSIM_GET_DEBUGGING_ERR(dbch) ((dbch)[0] & (1 << __ORSIM_DBCL_ERR))`

6.153.1.6 **#define** `__ORSIM_GET_DEBUGGING_FIXME(dbch) ((dbch)[0] & (1 << __ORSIM_DBCL_FIXME))`

6.153.1.7 **#define** `__ORSIM_GET_DEBUGGING_TRACE(dbch) ((dbch)[0] & (1 << __ORSIM_DBCL_TRACE))`

6.153.1.8 **#define** `__ORSIM_GET_DEBUGGING_WARN(dbch) ((dbch)[0] & (1 << __ORSIM_DBCL_WARN))`

6.153.1.9 **#define** `DECLARE_DEBUG_CHANNEL(dbch) extern char __orsim_dbch_##dbch[ ];`

6.153.1.10 **#define** `DEFAULT_DEBUG_CHANNEL(dbch)`

### Value:

```
extern char __orsim_dbch_##dbch[ ]; \
static char * const __orsim_dbch___default = __orsim_dbch_##dbch;
```

- 6.153.1.11 `#define ERR __ORSIM_DPRINTF(_ERR, __orsim_dbch__default)`
- 6.153.1.12 `#define ERR_(ch) __ORSIM_DPRINTF(_ERR, __orsim_dbch_##ch)`
- 6.153.1.13 `#define ERR_ON(ch) __ORSIM_GET_DEBUGGING(_ERR, __orsim_dbch_##ch)`
- 6.153.1.14 `#define FIXME __ORSIM_DPRINTF(_FIXME, __orsim_dbch__default)`
- 6.153.1.15 `#define FIXME_(ch) __ORSIM_DPRINTF(_FIXME, __orsim_dbch_##ch)`
- 6.153.1.16 `#define FIXME_ON(ch) __ORSIM_GET_DEBUGGING(_FIXME, __orsim_dbch_-##ch)`
- 6.153.1.17 `#define TRACE __ORSIM_DPRINTF(_TRACE, __orsim_dbch__default)`
- 6.153.1.18 `#define TRACE_(ch) __ORSIM_DPRINTF(_TRACE, __orsim_dbch_##ch)`
- 6.153.1.19 `#define TRACE_ON(ch) __ORSIM_GET_DEBUGGING(_TRACE, __orsim_dbch_-##ch)`
- 6.153.1.20 `#define WARN __ORSIM_DPRINTF(_WARN, __orsim_dbch__default)`
- 6.153.1.21 `#define WARN_(ch) __ORSIM_DPRINTF(_WARN, __orsim_dbch_##ch)`
- 6.153.1.22 `#define WARN_ON(ch) __ORSIM_GET_DEBUGGING(_WARN, __orsim_dbch_##ch)`

## 6.153.2 Enumeration Type Documentation

### 6.153.2.1 `enum __ORSIM_DEBUG_CLASS`

Enumerator:

`__ORSIM_DBCL_TRACE`

`__ORSIM_DBCL_FIXME`

`__ORSIM_DBCL_WARN`

`__ORSIM_DBCL_ERR`

## 6.153.3 Function Documentation

### 6.153.3.1 `void debug(int level, const char *format, ...)`

Internal debug function

Print the message if the level is greater than or equal to that specified in the configuration.

Parameters:

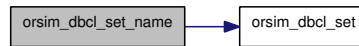
← *level* The debug level of this message

← *format* Varargs format string

← ... The varargs required by the string

**6.153.3.2** void void orsim\_dbcl\_set\_name (enum \_\_ORSIM\_DEBUG\_CLASS *dbcl*, const char \* *dbch*, int *on*)

Here is the call graph for this function:



**6.153.3.3** void orsim\_dbg\_log (enum \_\_ORSIM\_DEBUG\_CLASS *dbcl*, const char \* *dbch*, const char \* *function*, const char \* *format*, ...)

**6.153.3.4** void parse\_dbchs (const char \* *str*)

Here is the call graph for this function:

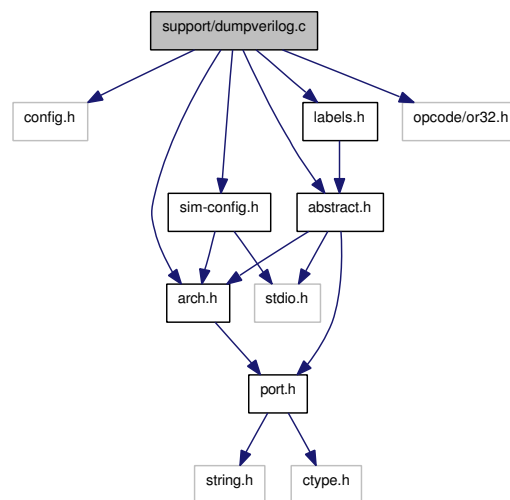




## 6.154 support/dumpverilog.c File Reference

```
#include "config.h"
#include "sim-config.h"
#include "arch.h"
#include "abstract.h"
#include "labels.h"
#include "opcode/or32.h"
```

Include dependency graph for dumpverilog.c:



### Defines

- #define [DW](#) 32
- #define [DWQ](#) (DW/8)
- #define [DISWIDTH](#) 25
- #define [OR1K\\_MEM\\_VERILOG\\_HEADER](#)(MODNAME, FROMADDR, TOADDR, DISWIDTH)
- #define [OR1K\\_MEM\\_VERILOG\\_FOOTER](#) "\n\nend\n\nalways @(posedge clk) begin\n\n if (ce && ~we) begin\n\n dataout <= #1 mem[addr];\n\n disout <= #1 dis[addr];\n\n \$display(\"or1k\_mem: reading mem[%0d]:%0h dis: %0s\", addr, dataout, dis[addr]);\n\n end else\n\n if (ce && we) begin\n\n mem[addr] <= #1 data;\n\n dis[addr] <= #1 \"(data)\";\n\n \$display(\"or1k\_mem: writing mem[%0d]:%0h dis: %0s\", addr, mem[addr], dis[addr]);\n\n end\n\nend\n\nendmodule\n"
- #define [LABLEND\\_CHAR](#) ":"

### Functions

- void [dumpverilog](#) (char \*verilog\_modname, [oraddr\\_t](#) from, [oraddr\\_t](#) to)
- void [dumphex](#) ([oraddr\\_t](#) from, [oraddr\\_t](#) to)

## 6.154.1 Define Documentation

6.154.1.1 **#define DISWIDTH 25**

6.154.1.2 **#define DW 32**

6.154.1.3 **#define DWQ (DW/8)**

6.154.1.4 **#define LABELEND\_CHAR ""**

6.154.1.5 **#define OR1K\_MEM\_VERILOG\_FOOTER ""**  
`\n\end\n\nalways @(posedge clk)  
begin\n\n if (ce && ~we) begin\n\n dataout <= #1 mem[addr];\n\n disout <= #1  
dis[addr];\n\n $display(\"or1k_mem: reading mem[%0d]:%0h dis: %0s\", addr,  
dataout, dis[addr]);\n\n end else\n\n if (ce && we) begin\n\n mem[addr] <= #1 data;\n\n  
dis[addr] <= #1 \"(data)\";\n\n $display(\"or1k_mem: writing mem[%0d]:%0h  
dis: %0s\", addr, mem[addr], dis[addr]);\n\n end\n\nend\n\nendmodule\n"`

6.154.1.6 **#define OR1K\_MEM\_VERILOG\_HEADER(MODNAME, FROMADDR, TOADDR,  
DISWIDTH)**

**Value:**

```

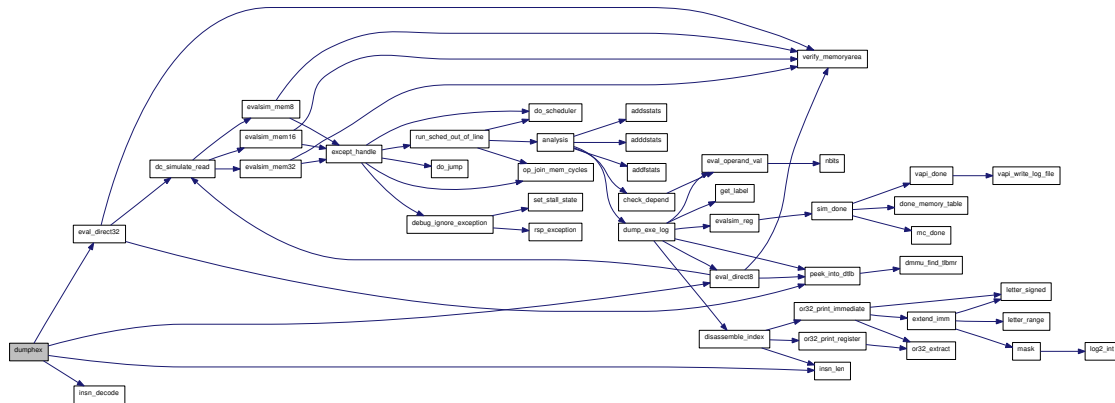
"\n\n\
#include \"general.h\"\n\n\n\
`timescale 1ns/100ps\n\n\n\
// Simple dw-wide Sync SRAM with initial content generated by orlksim.\n\n\
// All control, data in and addr signals are sampled at rising clock edge \n\n\
// Data out is not registered. Address bits specify dw-word (narrowest \n\n\
// addressed data is not byte but dw-word !). \n\n\
// There are still some bugs in generated output (dump word aligned regions)\n\n\n\
module %s(clk, data, addr, ce, we, disout);\n\n\n\
parameter dw = 32;\n\n\n\
parameter amin = % PRIdREG "; \n\n\n\
parameter amax = % PRIdREG "; \n\n\n\
input clk;\n\n\n\
inout [dw-1:0] data;\n\n\n\
input [31:0] addr;\n\n\n\
input ce;\n\n\n\
input we;\n\n\n\
output [%d:0] disout;\n\n\n\
reg [%d:0] disout;\n\n\n\
reg [dw-1:0] mem [amax:amin];\n\n\n\
reg [%d:0] dis [amax:amin];\n\n\n\
reg [dw-1:0] dataout;\n\n\n\
tri [dw-1:0] data = (ce && ~we) ? dataout : 'bz;\n\n\n\
initial begin\n\n", MODNAME, FROMADDR, TOADDR, DISWIDTH-1, DISWIDTH-1, DISWIDTH-1

```

## 6.154.2 Function Documentation

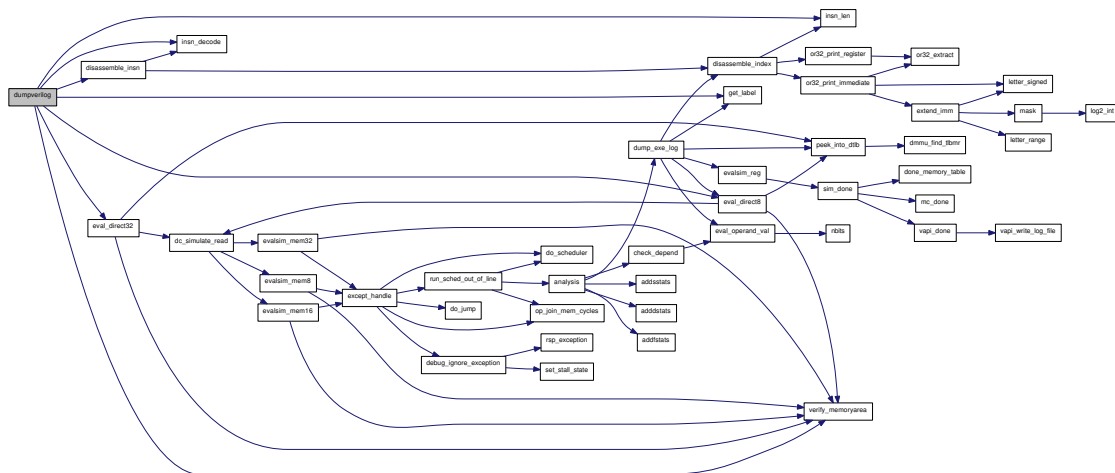
### 6.154.2.1 void dumphex (oraddr\_t from, oraddr\_t to)

Here is the call graph for this function:



### 6.154.2.2 void dumpverilog (char \* verilog\_modname, oraddr\_t from, oraddr\_t to)

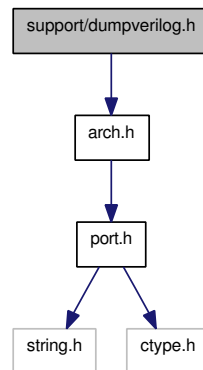
Here is the call graph for this function:



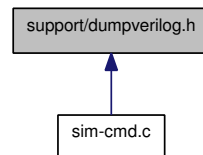
## 6.155 support/dumpverilog.h File Reference

```
#include "arch.h"
```

Include dependency graph for dumpverilog.h:



This graph shows which files directly or indirectly include this file:



## Functions

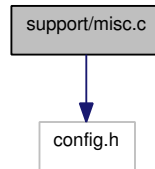
- void `dumpverilog` (char \*verilog\_modname, `oraddr_t` from, `oraddr_t` to)
- void `dumphex` (`oraddr_t` from, `oraddr_t` to)



## 6.156 support/misc.c File Reference

```
#include "config.h"
```

Include dependency graph for misc.c:



### Functions

- [int log2\\_int](#) (unsigned long *x*)
- [int is\\_power2](#) (int *x*)

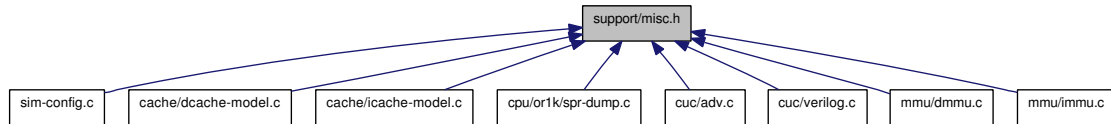
### 6.156.1 Function Documentation

**6.156.1.1** [int is\\_power2](#) (int *x*)

**6.156.1.2** [int log2\\_int](#) (unsigned long *x*)

## 6.157 support/misc.h File Reference

This graph shows which files directly or indirectly include this file:



### Functions

- [int log2\\_int](#) (unsigned long *x*)
- [int is\\_power2](#) (int *x*)

### 6.157.1 Function Documentation

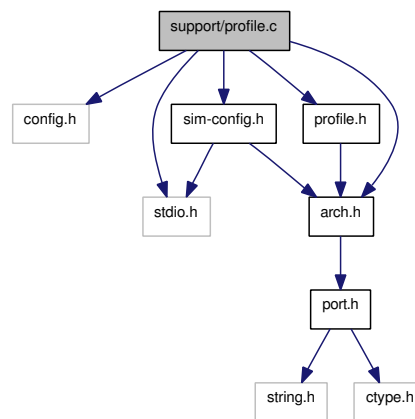
#### 6.157.1.1 [int is\\_power2](#) (int *x*)

#### 6.157.1.2 [int log2\\_int](#) (unsigned long *x*)

## 6.158 support/profile.c File Reference

```
#include "config.h"  
#include <stdio.h>  
#include "profile.h"  
#include "sim-config.h"  
#include "arch.h"
```

Include dependency graph for profile.c:



### Functions

- void `mprofile` (`oraddr_t memaddr`, unsigned char type)

#### 6.158.1 Function Documentation

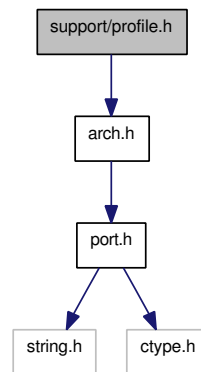
**6.158.1.1** void `mprofile` (`oraddr_t memaddr`, unsigned char type)



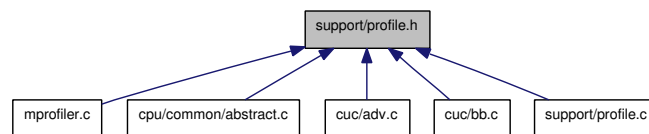
## 6.159 support/profile.h File Reference

```
#include "arch.h"
```

Include dependency graph for profile.h:



This graph shows which files directly or indirectly include this file:



### Data Structures

- struct [mprofentry\\_struct](#)

### Defines

- #define [MPROF\\_READ](#) 1
- #define [MPROF\\_WRITE](#) 2
- #define [MPROF\\_FETCH](#) 4
- #define [MPROF\\_8](#) 8
- #define [MPROF\\_16](#) 16
- #define [MPROF\\_32](#) 32

### Functions

- void [mprofile](#) ([oraddr\\_t](#) memaddr, unsigned char type)

### 6.159.1 Define Documentation

6.159.1.1 `#define MPROF_16 16`

6.159.1.2 `#define MPROF_32 32`

6.159.1.3 `#define MPROF_8 8`

6.159.1.4 `#define MPROF_FETCH 4`

6.159.1.5 `#define MPROF_READ 1`

6.159.1.6 `#define MPROF_WRITE 2`

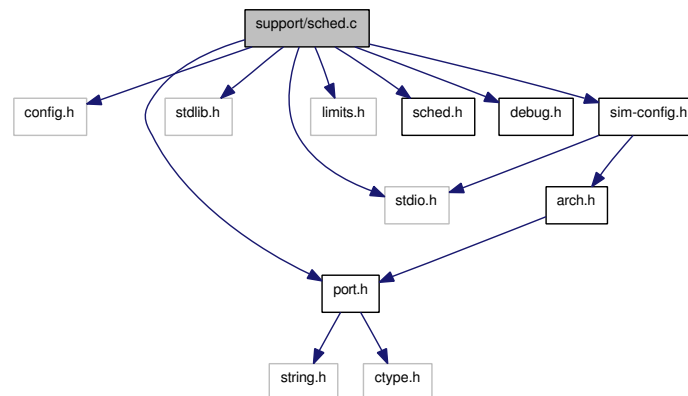
### 6.159.2 Function Documentation

6.159.2.1 `void mprofile (oraddr_t memaddr, unsigned char type)`

## 6.160 support/sched.c File Reference

```
#include "config.h"
#include "port.h"
#include <stdlib.h>
#include <stdio.h>
#include <limits.h>
#include "sched.h"
#include "debug.h"
#include "sim-config.h"
```

Include dependency graph for sched.c:



### Defines

- `#define SCHED_HEAP_SIZE 128`
- `#define SCHED_TIME_MAX INT32_MAX`

### Functions

- `DECLARE_DEBUG_CHANNEL` (sched\_jobs)
- void `sched_guard` (void \*dat)
- void `sched_reset` (void)
- void `sched_init` (void)
- void `do_scheduler` (void)
- void `sched_add` (void(\*job\_func)(void \*), void \*job\_param, int32\_t job\_time, const char \*func)
- void `sched_find_remove` (void(\*job\_func)(void \*), void \*dat)
- void `sched_next_insn` (void(\*func)(void \*), void \*dat)

### Variables

- struct `scheduler_struct scheduler`

## 6.160.1 Define Documentation

6.160.1.1 `#define SCHED_HEAP_SIZE 128`

6.160.1.2 `#define SCHED_TIME_MAX INT32_MAX`

## 6.160.2 Function Documentation

6.160.2.1 `DECLARE_DEBUG_CHANNEL (sched_jobs)`

6.160.2.2 `void do_scheduler (void)`

6.160.2.3 `void sched_add (void(*) (void *) job_func, void * job_param, int32_t job_time, const char * func)`

6.160.2.4 `void sched_find_remove (void(*) (void *) job_func, void * dat)`

6.160.2.5 `void sched_guard (void * dat)`

6.160.2.6 `void sched_init (void)`

Here is the call graph for this function:



6.160.2.7 `void sched_next_insn (void(*) (void *) func, void * dat)`

6.160.2.8 `void sched_reset (void)`

Here is the call graph for this function:

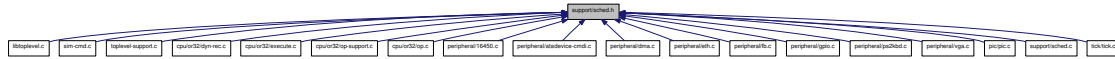


## 6.160.3 Variable Documentation

6.160.3.1 `struct scheduler_struct scheduler`

## 6.161 support/sched.h File Reference

This graph shows which files directly or indirectly include this file:



### Data Structures

- struct [sched\\_entry](#)
- struct [scheduler\\_struct](#)

### Defines

- #define [SCHED\\_ADD](#)(job\_func, job\_param, job\_time) sched\_add(job\_func, job\_param, job\_time, #job\_func)
- #define [SCHED\\_FIND\\_REMOVE](#)(f, p) sched\_find\_remove(f, p)

### Functions

- void [sched\\_init](#) ()
- void [sched\\_reset](#) ()
- void [sched\\_next\\_insn](#) (void(\*func)(void \*), void \*dat)
- void [sched\\_find\\_remove](#) (void(\*job\_func)(void \*), void \*dat)
- void [sched\\_add](#) (void(\*job\_func)(void \*), void \*job\_param, int32\_t job\_time, const char \*func)
- void [do\\_scheduler](#) ()

### Variables

- struct [scheduler\\_struct](#) [scheduler](#)

#### 6.161.1 Define Documentation

**6.161.1.1** #define [SCHED\\_ADD](#)(job\_func, job\_param, job\_time) sched\_add(job\_func, job\_param, job\_time, #job\_func)

Macro to add a job to the scheduler

**6.161.1.2** #define [SCHED\\_FIND\\_REMOVE](#)(f, p) sched\_find\_remove(f, p)

Macro to remove a job from the scheduler

## 6.161.2 Function Documentation

6.161.2.1 void do\_scheduler ()

6.161.2.2 void sched\_add (void(\*) (void \*) *job\_func*, void \* *job\_param*, int32\_t *job\_time*, const char \* *func*)

6.161.2.3 void sched\_find\_remove (void(\*) (void \*) *job\_func*, void \* *dat*)

6.161.2.4 void sched\_init ()

Here is the call graph for this function:



6.161.2.5 void sched\_next\_insn (void(\*) (void \*) *func*, void \* *dat*)

6.161.2.6 void sched\_reset ()

Here is the call graph for this function:



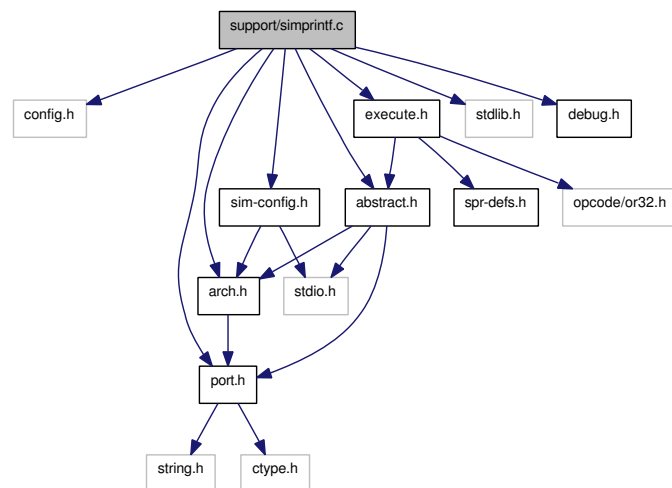
## 6.161.3 Variable Documentation

6.161.3.1 struct scheduler\_struct scheduler

## 6.162 support/simprintf.c File Reference

```
#include "config.h"
#include "port.h"
#include <stdlib.h>
#include "sim-config.h"
#include "arch.h"
#include "debug.h"
#include "abstract.h"
#include "execute.h"
```

Include dependency graph for simprintf.c:



### Defines

- #define [STACK\\_ARGS](#) 0
- #define [FMTLEN](#) 2000

### Functions

- static char \* [simgetstr](#) ([oraddr\\_t](#) stackaddr, unsigned long regparam)
- void [simprintf](#) ([oraddr\\_t](#) stackaddr, unsigned long regparam)

### Variables

- char [fmtstr](#) [[FMTLEN](#)]

## 6.162.1 Define Documentation

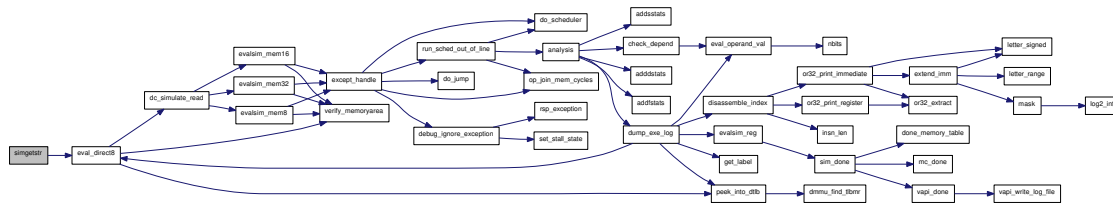
### 6.162.1.1 #define FMTLEN 2000

### 6.162.1.2 #define STACK\_ARGS 0

## 6.162.2 Function Documentation

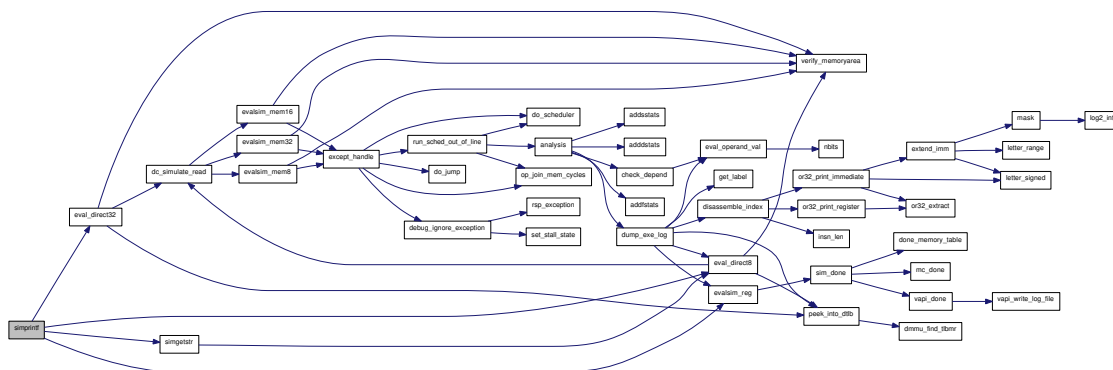
### 6.162.2.1 static char\* simgetstr (oraddr\_t stackaddr, unsigned long regparam) [static]

Here is the call graph for this function:



### 6.162.2.2 void simprintf (oraddr\_t stackaddr, unsigned long regparam)

Here is the call graph for this function:



## 6.162.3 Variable Documentation

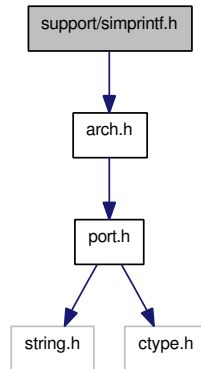
### 6.162.3.1 char fmtstr[FMTLEN]



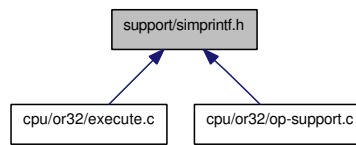
## 6.163 support/simprintf.h File Reference

```
#include "arch.h"
```

Include dependency graph for simprintf.h:



This graph shows which files directly or indirectly include this file:



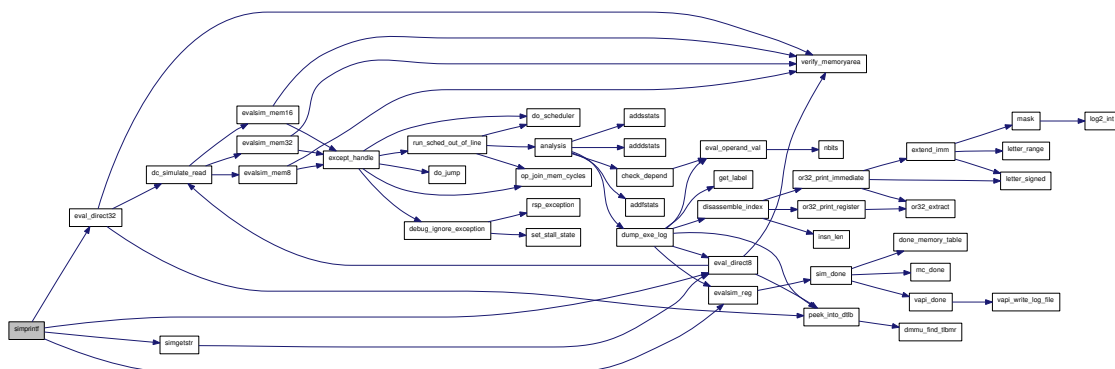
## Functions

- void `simprintf` (`oraddr_t` stackaddr, unsigned long regparam)

### 6.163.1 Function Documentation

#### 6.163.1.1 void `simprintf` (`oraddr_t` stackaddr, unsigned long regparam)

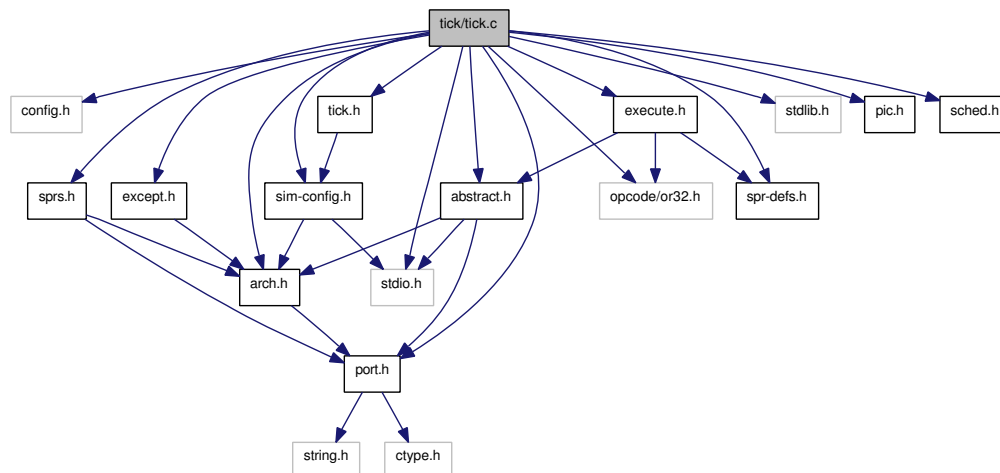
Here is the call graph for this function:



## 6.164 tick/tick.c File Reference

```
#include "config.h"
#include "port.h"
#include <stdlib.h>
#include <stdio.h>
#include "arch.h"
#include "abstract.h"
#include "except.h"
#include "tick.h"
#include "opcode/or32.h"
#include "spr-defs.h"
#include "execute.h"
#include "pic.h"
#include "sprs.h"
#include "sim-config.h"
#include "sched.h"
```

Include dependency graph for tick.c:



## Functions

- void [tick\\_reset](#) (void)
- static void [tick\\_raise\\_except](#) (void \*dat)
- static void [tick\\_restart](#) (void \*dat)
- static void [tick\\_one\\_shot](#) (void \*dat)
- static void [sched\\_timer\\_job](#) (uorreg\_t prev\_ttmr)
- void [spr\\_write\\_ttc](#) (uorreg\_t value)
- void [spr\\_write\\_ttmr](#) (uorreg\_t prev\_val)

- `uorreg_t spr_read_ttr ()`

## Variables

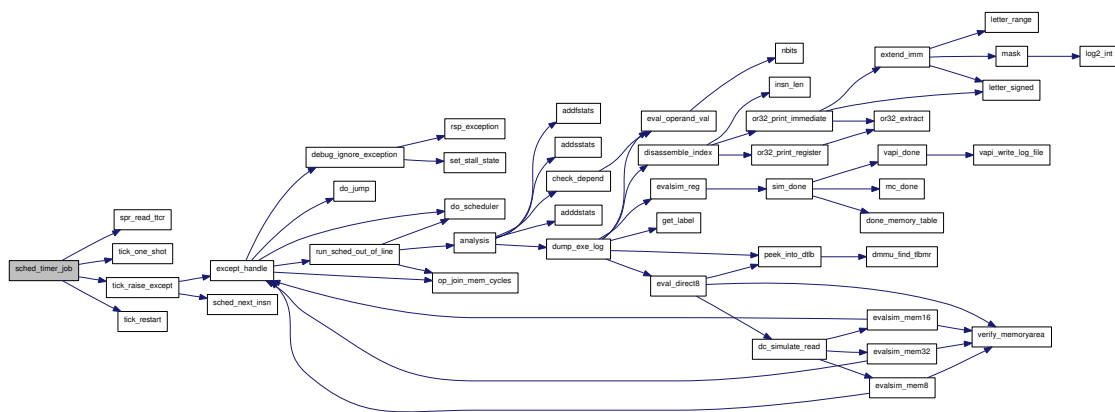
- static long long `cycles_start = 0`
- int `tick_count`

## 6.164.1 Function Documentation

### 6.164.1.1 static void sched\_timer\_job (uorreg\_t prev\_ttr) [static]

Schedules the timer jobs

Here is the call graph for this function:

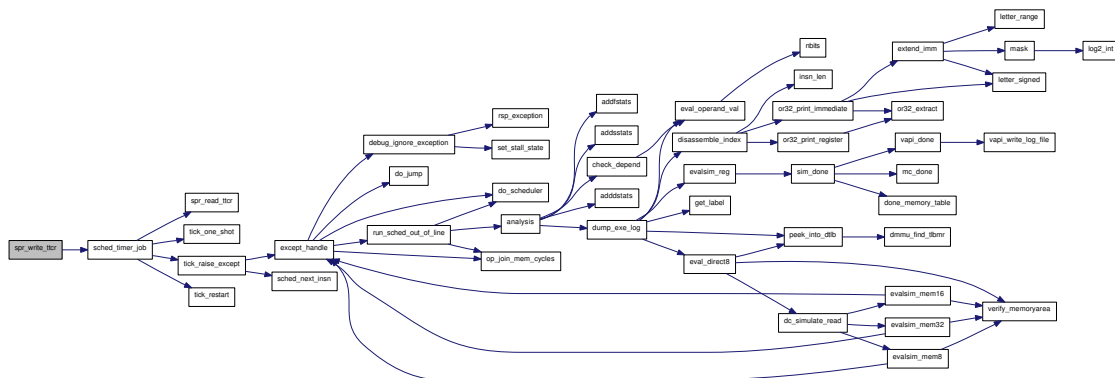


### 6.164.1.2 uorreg\_t spr\_read\_ttr ()

### 6.164.1.3 void spr\_write\_ttr (uorreg\_t value)

Handles a write to the ttr spr

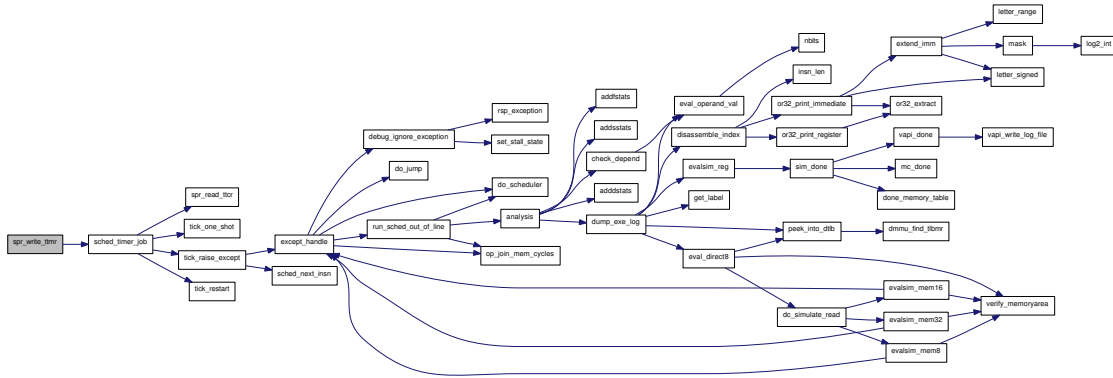
Here is the call graph for this function:



### 6.164.1.4 void spr\_write\_ttmr (uorreg\_t prev\_val)

Value is the \*previous\* value of SPR\_TTMR. The new one can be found in `cpu_state.sprs[SPR_TTMR]`

Here is the call graph for this function:



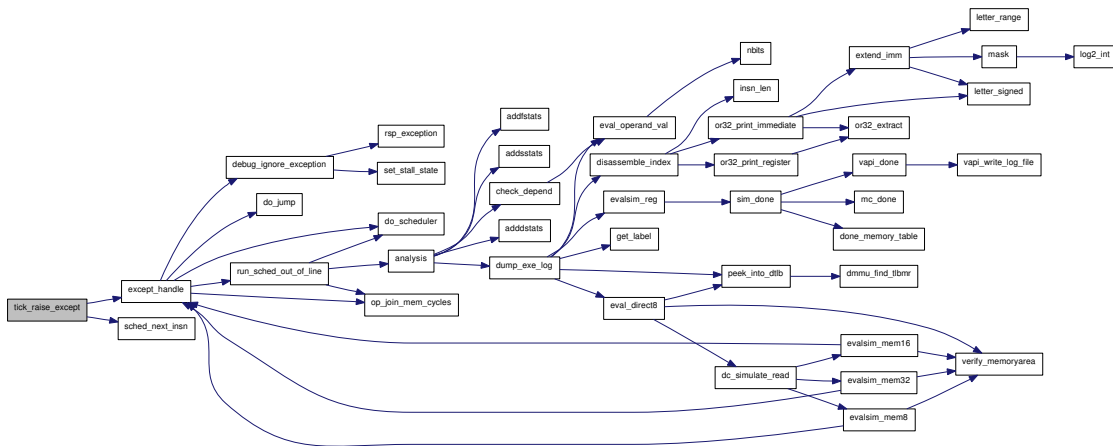
### 6.164.1.5 static void tick\_one\_shot (void \* dat) [static]

Stops the timer

### 6.164.1.6 static void tick\_raise\_except (void \* dat) [static]

Raises a timer exception

Here is the call graph for this function:



### 6.164.1.7 void tick\_reset (void)

Reset. It initializes TTCR register.

**6.164.1.8 static void tick\_restart (void \* *dat*) [static]**

Restarts the tick timer

**6.164.2 Variable Documentation****6.164.2.1 long long cycles\_start = 0 [static]**

When did the timer start to count

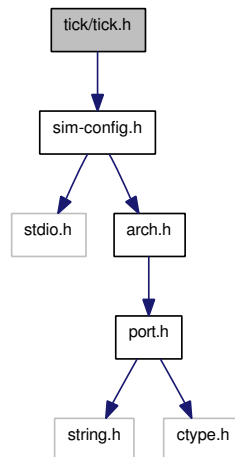
**6.164.2.2 int tick\_count**

Indicates if the timer is actually counting. Needed to simulate one-shot mode correctly

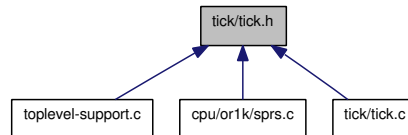
## 6.165 tick/tick.h File Reference

```
#include "sim-config.h"
```

Include dependency graph for tick.h:



This graph shows which files directly or indirectly include this file:



## Functions

- void [tick\\_reset \(\)](#)
- void [spr\\_write\\_ttc](#) ([uorreg\\_t value](#))
- void [spr\\_write\\_ttmr](#) ([uorreg\\_t value](#))
- [uorreg\\_t spr\\_read\\_ttc](#) ()

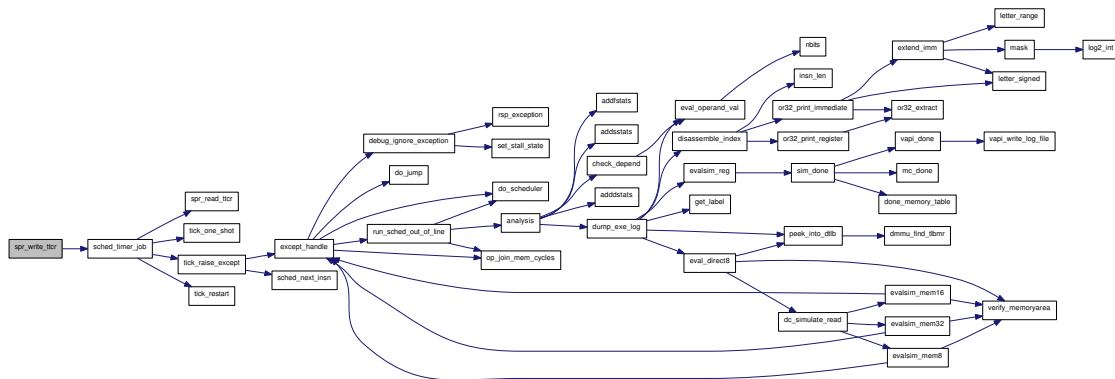
### 6.165.1 Function Documentation

#### 6.165.1.1 uorreg\_t spr\_read\_ttc ()

#### 6.165.1.2 void spr\_write\_ttc (uorreg\_t value)

Handles a write to the ttc spr

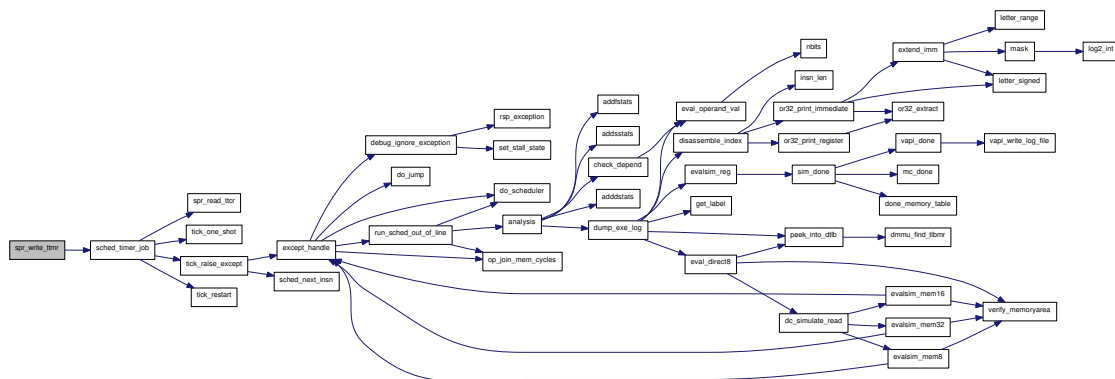
Here is the call graph for this function:



### 6.165.1.3 void spr\_write\_tmr (uorreg\_t prev\_val)

Value is the \*previous\* value of SPR\_TTMR. The new one can be found in `cpu_state.sprs[SPR_TTMR]`

Here is the call graph for this function:



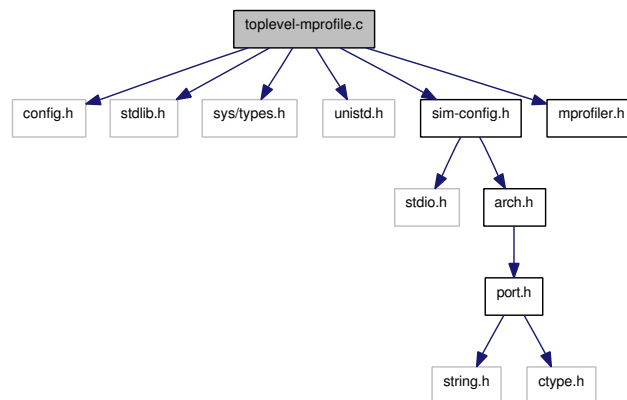
### 6.165.1.4 void tick\_reset (void)

Reset. It initializes TTCR register.

## 6.166 toplevel-mprofile.c File Reference

```
#include "config.h"  
#include <stdlib.h>  
#include <sys/types.h>  
#include <unistd.h>  
#include "sim-config.h"  
#include "mprofiler.h"
```

Include dependency graph for toplevel-mprofile.c:



## Functions

- `int main (int argc, char *argv[ ])`

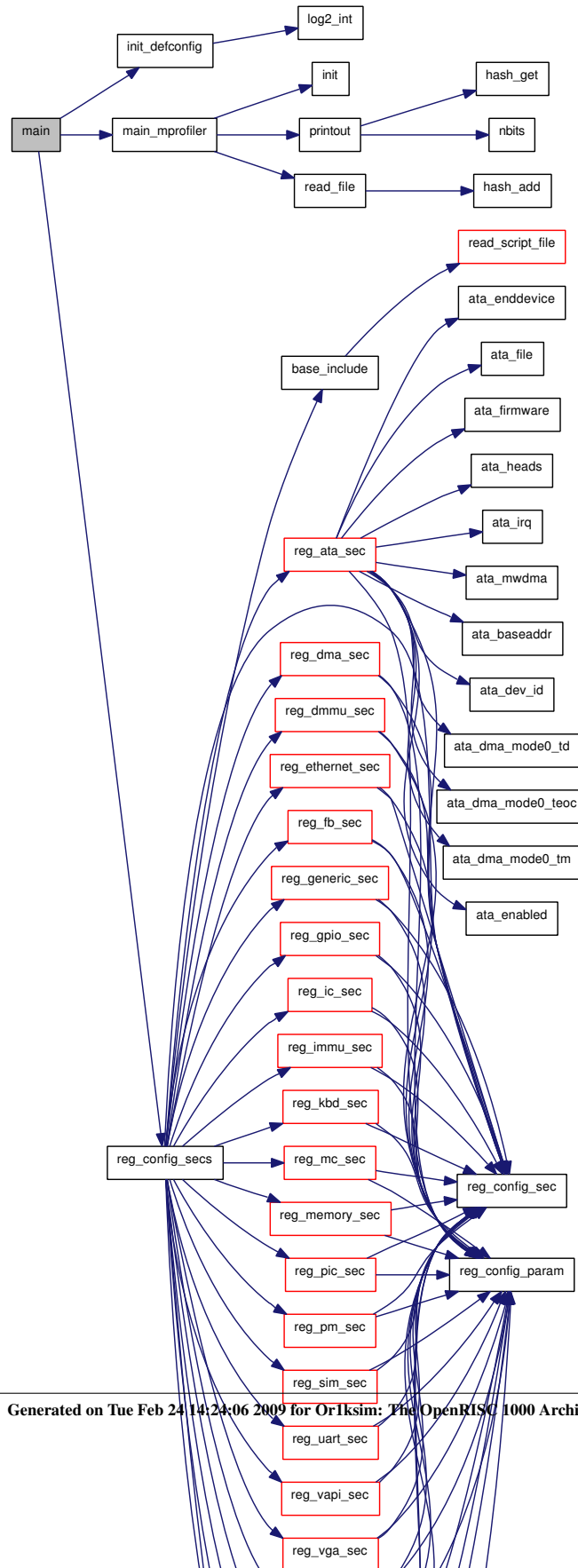




## 6.166.1 Function Documentation

### 6.166.1.1 `int main (int argc, char * argv[ ])`

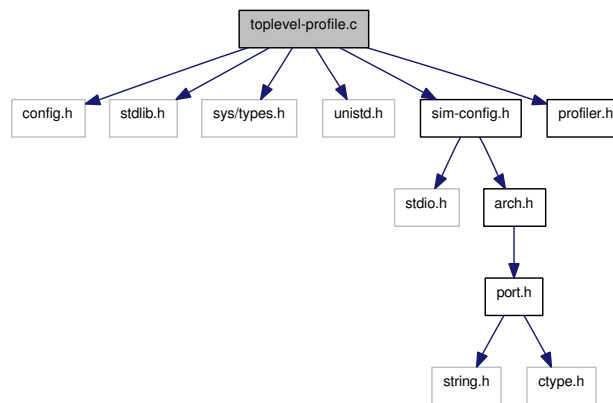
Here is the call graph for this function:



## 6.167 toplevel-profile.c File Reference

```
#include "config.h"  
#include <stdlib.h>  
#include <sys/types.h>  
#include <unistd.h>  
#include "sim-config.h"  
#include "profiler.h"
```

Include dependency graph for toplevel-profile.c:



## Functions

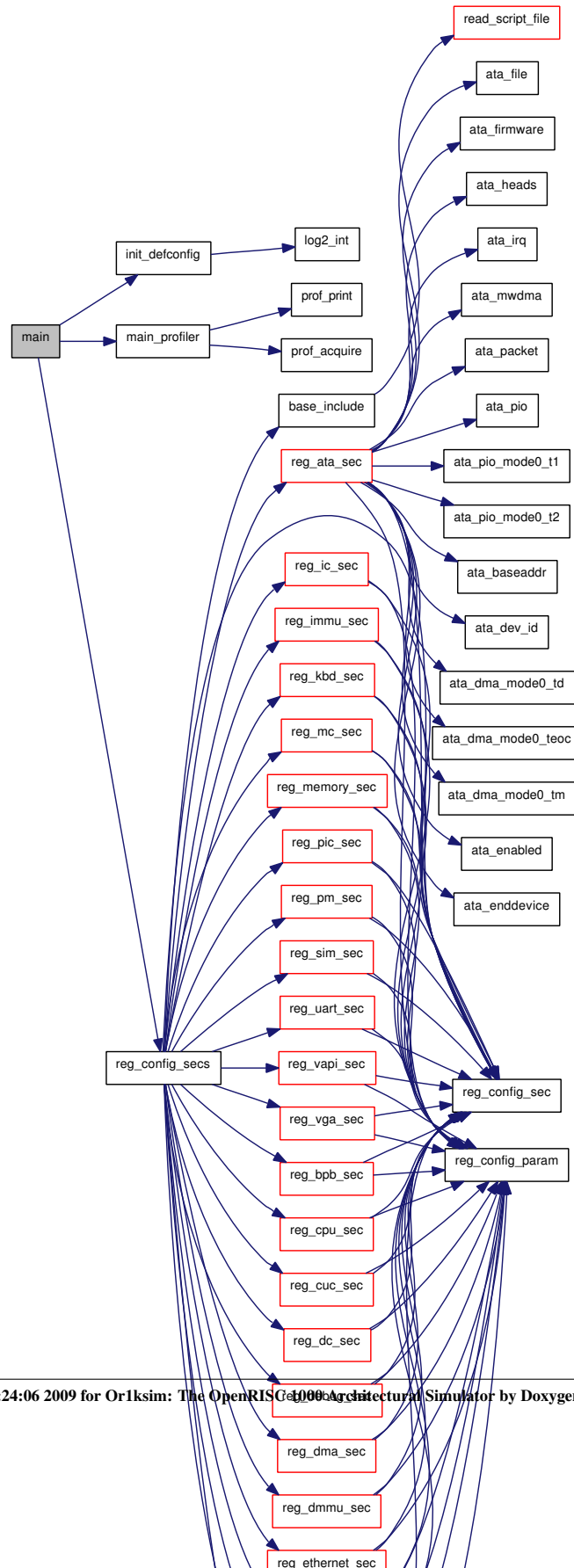
- `int main (int argc, char *argv[ ])`



## 6.167.1 Function Documentation

### 6.167.1.1 int main (int argc, char \* argv[ ])

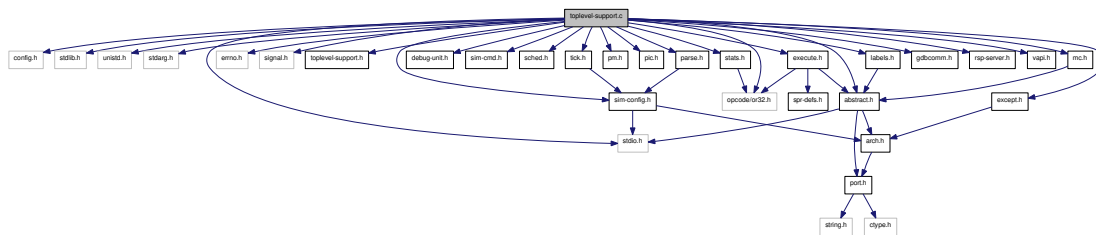
Here is the call graph for this function:



## 6.168 toplevel-support.c File Reference

```
#include "config.h"
#include <stdlib.h>
#include <unistd.h>
#include <stdarg.h>
#include <stdio.h>
#include <errno.h>
#include <signal.h>
#include "toplevel-support.h"
#include "sim-config.h"
#include "debug-unit.h"
#include "sim-cmd.h"
#include "sched.h"
#include "tick.h"
#include "pm.h"
#include "pic.h"
#include "execute.h"
#include "labels.h"
#include "stats.h"
#include "opcode/or32.h"
#include "parse.h"
#include "gdbcomm.h"
#include "rsp-server.h"
#include "vapi.h"
#include "abstract.h"
#include "mc.h"
#include "except.h"
```

Include dependency graph for toplevel-support.c:



## Data Structures

- struct [sim\\_reset\\_hook](#)

## Functions

- void [ctrl\\_c](#) (int signum)
- void [check\\_int](#) (void \*dat)
- void [reg\\_sim\\_reset](#) (void(\*reset\_hook)(void \*), void \*dat)
- void [sim\\_reset](#) ()
- void [sim\\_init](#) ()
- void [sim\\_done](#) ()

## Variables

- static struct [sim\\_reset\\_hook](#) \* [sim\\_reset\\_hooks](#) = NULL

### 6.168.1 Function Documentation

#### 6.168.1.1 void [check\\_int](#) (void \* *dat*)

Routine poll to see if interaction is needed

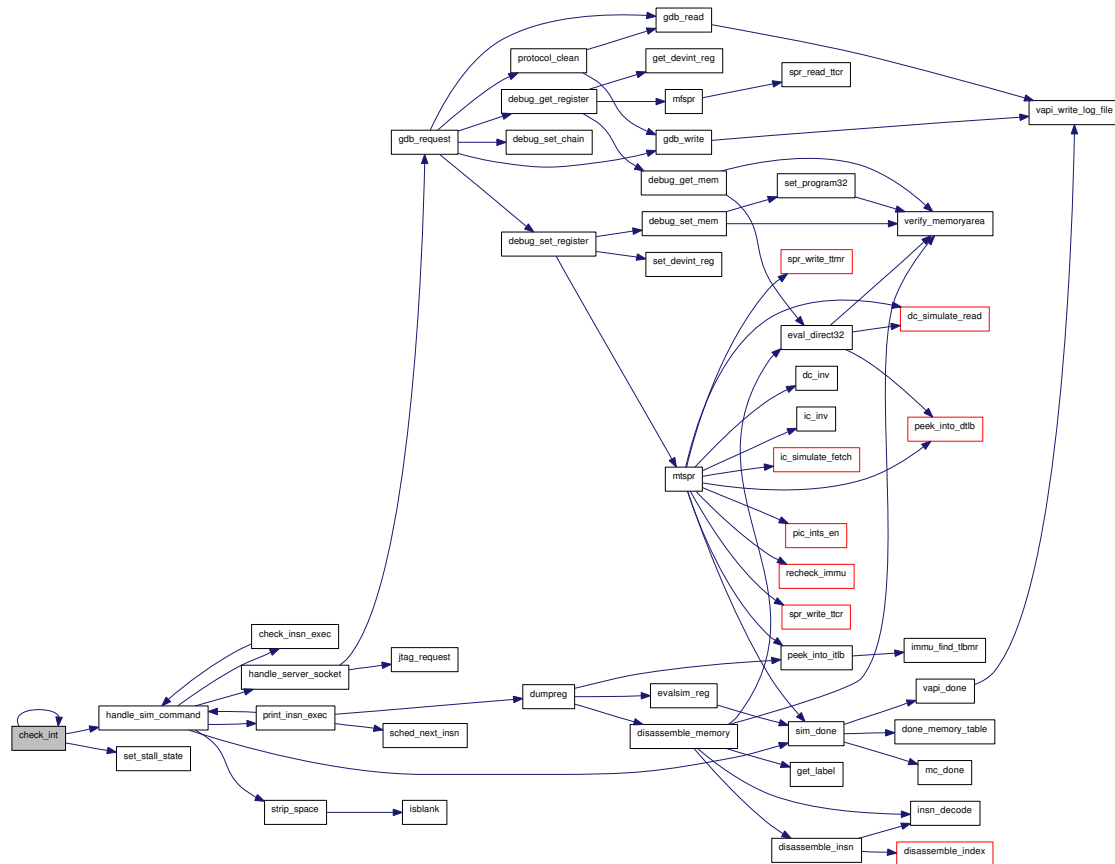
This is most likely to happen due to a ctrl-C. However when the -i flag is specified, the simulator starts up ready for interaction.

The main simulator loop will stop for interaction if it hits a breakpoint.

#### Parameters:

- ← *dat* Data passed in by the Or1ksim scheduler. Not needed by this function.

Here is the call graph for this function:



### 6.168.1.2 void ctrl\_c(int *sigum*)

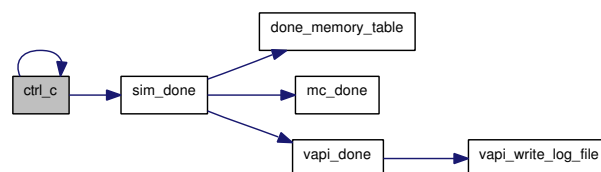
Signal handler for ctrl-C

Sets the iprompt flag, so the simulator will stop next time round the loop. If the iprompt flag is set when we enter here, that means the simulator has not reacted since the last ctrl-C, so we kill the simulation.

#### Parameters:

← *sigum* The signal which triggered this handler

Here is the call graph for this function:





### 6.168.1.3 void reg\_sim\_reset (void(\*) (void \*) reset\_hook, void \* dat)

Register a new reset hook

The registered functions will be called in turn, whenever the simulation is reset by calling [sim\\_reset\(\)](#).

#### Parameters:

← *reset\_hook* The function to be called on reset

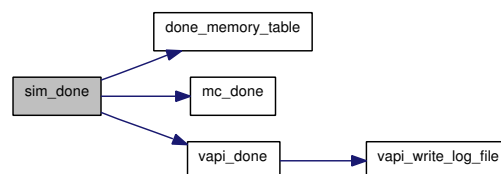
← *dat* The data structure to be passed as argument when the reset\_hook function is called.

### 6.168.1.4 void sim\_done ()

Clean up

Close an profile or log files, disconnect VAPI. Call any memory mapped peripheral close down function. Exit with rc 0.

Here is the call graph for this function:



### 6.168.1.5 void sim\_init ()

Initialize the simulator

Reset internal data: symbol table (aka labels), breakpoints and stats. Rebuild the FSA's used for disassembly.

Initialize the [dynamic](#) execution system if required.

Initialize the scheduler.

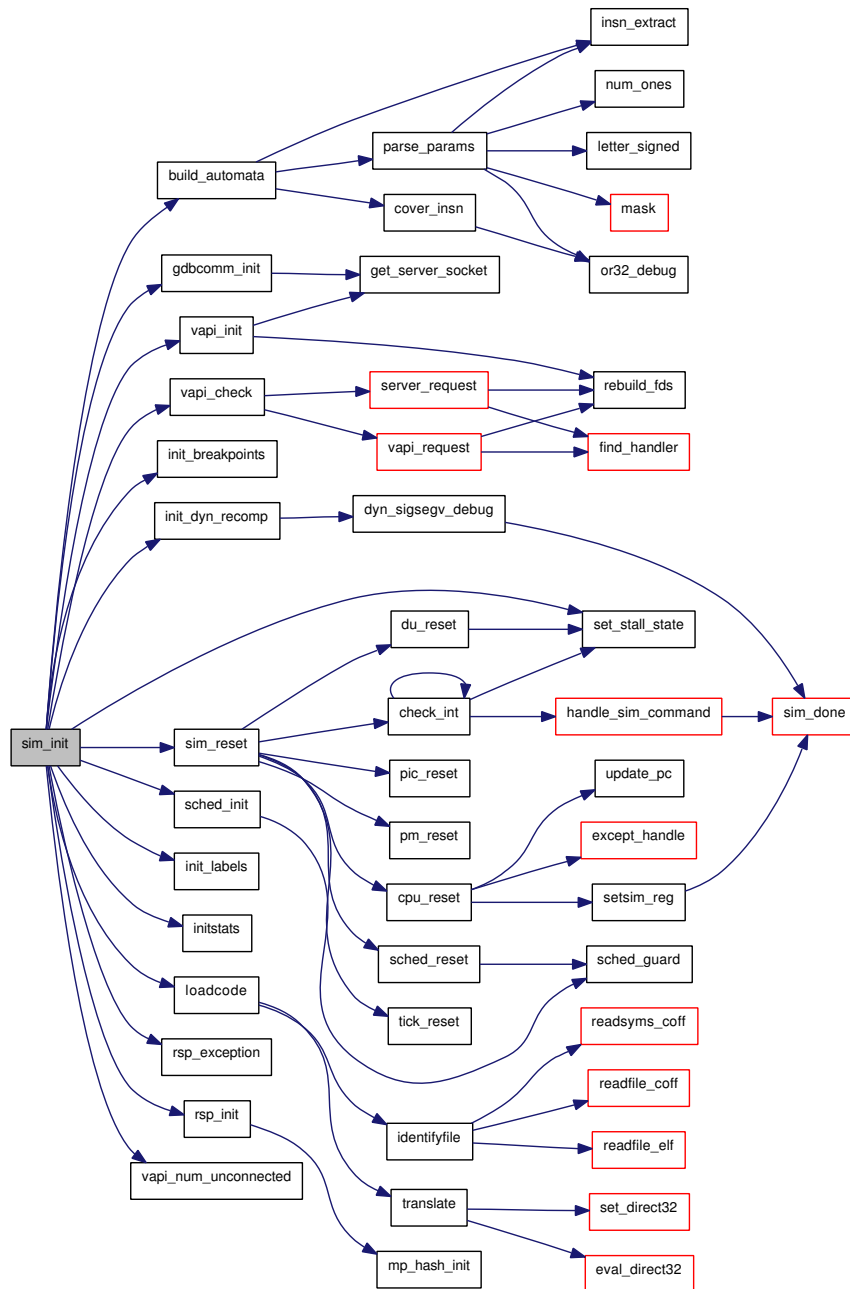
Open the various logs and statistics files requested by the configuration and/or command arguments.

Initialize GDB and VAPI connections.

Reset the simulator.

Wait for VAPI to connect if configured.

Here is the call graph for this function:



### 6.168.1.6 void sim\_reset ()

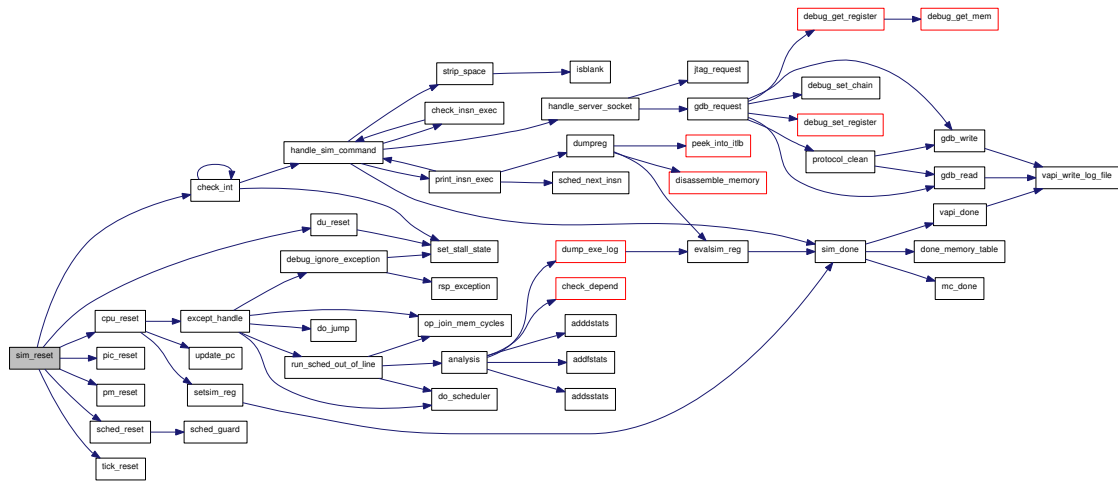
Reset the simulator

The scheduler is reset, then all reset functions on the reset hook list (i.e. peripherals) are reset. Then standard core functions (which do not use reset hooks) are reset: tick timer, power management, programmable interrupt controller and debug unit.

The scheduler queue is reinitialized with an immediate check for ctrl-C on its queue.

Finally the count of simulated cycles is set to zero, and the CPU itself is reset.

Here is the call graph for this function:



## 6.168.2 Variable Documentation

**6.168.2.1** `struct sim_reset_hook* sim_reset_hooks = NULL` [static]

The list of reset hooks. Local to this source file

## 6.169 toplevel-support.h File Reference

This graph shows which files directly or indirectly include this file:



### Functions

- void [ctrl\\_c](#) (int signum)
- void [reg\\_sim\\_reset](#) (void(\*reset\_hook)(void \*), void \*dat)
- void [sim\\_done](#) ()
- void [check\\_int](#) (void \*dat)
- void [sim\\_reset](#) ()
- void [sim\\_init](#) ()

### 6.169.1 Function Documentation

#### 6.169.1.1 void [check\\_int](#) (void \* *dat*)

Routine poll to see if interaction is needed

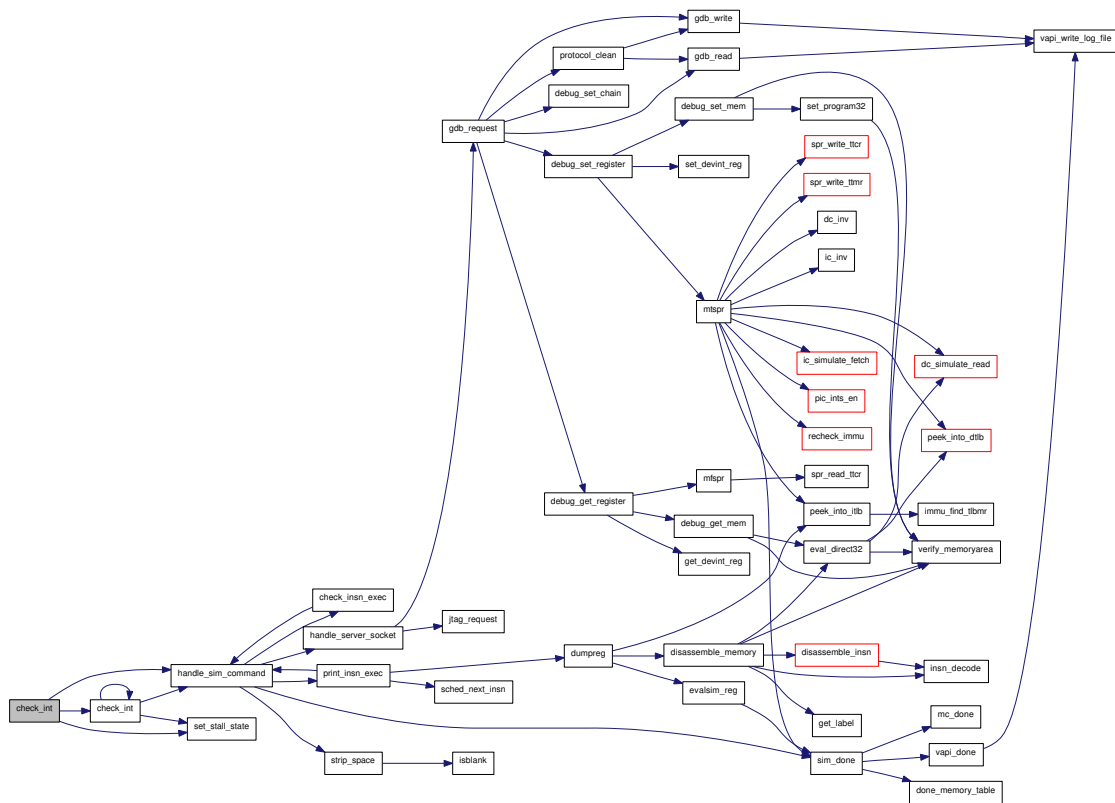
This is most likely to happen due to a ctrl-C. However when the `-i` flag is specified, the simulator starts up ready for interaction.

The main simulator loop will stop for interaction if it hits a breakpoint.

#### Parameters:

- ← *dat* Data passed in by the Or1ksim scheduler. Not needed by this function.

Here is the call graph for this function:



### 6.169.1.2 void ctrl\_c(int signum)

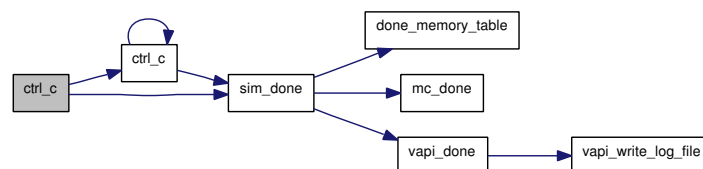
Signal handler for ctrl-C

Sets the iprompt flag, so the simulator will stop next time round the loop. If the iprompt flag is set when we enter here, that means the simulator has not reacted since the last ctrl-C, so we kill the simulation.

**Parameters:**

← *signum* The signal which triggered this handler

Here is the call graph for this function:



### 6.169.1.3 void reg\_sim\_reset(void(\*) (void \*) reset\_hook, void \* dat)

Register a new reset hook

The registered functions will be called in turn, whenever the simulation is reset by calling `sim_reset()`.

**Parameters:**

← *reset\_hook* The function to be called on reset

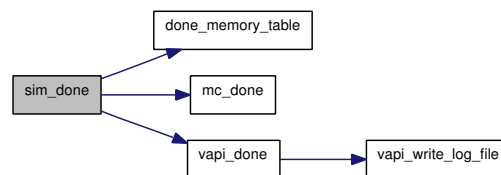
← *dat* The data structure to be passed as argument when the `reset_hook` function is called.

**6.169.1.4 void sim\_done ()**

Clean up

Close an profile or log files, disconnect VAPI. Call any memory mapped peripheral close down function. Exit with rc 0.

Here is the call graph for this function:



**6.169.1.5 void sim\_init ()**

Initialize the simulator

Reset internal data: symbol table (aka labels), breakpoints and stats. Rebuild the FSA's used for disassembly.

Initialize the [dynamic](#) execution system if required.

Initialize the scheduler.

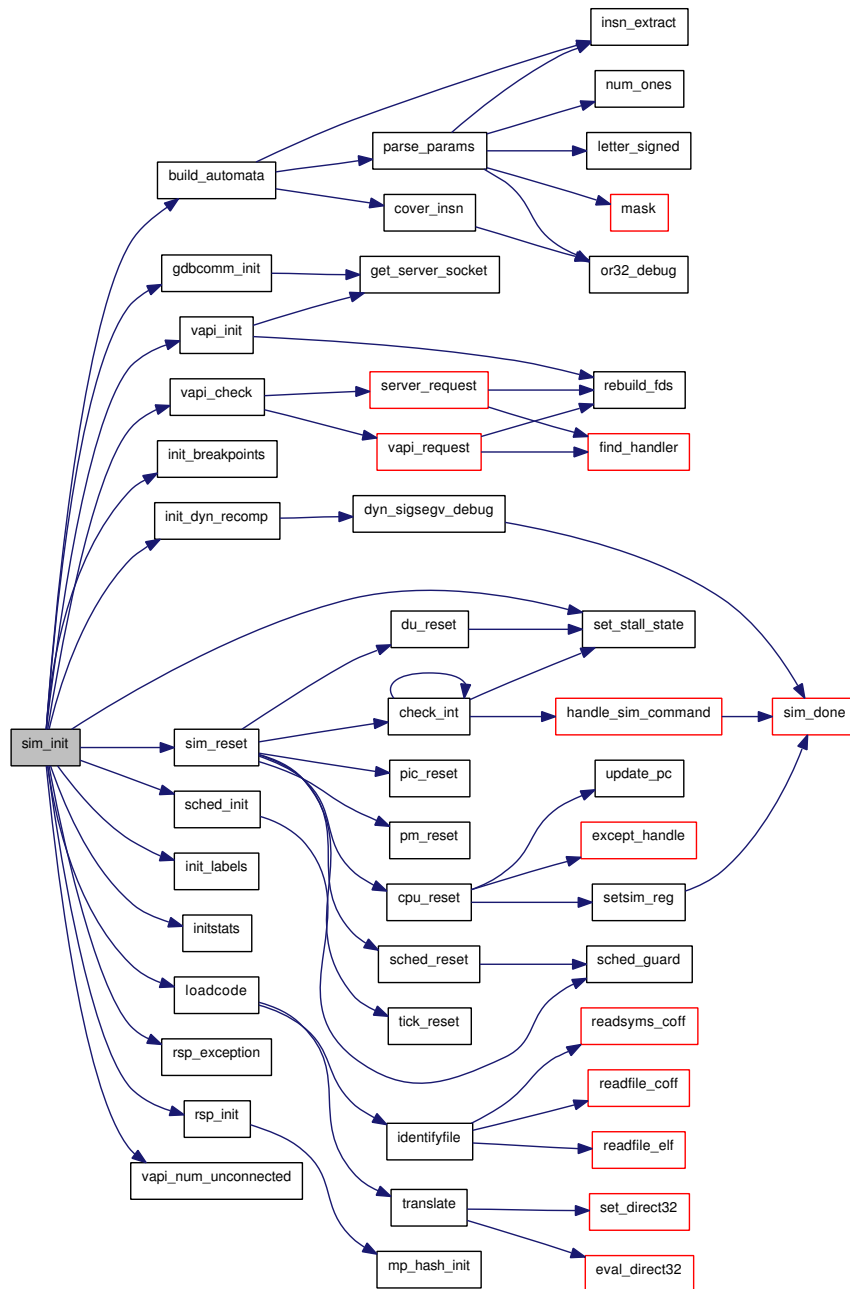
Open the various logs and statistics files requested by the configuration and/or command arguments.

Initialize GDB and VAPI connections.

Reset the simulator.

Wait for VAPI to connect if configured.

Here is the call graph for this function:



### 6.169.1.6 void sim\_reset ()

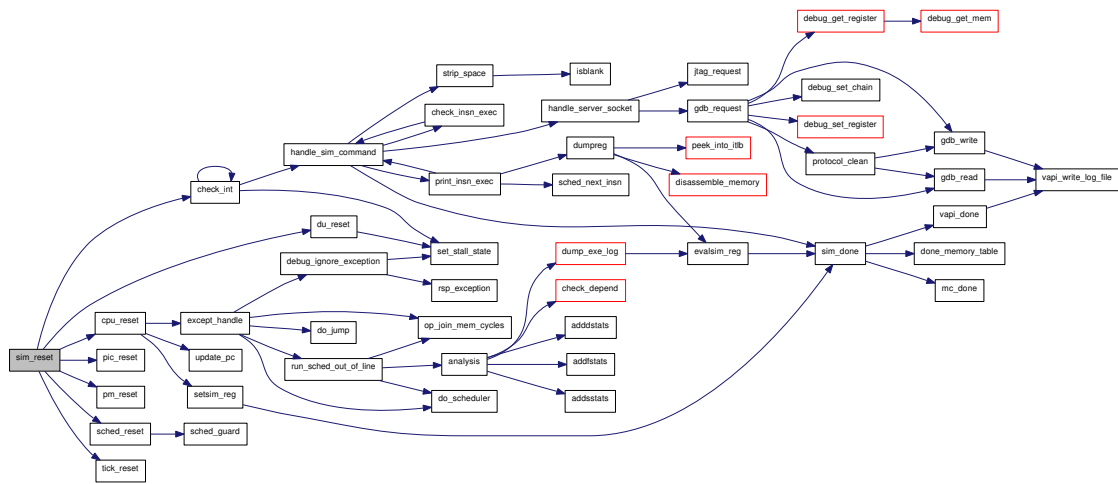
Reset the simulator

The scheduler is reset, then all reset functions on the reset hook list (i.e. peripherals) are reset. Then standard core functions (which do not use reset hooks) are reset: tick timer, power management, programmable interrupt controller and debug unit.

The scheduler queue is reinitialized with an immediate check for ctrl-C on its queue.

Finally the count of simulated cycles is set to zero, and the CPU itself is reset.

Here is the call graph for this function:

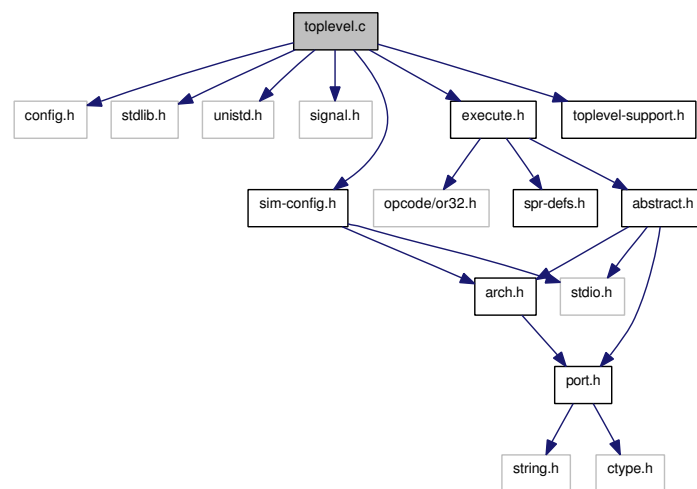




## 6.170 toplevel.c File Reference

```
#include "config.h"
#include <stdlib.h>
#include <unistd.h>
#include <signal.h>
#include "sim-config.h"
#include "toplevel-support.h"
#include "execute.h"
```

Include dependency graph for toplevel.c:



### Functions

- `int main (int argc, char *argv[ ])`

#### 6.170.1 Function Documentation

##### 6.170.1.1 `int main (int argc, char * argv[ ])`

Main function

Set up the standalone simulation. Initialize the default configuration and register all the sections that may appear in a user configuration.

Then attempt to parse the args, configure the system from any configuration file specified and print out the configuration used.

Add a signal handler, so ctrl-C will drop the user into the CLI.

The initialize the simulator, call the appropriate main simulator function and when it returns tidy up.

#### Parameters:

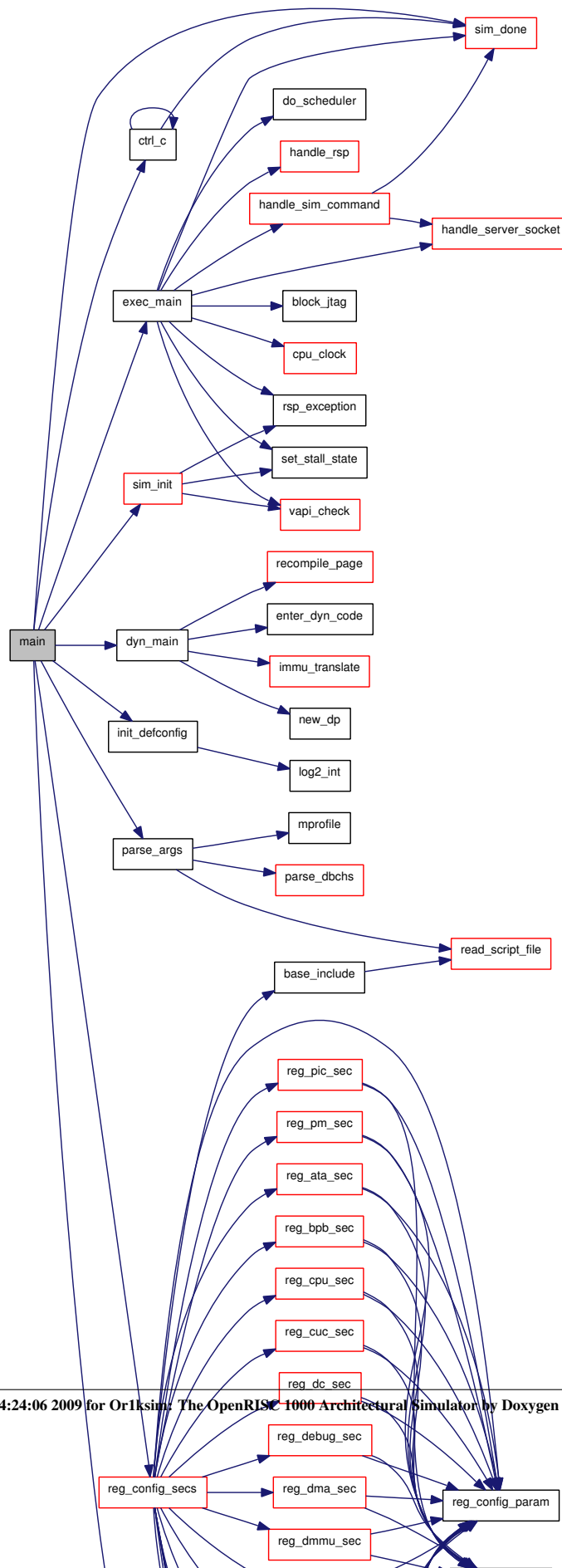
- ← *argc* The number of arguments to the command

← *argv* The vector of argument strings

**Returns:**

The return code required from the simulator. This is actually achieved by calling `exit()` with the return code, rather than returning an explicit value.

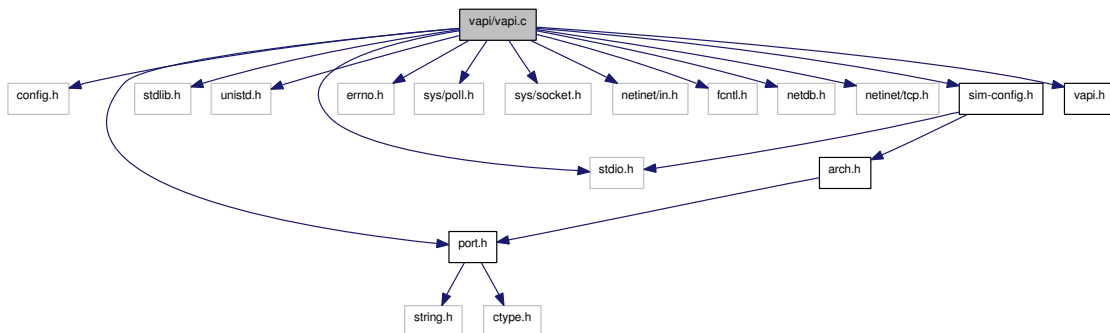
Here is the call graph for this function:



## 6.171 vapi/vapi.c File Reference

```
#include "config.h"
#include "port.h"
#include <stdlib.h>
#include <unistd.h>
#include <stdio.h>
#include <errno.h>
#include <sys/poll.h>
#include <sys/socket.h>
#include <netinet/in.h>
#include <fcntl.h>
#include <netdb.h>
#include <netinet/tcp.h>
#include "sim-config.h"
#include "vapi.h"
```

Include dependency graph for vapi.c:



## Data Structures

- struct [vapi\\_handler](#)

## Functions

- void [rebuild\\_fds](#) ()
- static int [handler\\_fits\\_id](#) (const struct [vapi\\_handler](#) \*t, unsigned long id)
- static struct [vapi\\_handler](#) \* [find\\_handler](#) (unsigned long id)
- static struct [vapi\\_handler](#) \* [add\\_handler](#) (unsigned long base\_id, unsigned long num\_ids)
- void [vapi\\_write\\_log\\_file](#) (VAPI\_COMMAND command, unsigned long devid, unsigned long data)
- static int [vapi\\_write\\_stream](#) (int fd, void \*buf, int len)
- static int [vapi\\_read\\_stream](#) (int fd, void \*buf, int len)
- int [get\\_server\\_socket](#) (const char \*name, const char \*proto, int port)

- static void `server_request` ()
- static int `write_packet` (unsigned long id, unsigned long data)
- static int `read_packet` (int fd, unsigned long \*id, unsigned long \*data)
- static void `vapi_request` (struct `vapi_handler` \*t)
- void `vapi_check` ()
- int `vapi_init` ()
- void `vapi_done` ()
- void `vapi_install_handler` (unsigned long id, void(\*read\_func)(unsigned long, unsigned long, void \*), void \*dat)
- void `vapi_install_multi_handler` (unsigned long base\_id, unsigned long num\_ids, void(\*read\_func)(unsigned long, unsigned long, void \*), void \*dat)
- int `vapi_num_unconnected` (int printout)
- void `vapi_send` (unsigned long id, unsigned long data)
- static void `vapi_enabled` (union `param_val` val, void \*dat)
- static void `vapi_server_port` (union `param_val` val, void \*dat)
- static void `vapi_log_enabled` (union `param_val` val, void \*dat)
- static void `vapi_hide_device_id` (union `param_val` val, void \*dat)
- static void `vapi_log_fn` (union `param_val` val, void \*dat)
- void `reg_vapi_sec` (void)

## Variables

- static unsigned int `serverIP` = 0
- static unsigned int `server_fd` = 0
- static unsigned int `nhandlers` = 0
- static int `tcp_level` = 0
- static struct pollfd \* `fds` = NULL
- static int `nfds` = 0

### 6.171.1 Function Documentation

**6.171.1.1** static struct `vapi_handler`\* `add_handler` (unsigned long *base\_id*, unsigned long *num\_ids*)  
[static, read]

Here is the call graph for this function:



**6.171.1.2** static struct `vapi_handler`\* `find_handler` (unsigned long *id*) [static, read]

Here is the call graph for this function:



**6.171.1.3** `int get_server_socket (const char * name, const char * proto, int port)`

**6.171.1.4** `static int handler_fits_id (const struct vapi_handler * t, unsigned long id)` [static]

**6.171.1.5** `static int read_packet (int fd, unsigned long * id, unsigned long * data)` [static]

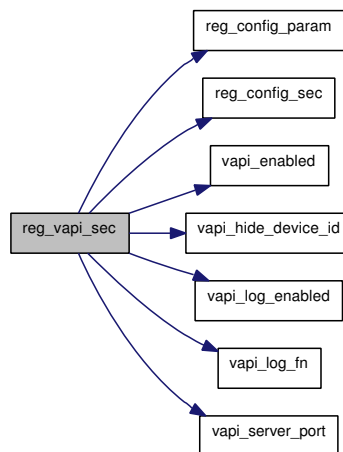
Here is the call graph for this function:



**6.171.1.6** `void rebuild_fds ()`

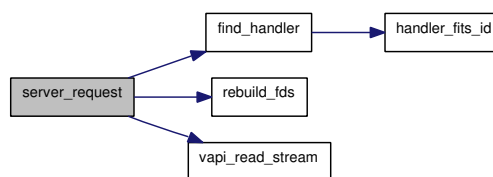
**6.171.1.7** `void reg_vapi_sec (void)`

Here is the call graph for this function:



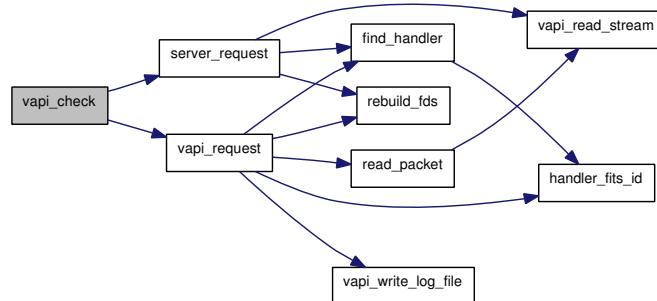
**6.171.1.8** `static void server_request ()` [static]

Here is the call graph for this function:



**6.171.1.9 void vapi\_check ()**

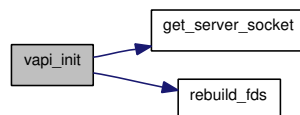
Here is the call graph for this function:

**6.171.1.10 void vapi\_done ()**

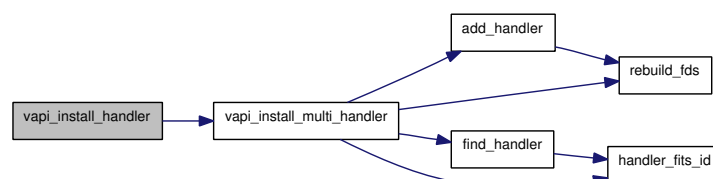
Here is the call graph for this function:

**6.171.1.11 static void vapi\_enabled (union param\_val val, void \* dat) [static]****6.171.1.12 static void vapi\_hide\_device\_id (union param\_val val, void \* dat) [static]****6.171.1.13 int vapi\_init ()**

Here is the call graph for this function:

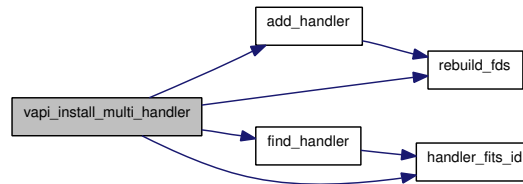
**6.171.1.14 void vapi\_install\_handler (unsigned long id, void(\*) (unsigned long, unsigned long, void \*) read\_func, void \* dat)**

Here is the call graph for this function:



**6.171.1.15** void vapi\_install\_multi\_handler (unsigned long *base\_id*, unsigned long *num\_ids*, void(\*) (unsigned long, unsigned long, void \*) *read\_func*, void \* *dat*)

Here is the call graph for this function:



**6.171.1.16** static void vapi\_log\_enabled (union param\_val *val*, void \* *dat*) [static]

**6.171.1.17** static void vapi\_log\_fn (union param\_val *val*, void \* *dat*) [static]

Set the log file

Free any existing string.

#### Parameters:

← *val* The value to use

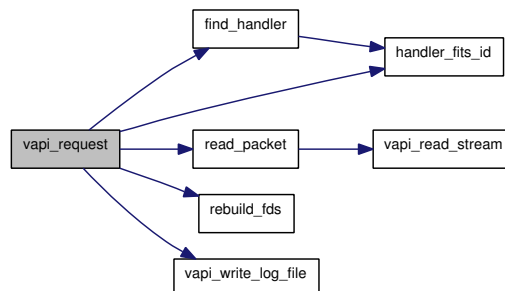
← *dat* The [config](#) data structure (not used here)

**6.171.1.18** int vapi\_num\_unconnected (int *printout*)

**6.171.1.19** static int vapi\_read\_stream (int *fd*, void \* *buf*, int *len*) [static]

**6.171.1.20** static void vapi\_request (struct vapi\_handler \* *t*) [static]

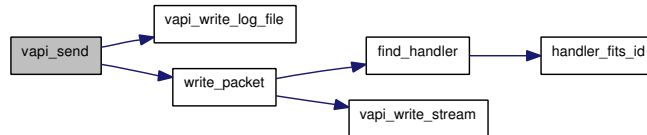
Here is the call graph for this function:





**6.171.1.21 void vapi\_send (unsigned long *id*, unsigned long *data*)**

Here is the call graph for this function:

**6.171.1.22 static void vapi\_server\_port (union param\_val *val*, void \* *dat*)** [static]

Set the VAPI server port

Ensure the value chosen is valid

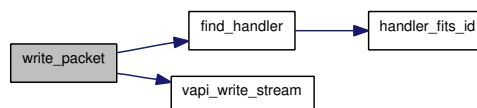
**Parameters:**

← *val* The value to use

← *dat* The [config](#) data structure (not used here)

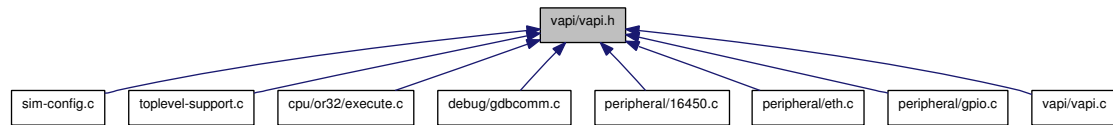
**6.171.1.23 void vapi\_write\_log\_file (VAPI\_COMMAND *command*, unsigned long *devid*, unsigned long *data*)****6.171.1.24 static int vapi\_write\_stream (int *fd*, void \* *buf*, int *len*)** [static]**6.171.1.25 static int write\_packet (unsigned long *id*, unsigned long *data*)** [static]

Here is the call graph for this function:

**6.171.2 Variable Documentation****6.171.2.1 struct pollfd\* fds = NULL** [static]**6.171.2.2 int nfds = 0** [static]**6.171.2.3 unsigned int nhandlers = 0** [static]**6.171.2.4 unsigned int server\_fd = 0** [static]**6.171.2.5 unsigned int serverIP = 0** [static]**6.171.2.6 int tcp\_level = 0** [static]

## 6.172 vapi/vapi.h File Reference

This graph shows which files directly or indirectly include this file:



### Defines

- #define `VAPI_MAX_DEVID` 0xFFFF

### Enumerations

- enum `VAPI_COMMAND` { `VAPI_COMMAND_REQUEST` = 0, `VAPI_COMMAND_SEND` = 1, `VAPI_COMMAND_END` = 2 }

### Functions

- int `vapi_init` ()
- void `vapi_done` ()
- void `vapi_install_handler` (unsigned long id, void(\*read\_func)(unsigned long, unsigned long, void \*), void \*dat)
- void `vapi_install_multi_handler` (unsigned long base\_id, unsigned long num\_ids, void(\*read\_func)(unsigned long, unsigned long, void \*), void \*dat)
- void `vapi_check` ()
- int `vapi_num_unconnected` (int printout)
- void `vapi_send` (unsigned long id, unsigned long data)
- void `vapi_write_log_file` (`VAPI_COMMAND` command, unsigned long device\_id, unsigned long data)
- void `reg_vapi_sec` ()

#### 6.172.1 Define Documentation

##### 6.172.1.1 #define VAPI\_MAX\_DEVID 0xFFFF

Maximum value for VAPI device id

#### 6.172.2 Enumeration Type Documentation

##### 6.172.2.1 enum VAPI\_COMMAND

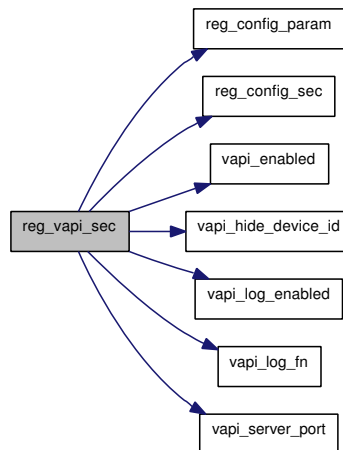
Enumerator:

`VAPI_COMMAND_REQUEST`  
`VAPI_COMMAND_SEND`  
`VAPI_COMMAND_END`

### 6.172.3 Function Documentation

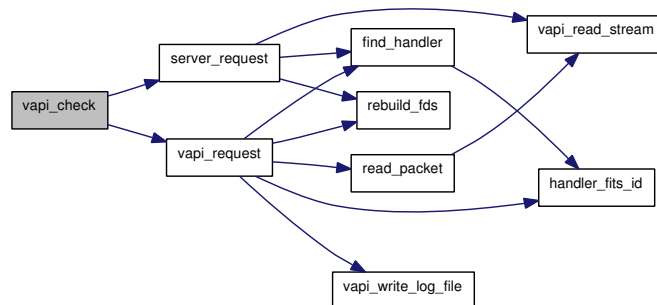
#### 6.172.3.1 void reg\_vapi\_sec ()

Here is the call graph for this function:



#### 6.172.3.2 void vapi\_check ()

Here is the call graph for this function:



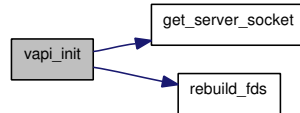
#### 6.172.3.3 void vapi\_done ()

Here is the call graph for this function:



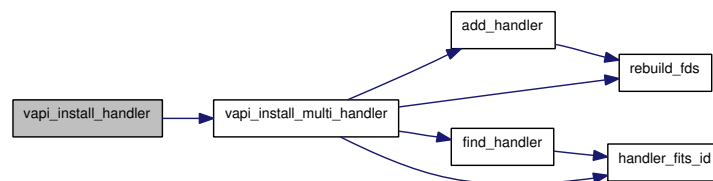
### 6.172.3.4 int vapi\_init ()

Here is the call graph for this function:



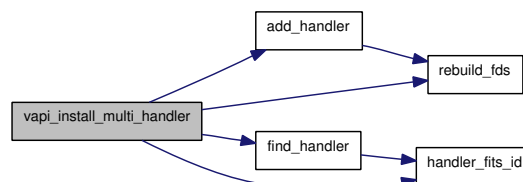
### 6.172.3.5 void vapi\_install\_handler (unsigned long id, void(\*) (unsigned long, unsigned long, void \*) read\_func, void \* dat)

Here is the call graph for this function:



### 6.172.3.6 void vapi\_install\_multi\_handler (unsigned long base\_id, unsigned long num\_ids, void(\*) (unsigned long, unsigned long, void \*) read\_func, void \* dat)

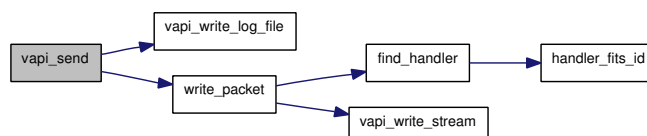
Here is the call graph for this function:



### 6.172.3.7 int vapi\_num\_unconnected (int printout)

### 6.172.3.8 void vapi\_send (unsigned long id, unsigned long data)

Here is the call graph for this function:



**6.172.3.9** void `vapi_write_log_file` (`VAPI_COMMAND` *command*, unsigned long *device\_id*, unsigned long *data*)

# Index

- `__ORSIM_DBCL_ERR`
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