

systemc-macs

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Main Page

Chapter 2

Hierarchical Index

2.1 Class Hierarchy

This inheritance list is sorted roughly, but not completely, alphabetically:

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Chapter 3

Class Index

3.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

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Chapter 4

Class Documentation

4.1 bus_mode_reg Union Reference

Public Attributes

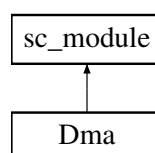
- ```
struct {
 uint32_t swr:1
 uint32_t reserved1:1
 uint32_t dsl:5
 uint32_t atds:1
 uint32_t pbl:6
 uint32_t reserved2:2
 uint32_t fb:1
 uint32_t rpbl:6
 uint32_t usp:1
 uint32_t eightxpbl:1
 uint32_t aal:1
 uint32_t reserved3:6
};
```
- uint32\_t value

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

- /home/thomas/Documents/GreenSocs/build-lib/systemc-macs/include/greensocs/systemc-macs/dwmac.h

### 4.2 Dma Class Reference

Inheritance diagram for Dma:



## Public Member Functions

- **Dma** (const sc\_core::sc\_module\_name &name)
- void **bus\_do** (uint64\_t addr, uint8\_t \*data, uint32\_t size, bool is\_write)
- void **bus\_write** (uint64\_t addr, uint8\_t \*data, uint32\_t size)
- void **bus\_read** (uint64\_t addr, uint8\_t \*data, uint32\_t size)

## Public Attributes

- tlm\_utils::simple\_initiator\_socket< [Dma](#) > **socket**
- tlm::tlm\_dmi **dmi\_data**
- bool **dmi\_valid**

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

- /home/thomas/Documents/GreenSocs/build-lib/systemc-macs/include/greensocs/systemc-macs/components/dma.h↔

## 4.3 dma\_desc Struct Reference

### Public Attributes

- ```

union {
    struct {
        uint32_t rx_mac_addr:1
        uint32_t crc_error:1
        uint32_t dribbling:1
        uint32_t error_gmii:1
        uint32_t receive_watchdog:1
        uint32_t frame_type:1
        uint32_t late_collision:1
        uint32_t ipc_csum_error:1
        uint32_t last_descriptor:1
        uint32_t first_descriptor:1
        uint32_t vlan_tag:1
        uint32_t overflow_error:1
        uint32_t length_error:1
        uint32_t sa_filter_fail:1
        uint32_t descriptor_error:1
        uint32_t error_summary:1
        uint32_t frame_length:14
        uint32_t da_filter_fail:1
        uint32_t own:1
        uint32_t buffer1_size:13
        uint32_t reserved1:1
        uint32_t second_address_chained:1
        uint32_t end_ring:1
        uint32_t buffer2_size:13
        uint32_t reserved2:2
        uint32_t disable_ic:1
    } erx

```

```

struct {
    uint32_t deferred:1
    uint32_t underflow_error:1
    uint32_t excessive_deferral:1
    uint32_t collision_count:4
    uint32_t vlan_frame:1
    uint32_t excessive_collisions:1
    uint32_t late_collision:1
    uint32_t no_carrier:1
    uint32_t loss_carrier:1
    uint32_t payload_error:1
    uint32_t frame_flushed:1
    uint32_t jabber_timeout:1
    uint32_t error_summary:1
    uint32_t ip_header_error:1
    uint32_t time_stamp_status:1
    uint32_t reserved1:2
    uint32_t second_address_chained:1
    uint32_t end_ring:1
    uint32_t checksum_insertion:2
    uint32_t reserved2:1
    uint32_t time_stamp_enable:1
    uint32_t disable_padding:1
    uint32_t crc_disable:1
    uint32_t first_segment:1
    uint32_t last_segment:1
    uint32_t interrupt:1
    uint32_t own:1
    uint32_t buffer1_size:13
    uint32_t reserved3:3
    uint32_t buffer2_size:13
    uint32_t reserved4:3
} etx
} des01

```

- unsigned int **des2**
- unsigned int **des3**
- unsigned int **des4**
- unsigned int **des5**
- unsigned int **des6**
- unsigned int **des7**

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

- /home/thomas/Documents/GreenSocs/build-lib/systemc-macs/include/greensocs/systemc-macs/dwmac.h

4.4 Dwmac::DmaRegisters Class Reference

Public Member Functions

- uint32_t **desc_size** ()

Public Attributes

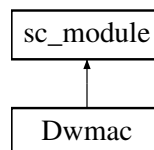
- union [bus_mode_reg](#) **bus_mode**
- uint32_t **rx_desc_addr**
- uint32_t **tx_desc_addr**
- [InterruptRegister](#) **intr**
- union [opr_mode_reg](#) **opr_mode**
- uint32_t **counters**
- uint32_t **current_tx_desc**
- uint32_t **current_rx_desc**
- uint32_t **current_tx_buf**
- uint32_t **current_rx_buf**

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

- /home/thomas/Documents/GreenSocs/build-lib/systemc-macs/include/greensocs/systemc-macs/dwmac.h

4.5 Dwmac Class Reference

Inheritance diagram for Dwmac:



Classes

- class [DmaRegisters](#)

Public Member Functions

- void **set_backend** ([NetworkBackend](#) *backend)
- **SC_HAS_PROCESS** ([Dwmac](#))
- **Dwmac** (sc_core::sc_module_name name)
- uint32_t **read_word** (uint32_t address)
- void **write_word** (uint32_t address, uint32_t data)
- void **b_transport** (tlm::tlm_generic_payload &trans, sc_core::sc_time &delay)
- virtual void **payload_rcv** ([Payload](#) &frame)

Static Public Member Functions

- static void **eth_rx_sc** (void *opaque, [Payload](#) &frame)
- static int **eth_can_rx_sc** (void *opaque)

Public Attributes

- `sc_core::sc_out< bool > intr0`
- `sc_core::sc_out< bool > intr1`
- `tlm_utils::simple_target_socket< Dwmac > socket`
- `Dma dma`
- `Phy phy`
- `NetworkBackend * m_backend`
- `Payload m_tx_frame`

Protected Member Functions

- `void reset ()`
- `void interrupts_fire (uint32_t interrupts)`
- `void interrupts_clear (uint32_t interrupts)`
- `bool read_tx_desc (dma_desc *desc)`
- `bool read_rx_desc (dma_desc *desc)`
- `bool tx ()`
- `bool rx (Payload &frame)`
- `void move_to_next_tx_desc (dma_desc &desc)`
- `void tx_thread ()`
- `void intr_thread ()`

Protected Attributes

- `bool warn_anregs = true`
- `sc_core::sc_event m_tx_event`
- `sc_core::sc_event intr_wake`
- `DmaRegisters m_dma`
- `uint32_t m_configuration`
- `uint32_t m_frame_filter`
- `uint32_t m_hash_table_hi`
- `uint32_t m_hash_table_lo`
- `union s_gmii_address m_gmii_address`
- `uint32_t m_gmii_data`
- `uint32_t m_flow_control`
- `uint32_t m_vlan_tag`
- `uint32_t m_pmt`
- `MACAddress m_mac_0`
- `MACAddress m_mac_n [MACn_COUNT]`
- `uint32_t m_htbl [8]`
- `uint32_t m_int_mask`
- `uint32_t m_axi_bus_mode`

Static Protected Attributes

- static const uint32_t **DMA_BUS_MODE** = 0x1000
- static const uint32_t **DMA_TX_POLL** = 0x1004
- static const uint32_t **DMA_RX_POLL** = 0x1008
- static const uint32_t **DMA_RX_DESC_LIST_ADDR** = 0x100C
- static const uint32_t **DMA_TX_DESC_LIST_ADDR** = 0x1010
- static const uint32_t **DMA_STATUS** = 0x1014
- static const uint32_t **DMA_OPERATION_MODE** = 0x1018
- static const uint32_t **DMA_INTERRUPTS** = 0x101C
- static const uint32_t **DMA_COUNTERS** = 0x1020
- static const uint32_t **DMA_RX_INT_WDT** = 0x1024
- static const uint32_t **DMA_AXI_BUS_MODE** = 0x1028
- static const uint32_t **DMA_CURRENT_TX_DESC** = 0x1048
- static const uint32_t **DMA_CURRENT_RX_DESC** = 0x104C
- static const uint32_t **DMA_CURRENT_TX_BUF** = 0x1050
- static const uint32_t **DMA_CURRENT_RX_BUF** = 0x1054
- static const uint32_t **HW_FEATURE** = 0x1058
- static const uint32_t **DWMAC_VERSION_VALUE** = 0x0010
- static const uint32_t **DWMAC_CONFIGURATION** = 0x0000
- static const uint32_t **DWMAC_FRAME_FILTER** = 0x0004
- static const uint32_t **DWMAC_HASH_TABLE_HI** = 0x0008
- static const uint32_t **DWMAC_HASH_TABLE_LO** = 0x000C
- static const uint32_t **DWMAC_GMII_ADDRESS** = 0x0010
- static const uint32_t **DWMAC_GMII_DATA** = 0x0014
- static const uint32_t **DWMAC_FLOW_CONTROL** = 0x0018
- static const uint32_t **DWMAC_VLAN_TAG** = 0x001C
- static const uint32_t **DWMAC_VERSION** = 0x0020
- static const uint32_t **DWMAC_WAKE_UP_FILTER** = 0x0028
- static const uint32_t **DWMAC_PMT** = 0x002C
- static const uint32_t **DWMAC_INTERRUPT** = 0x0038
- static const uint32_t **DWMAC_INTERRUPT_MASK** = 0x003C
- static const uint32_t **DWMAC_AN_CONTROL** = 0x00C0
- static const uint32_t **DWMAC_AN_STATUS** = 0x00C4
- static const uint32_t **DWMAC_AN_ADVERTISEMENT** = 0x00C8
- static const uint32_t **DWMAC_AN_LINK_PARTNER_ABILITY** = 0x00CC
- static const uint32_t **DWMAC_AN_EXPANSION** = 0x00D0
- static const uint32_t **DWMAC_MAC0_HI** = 0x0040
- static const uint32_t **DWMAC_MAC0_LO** = 0x0044
- static const uint32_t **DWMAC_MACn** = 0x0048
- static const uint32_t **DWMAC_MMC_CONTROL** = 0x0100
- static const uint32_t **DWMAC_MMC_RX_INT** = 0x0104
- static const uint32_t **DWMAC_MMC_TX_INT** = 0x0108
- static const uint32_t **DWMAC_MMC_RX_INT_MASK** = 0x010C
- static const uint32_t **DWMAC_MMC_TX_INT_MASK** = 0x0110
- static const uint32_t **DWMAC_MMC_IPC_RX_INT_MASK** = 0x0200
- static const uint32_t **DWMAC_MMC_IPC_RX_INT** = 0x0208
- static const uint32_t **MACn_COUNT** = 15

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

- /home/thomas/Documents/GreenSocs/build-lib/systemc-macs/include/greensocs/systemc-macs/dwmac.h
- /home/thomas/Documents/GreenSocs/build-lib/systemc-macs/src/models/dwmac.cc

4.6 InterruptRegister Class Reference

Public Types

- enum **IRQ** {
EarlyReceive = 1 << 14, **BusError** = 1 << 13, **EarlyTransmit** = 1 << 10, **RxWatchdogTimeout** = 1 << 9,
RxStopped = 1 << 8, **RxBufUnavailable** = 1 << 7, **RxInt** = 1 << 6, **Underflow** = 1 << 5,
Overflow = 1 << 4, **TxJabberTimeout** = 1 << 3, **TxBufUnavailable** = 1 << 2, **TxStopped** = 1 << 1,
TxInt = 1 << 0 }

Public Member Functions

- void **setTxState** (DwmacState::Tx state)
- void **setRxState** (DwmacState::Rx state)
- DwmacState::Tx **getTxState** () const
- DwmacState::Rx **getRxState** () const
- void **reset** ()
- void **clear** (uint32_t clear)
- void **fire** (uint32_t interrupts)
- bool **has_interrupts** () const
- void **set_interrupts** (uint32_t mask)
- void **set_status** (uint32_t value)
- uint32_t **interrupts** () const
- uint32_t **status** () const

Public Attributes

- bool **m_regstate_staled**
- uint32_t **m_regstate**
- uint32_t **m_regmask**
- uint32_t **m_interrupts**
- union [status_reg](#) **m_dma_reg_status**

Static Public Attributes

- static const uint32_t **NIS_mask** = 0x4045
- static const uint32_t **AIS_mask** = 0x27ba
- static const uint32_t **NIS_bit** = 1 << 16
- static const uint32_t **AIS_bit** = 1 << 15
- static const uint32_t **IS_mask** = NIS_mask | AIS_mask
- static const uint32_t **IS_bits** = NIS_bit | AIS_bit
- static const uint32_t **BE_mask** = 7

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

- /home/thomas/Documents/GreenSocs/build-lib/systemc-macs/include/greensocs/systemc-macs/dwmac.h

4.7 MACAddress Class Reference

Public Member Functions

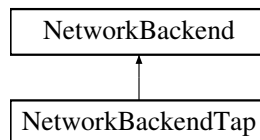
- uint32_t **lo** () const
- uint16_t **hi** () const
- void **set_lo** (uint32_t value)
- void **set_hi** (uint16_t value)
- void **zero** ()
- void **randomize** ()
- bool **set_from_str** (const std::string &s)
- bool **operator==** (const [MACAddress](#) &other) const
- bool **operator!=** (const [MACAddress](#) &other) const
- bool **operator<** (const [MACAddress](#) &other) const
- bool **operator>** (const [MACAddress](#) &other) const
- bool **operator<=** (const [MACAddress](#) &other) const
- bool **operator>=** (const [MACAddress](#) &other) const
- uint8_t **operator[]** (int i) const

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

- /home/thomas/Documents/GreenSocs/build-lib/systemc-macs/include/greensocs/systemc-macs/components/mac.h
- /home/thomas/Documents/GreenSocs/build-lib/systemc-macs/src/components/mac.cc

4.8 NetworkBackend Class Reference

Inheritance diagram for NetworkBackend:



Public Member Functions

- virtual void **send** ([Payload](#) &frame)=0
- void **register_receive** (void *opaque, void(*receive)(void *opaque, [Payload](#) &frame), int(*can_receive)(void *opaque))

Protected Attributes

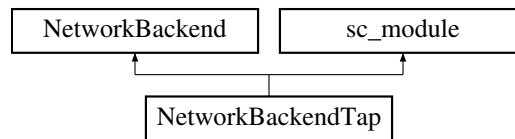
- void * **m_opaque**
- void(* **m_receive**)(void *opaque, [Payload](#) &frame)
- int(* **m_can_receive**)(void *opaque)

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

- /home/thomas/Documents/GreenSocs/build-lib/systemc-macs/include/greensocs/systemc-macs/backends/net-backend.h

4.9 NetworkBackendTap Class Reference

Inheritance diagram for NetworkBackendTap:



Public Member Functions

- **SC_HAS_PROCESS** ([NetworkBackendTap](#))
- **NetworkBackendTap** (sc_core::sc_module_name name, std::string tun)
- void **send** ([Payload](#) &frame)

Additional Inherited Members

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

- /home/thomas/Documents/GreenSocs/build-lib/systemc-macs/include/greensocs/systemc-macs/backends/net/tap.h ↩
- /home/thomas/Documents/GreenSocs/build-lib/systemc-macs/src/backends/tap.cc

4.10 opr_mode_reg Union Reference

Public Attributes

- ```

struct {
 uint32_t reserved1:1
 uint32_t sr:1
 uint32_t osf:1
 uint32_t rtc:2
 uint32_t reserved2:1
 uint32_t fuf:1
 uint32_t fef:1
 uint32_t efc:1
 uint32_t rfa:2
 uint32_t rfd:2
 uint32_t st:1
 uint32_t ttc:3
 uint32_t reserved3:3
 uint32_t ftf:1
 uint32_t tsf:1
 uint32_t reserved4:2
 uint32_t dff:1
 uint32_t rsf:1
 uint32_t dt:1
 uint32_t reserved5:5
};

```

- `uint32_t value`

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

- `/home/thomas/Documents/GreenSocs/build-lib/systemc-macs/include/greensocs/systemc-macs/dwmac.h`

## 4.11 Payload Class Reference

### Public Member Functions

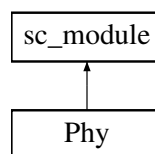
- **Payload** (`size_t capacity`)
- `size_t capacity` () const
- `size_t size` () const
- `uint8_t * data` () const
- `void resize` (`size_t size`)

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

- `/home/thomas/Documents/GreenSocs/build-lib/systemc-macs/include/greensocs/systemc-macs/components/payload.h`↔

## 4.12 Phy Class Reference

Inheritance diagram for Phy:



### Public Member Functions

- **SC\_HAS\_PROCESS** ([Phy](#))
- **Phy** (`sc_core::sc_module_name name`, `uint32_t id`, `uint8_t addr`)
- virtual void **mdio\_reg\_read** (`uint8_t reg`, `uint16_t &data`)
- virtual void **mdio\_reg\_write** (`uint8_t reg`, `uint16_t data`)

### Public Attributes

- `const uint32_t m_id`
- `const uint8_t m_addr`

## Protected Attributes

- `uint16_t m_ctl`
- `uint16_t m_status`
- `uint16_t m_adv`

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

- `/home/thomas/Documents/GreenSocs/build-lib/systemc-macs/include/greensocs/systemc-macs/components/phy.h`
- `/home/thomas/Documents/GreenSocs/build-lib/systemc-macs/src/components/phy.cc`

## 4.13 RxTxStats Struct Reference

### Public Attributes

- `uint64_t rx_bytes`
- `uint64_t tx_bytes`
- `uint64_t rx`
- `uint64_t rx_bcast`
- `uint64_t rx_mcast`

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

- `/home/thomas/Documents/GreenSocs/build-lib/systemc-macs/include/greensocs/systemc-macs/xgmac.h`

## 4.14 s\_gmii\_address Union Reference

### Public Attributes

- ```
struct {  
    uint32_t gb:1  
    uint32_t gw:1  
    uint32_t cr:4  
    uint32_t gr:5  
    uint32_t pa:5  
};
```
- `uint32_t value`

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

- `/home/thomas/Documents/GreenSocs/build-lib/systemc-macs/include/greensocs/systemc-macs/dwmac.h`

4.15 status_reg Union Reference

Public Attributes

- ```

struct {
 uint32_t ti:1
 uint32_t tps:1
 uint32_t tu:1
 uint32_t tjt:1
 uint32_t ovf:1
 uint32_t unf:1
 uint32_t ri:1
 uint32_t ru:1
 uint32_t rps:1
 uint32_t rwt:1
 uint32_t eti:1
 uint32_t reserved1:2
 uint32_t fbi:1
 uint32_t eri:1
 uint32_t ais:1
 uint32_t nis:1
 DwmacState::Rx rs:3
 DwmacState::Tx ts:3
 uint32_t eb:3
 uint32_t gli:1
 uint32_t gmi:1
 uint32_t reserved2:1
 uint32_t tti:1
 uint32_t glpii:1
 uint32_t reserved3:1
};

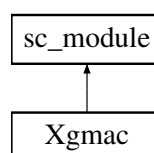
```
- uint32\_t value

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

- /home/thomas/Documents/GreenSocs/build-lib/systemc-macs/include/greensocs/systemc-macs/dwmac.h

## 4.16 Xgmac Class Reference

Inheritance diagram for Xgmac:



## Public Member Functions

- **SC\_HAS\_PROCESS** ([Xgmac](#))
- **Xgmac** (sc\_core::sc\_module\_name name)
- void **set\_backend** ([NetworkBackend](#) \*backend)
- void **b\_transport** (tlm::tlm\_generic\_payload &trans, sc\_core::sc\_time &delay)
- virtual void **payload\_rcv** ([Payload](#) &frame)

## Static Public Member Functions

- static void **eth\_rx\_sc** (void \*opaque, [Payload](#) &frame)
- static int **eth\_can\_rx\_sc** (void \*opaque)

## Public Attributes

- sc\_core::sc\_out< bool > **sbd\_irq**
- sc\_core::sc\_out< bool > **pmt\_irq**
- sc\_core::sc\_out< bool > **mci\_irq**
- tlm\_utils::simple\_target\_socket< [Xgmac](#) > **socket**
- [Dma](#) dma
- [NetworkBackend](#) \* m\_backend

## Protected Member Functions

- bool **eth\_can\_rx** () const
- ssize\_t **eth\_rx** (const uint8\_t \*buf, size\_t size)
- void **xgmac\_read\_desc** ([XGmacDesc](#) \*d, int rx)
- void **xgmac\_write\_desc** ([XGmacDesc](#) \*d, int rx)
- void **xgmac\_enet\_send** ()
- void **enet\_update\_irq** ()
- void **enet\_update\_irq\_sysc** ()
- uint64\_t **enet\_read** (uint64\_t addr, unsigned size)
- void **enet\_write** (uint64\_t addr, uint64\_t value, unsigned size)

## Protected Attributes

- [RxTxStats](#) m\_stats
- uint32\_t m\_regs [R\_MAX]

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

- /home/thomas/Documents/GreenSocs/build-lib/systemc-macs/include/greensocs/systemc-macs/xgmac.h
- /home/thomas/Documents/GreenSocs/build-lib/systemc-macs/src/models/xgmac.cc

## 4.17 XGmacDesc Struct Reference

### Public Attributes

- uint32\_t **ctl\_stat**
- uint16\_t **buffer1\_size**
- uint16\_t **buffer2\_size**
- uint32\_t **buffer1\_addr**
- uint32\_t **buffer2\_addr**
- uint32\_t **ext\_stat**
- uint32\_t **res** [3]

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

- /home/thomas/Documents/GreenSocs/build-lib/systemc-macs/include/greensocs/systemc-macs/xgmac.h



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