

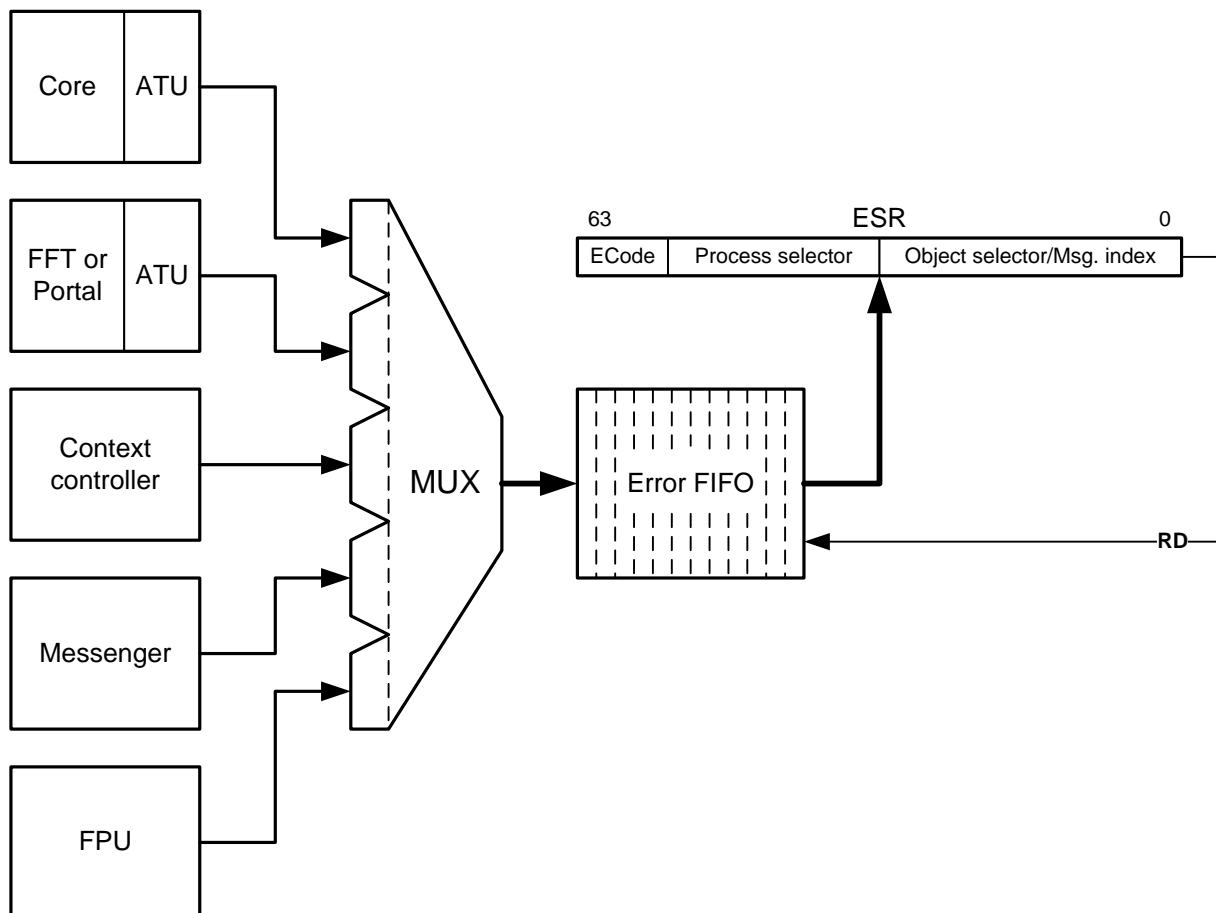
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Error processing

Hardware

Messages about system errors are entered in the FIFO queue at the input of which a 4-channel multiplexer is installed. The multiplexer receives error messages from the core, from the context controller, from the messenger and from the FPU. The error queue has a length of 64 cells, which guarantees the preservation of multiple errors from several sources until the time when the system error-handling procedure starts to read the records.



The output of the error queue is the system register ESR, which is read-only. The presence of a real value at the output queue can be determined from the non-zero state of the Error Code field.

The value is removed from the queue if at least one byte and the ESR register are read. Therefore, it is recommended to read the register with the LD instruction with 64-bit data size so as not to lose all the components of the error record.

The lower 32 bits of ESR contain the index of the message during processing of which an error was detected by the messenger.

The presence of at least one error record in the queue causes an interrupt. To determine the interrupt handler, the processor uses the entry point in the interrupt table with the index 0001h.

Error codes

Code	Description
Data access errors (local and network)	
XXX01001	Object limit violation.
XXX10001	Attempt to read from an object that is not readable or attempt to write to a write-protected object.
XX1XX001	Privilege level violation.
X1XXX001	TaskID violation.
1XXXX001	Invalid descriptor type. Attempt to access an empty entry point in the descriptor table or to a free object.
00000001	Invalid selector. Zero or beyond the descriptor table.
XXX11001	Object limit violation during code fetch.
11111001	An attempt was made to access an object located in another processor, which is denied network access or slave processor not present in the network.
Messenger errors.	
00000010	The message index goes beyond the table of imported procedures.
00001010	Invalid PSO selector of the process to which the message is sent.
00010010	The index goes beyond the table of exported procedures.
00011010	Violation of access to the message handler by privilege level.
00100010	The type of the message handler does not match the mode of access. For example, if a software attempt is made to call the hardware interrupt handler.
00101010	There is no space in the message queue to write a message.
00110010	Invalid interrupt index. Or zero or out of the interrupt table.
00110011	PSO selector from interrupt table out of descriptor table bound.
00110100	Entry from exported procedures table is not an interrupt entry type.
00111010	Invalid PSO selector in the cycle-switching process table.
01111010	The portal message index is outside the table of imported procedures.
01010010	An invalid PSO selector was found in the import procedure table to which the portal is trying to send a message.
01011010	While sending a message from the portal, a procedure index was encountered that was outside the table of exported procedures of the process receiving the message.
01100010	The portal tries to pass a message to a handler that is not a message handler by type.
01101010	The portal is trying to send a message to a handler that is not privileged.
01110010	The portal sends a message to a process that has a full message queue.

Code	Description
Context controller errors.	
01000010	Overflow of context stack in PSO.
01001010	Trying to execute ENDMSG instruction on the empty context stack.
01001011	Invalid return PSO selector in the context stack.