



DAQ update: error/alarm handling

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What's new !

- Modify DOOCS codes in **serverlib**;
- Coding in DOOCS device servers;
- DOOCS → ODR CTL software communication;
- Exercises are ongoing.



Error/alarm handling: serverlib coding

- How to modify codes in `eq_fct_errors.h`?
 - In header file part `enum`:

```
// these 9 err types are added to CALICE-DAQ ODR.  
ODR_NoErrors,  
ODR_CannotMapMemory,  
ODR_MemoryAllocFailed,  
ODR_CannotCreateThread,  
ODR_CannotDetachThread,  
ODR_ThreadCancelErr,  
ODR_FileOpenErr,  
ODR_Sending2DoocsErr,  
ODR_ODRMacInitErr
```

Error types can be added for:
ODR, LDA, DIF, etc.



Error/alarm handling: serverlib coding

- How to modify codes in `eq_fct_errors.cc`?
 - In source code:

```
/*===== Eq ODR errors by wutao =====*/  
//                                     "123456789012345";  
char *str_odr_noerror                 = "ODR no error";  
char *str_odr_CannotMapMemory         = "ODR MapMem Err";  
char *str_odr_MemoryAllocFailed      = "ODR MemAllocErr";  
char *str_odr_CannotCreateThread     = "ODR CreatThread";  
char *str_odr_CannotDetachThread     = "ODR DetacThread";  
char *str_odr_ThreadCancelErr        = "ODR Thrd Cancel";  
char *str_odr_FileOpenErr            = "ODR FileOpenErr";  
char *str_odr_Sending2DoocsErr       = "ODR Send2DCSErr";  
char *str_odr_ODRMacInitErr          = "ODR MacInit Err";
```

```
/*===== Eq ODR errors by wutao =====*/  
{ ODR_NoErrors,                &str_odr_noerror, },  
{ ODR_CannotMapMemory,        &str_odr_CannotMapMemory, },  
{ ODR_MemoryAllocFailed,      &str_odr_MemoryAllocFailed, },  
{ ODR_CannotCreateThread,     &str_odr_CannotCreateThread, },  
{ ODR_CannotDetachThread,     &str_odr_CannotDetachThread, },  
{ ODR_ThreadCancelErr,        &str_odr_ThreadCancelErr, },  
{ ODR_FileOpenErr,            &str_odr_FileOpenErr, },  
{ ODR_Sending2DoocsErr,       &str_odr_Sending2DoocsErr, },  
{ ODR_ODRMacInitErr,          &str_odr_ODRMacInitErr }
```



An example server

- How to detect error and alarm in device server codes?
 - An example in singenerator:

```
// test new error type  
set_error( (int) ThreadCancelErr );  
sprintf(err_str, "%s", "ODR ERR NoErrors: singenerator test");  
write_error( (int) ThreadCancelErr ); // tested by wutao
```

RPC GUI Utility

DOOCS Communication and Plot Utility (Version 5.6.8) wutao@larch.pp.rhul.ac.uk

TEST.DOOCs SINGENERATOR SIN STS.ONLINE

Property	Description
NAME = location	STRING
STS.ERROR	pending error status
STS.NEWERROR	new error detected
STS.ERRORMASK	disable new error
STS.ONLINE	device on-line status
SET.ONLINE	command to set on-line
ERROR	general error code
ERROR.STR	error as string

reconnect Sorting All Locations

INT Format: List all Locs/Props -> File

Read Plot READ -> File: /tmp/rpc_test_wutao Format: Show File

Result: 1

Send Send - Type: Send Data: 0 **Change it into error by force**

host=larch.pp.rhul.ac.uk, lib=610498010 DOOCS host= larch.pp.rhul.ac.uk (svr_mask=2 auth=15 opt=0 status=ok)

A fake error type

DOOCS Error Monitor (Version 5.1.39) wutao@larch.pp.rhul.ac.uk

Scan Time [sec] : 90

List of Subsystems :

Facility Object

- ▶ TTF WATCHDOG
- ▶ TEST.DOOCS ODR
- ☹ TEST.DOOCS SINGENERATO

Errors in Subsystem :

Location	New	Pending	Mask	Code	Time	Date	Error
TESLAHB2._SVR	0	0	0	0	16:57.55	4. Dec. 2008	OK
SIN	1	1	0	35	14:54.53	21. Jan. 2009	ODR Thrd Cancel
COS	0	0	0	0	16:48.48	15. Dec. 2008	OK
TAN	0	0	0	0	16:57.55	4. Dec. 2008	OK

Functions on selected items : Mask Choice:

Error code i^{th} ; error type



Programming in ODR device server

```
switch( error ) // switch on error types
{
    case NoErrors: //0
        cout<<"No Online Device Errors ^_^ !" <<endl;
        set_error( (int) ODR_NoErrors );
        write_error( (int) ODR_NoErrors );
        break;
    case CannotMapMemory: //1
        cout<<"ODR Device Error: Can not Map Memory!" <<endl;
        set_error( (int) ODR_CannotMapMemory );
        write_error( (int) ODR_CannotMapMemory );
        break;
    case MemoryAllocFailed: //2
        cout<<"ODR Device Error: Memory Alloc Failed !" <<endl;
        set_error( (int) ODR_MemoryAllocFailed );
        write_error( (int) ODR_MemoryAllocFailed );
        break;
    case CannotCreateThread: //3
        cout<<"ODR Device Error: Can not Create Thread !" <<endl;
        set_error( (int) ODR_CannotCreateThread );
        write_error( (int) ODR_CannotCreateThread );
}
```

Methods can
be overloaded



XView GUI interface

DOOCS Error Monitor (Version 5.1.39) wutao@larch.pp.rhul.ac.uk

List of Subsystems :

Facility	Object
TTF	WATCHDOG
TEST.DOOCS	ODR
TEST.DOOCS	SINGENERATO

Scan Time [sec] : 90 Stop

New Errors Pending Errors Error Masks All Devices

Errors in Subsystem :

Location	New	Pending	Mask	Code	Time	Date	Error
ODR._SVR	1	0	1	0	16:57.55	4. Dec. 2008	OK
ODR1	1	1	0	34	14:29.37	22. Jan. 2009	ODR DetatThread

Functions on selected items : Acknowledge Enable Disable Mask Choice: local mask

Print complete list: Print Log Files: History

```
ODR Device Error: Can not Detach Thread !  
ODR_Server          ODR1          14:29.37  22.01.2009  -> ODR DetatThread
```