



Alarm handling

Tao Wu



Error handling

- Purposes? User/shifter can detect
 - What type of errors (warnings);
 - its severity level
- How about the implementation?
 - Error handling is done by the serverlib;
 - Serverlibs provide error handling with Facility/Device
- Xerror is a client GUI
 - What Xerror client GUI looks like?



Error Monitor Xview GUI

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

New Errors Pending Errors Error Masks All Devices

Stop

Errors in Subsystem :

Location	New	Pending	Mask	Code	Time	Date	Error
TESLAHB2._SVR	0	0	0	0	17:10.43	24. Feb. 2004	OK
SIN	0	0	0	0	15:15.46	4. Dec. 2008	OK
COS	0	0	0	0	11:31.44	1. Oct. 2007	OK
TAN	0	0	0	0	19:23.45	13. Jun. 2003	OK

Functions on selected items :

Acknowledge Enable Disable Mask Choice: local mask

Print complete list: Print

Log Files : History

Smiling no error


Link to server is broken



Device server offline

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Scan Time [sec] : 90 Stop

New Errors Pending Errors Error Masks All Devices

Errors in Subsystem :

Location	New	Pending	Mask	Code	Time	Date	Error
TESLAHB2._SVR	0	0	0	0	17:10.43	24. Feb. 2004	OK
SIN	1	1	0	6	15:17.39	4. Dec. 2008	Device OFFLINE
COS	0	0	0	0	11:31.44	1. Oct. 2007	OK
TAN	0	0	0	0	19:23.45	13. Jun. 2003	OK

Sad: new error

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

Print complete list: Print Log Files: History



New errors & pending errors

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

Scan Time [sec] : 90

Stop

Errors in Subsystem :

Location	New	Pending	Mask	Code	Time	Date	Error
SIN	1	1	0	6	15:17.39	4. Dec. 2008	Device OFFLINE

Functions on selected items :

Acknowledge Enable Disable Mask Choice: local mask

Print complete list: Print Log Files: History

New errors have to be acknowledged by client

Pending errors : if the error is still pending after its first appearance



Back to online & acknowledged

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

List of Subsystems :

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

Scan Time [sec] : 90

Errors in Subsystem :

Location	New	Pending	Mask	Code	Time	Date	Error
TESLAHB2._SVR	0	0	0	0	17:10.43	24. Feb. 2004	OK
SIN	0	0	0	0	15:18.30	4. Dec. 2008	OK
COS	0	0	0	0	11:31.44	1. Oct. 2007	OK
TAN	0	0	0	0	19:23.45	13. Jun. 2003	OK

Functions on selected items : Mask Choice:

Acknowledged, NO errors



History Log file & its codes

```
#include "eq_errors.h"  
#include "eq_sts_codes.h"  
#include "eq_fct_errors.h"
```

```
History File  
singenerator_server SIN 15:15.25 4.12.2008 -> Device OFFLINE
```

```
// ....system online.....
```

```
if ( g_sts_.online() ) {  
    tds.status = sts_ok;  
    set_error( (int) no_error );  
}
```

```
set_error( (int) no_error, char* err_str );
```

```
else { // device offline
```

```
    set_error( (int) went_offline );  
    write_error((int) went_offline, err_str);  
}
```

```
set_error( (int) went_offline, err_str );
```

Log files on the local disk



29 error types

```
enum {  
    no_error,  
    not_available,  
    ill_function,  
    ill_type,  
    ill_device_no,  
    ill_parameter,  
    offline,  
    warning,  
    frame_error,  
    RE_error,  
    parity_error,  
    sys_restart,  
    book_error,  
    line_error,  
    ill_system,  
    read_error,  
    write_error,  
  
    device_autom,  
    state_error,  
    veto_error,  
    overload_error,  
    open_error,  
    ordering_error,  
    not_open_error,  
    remote_error,  
    not_responding ,  
    device_error
```

We should customise some error types for our DAQ system.



xerror : how to drive

xerror_list.conf

```
# device_list:
# facility object : case
insensitive
/
ttf          watchdog
test.doocs   odr
# for xerror GUI display
TEST.DOOCs   SINGENERATOR
$DRT/Linux/obj/clients/ttf/xerro
r/xerror \
    -d
    $DRT/source/clients/ttf/xerror \
    -f xerror_list.conf -t
ODR.ERROR_INFO &
```

-d : directory path to conf



Weakness and drawbacks

- One type of error is logged only for the first appearance, following errors with the same type are hidden, but repetitively counted;
- No central logging, no order sortable;
- Possible big log files;



Need Improvements

- Central error logging server with Web Services;
- Build-in error handling for sub-devices in the device server codes;
- error class creates a thread to send the error message to the central error logging server with a certain severity level

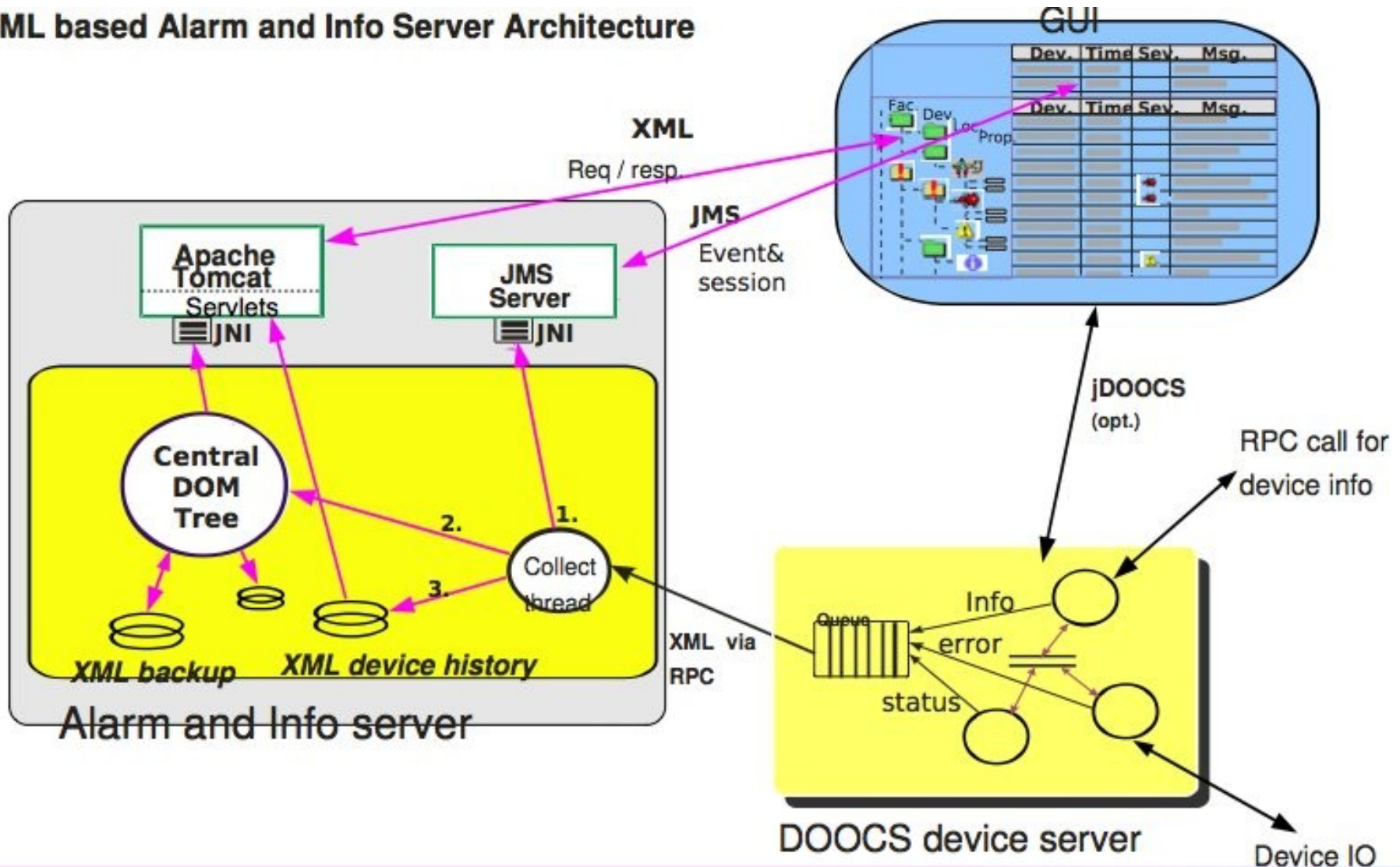


Java Servlets and Applets !



Central Error/Info server

XML based Alarm and Info Server Architecture





Package dependencies of Alarm Handling

- - xmllib2 and xmlwrapper 0.5.0 (C++); OK
 - - Apache/Tomcat 5.5 or 6.x;
 - - CLucene-0.9.21b for search engine; OK
 - - javaws >1.6+, java webstart; OK
 - - JNI java native interface;
 - - JMS java messaging server >1.3.1;
 - - jDOOCS java lib for DOOCS; **existing**
 - - TINE protocol (?);
- } JDK
} JSE
} JEE

Installation & testing: NOT so easy !



Java Servlets & Applets

		Java Language	Java Language										
		Tools & Tool APIs	java	javac	javadoc	apt	jar	javap	JPDA	JConsole		Java VisualVM	
			Security	Int'l	RMI	IDL	Deploy	Monitoring	Troubleshoot	Scripting	JVM TI		
JDK	Deployment Technologies		Deployment			Java Web Start			Java Plug-in				
		User Interface Toolkits	AWT			Swing			Java 2D				
			Accessibility	Drag n Drop		Input Methods		Image I/O	Print Service	Sound			
	Integration Libraries	IDL	JDBC		JNDI		RMI	RMI-IIOP					
	Other Base Libraries	Beans	Intl Support		Input/Output		JMX	JNI		Math	Java SE API		
		Networking	Override Mechanism		Security		Serialization	Extension Mechanism		XML JAXP			
	lang and util Base Libraries	lang and util	Collections		Concurrency Utilities		JAR	Logging		Management			
		Preferences API	Ref Objects		Reflection		Regular Expressions	Versioning	Zip	Instrumentation			
	Java Virtual Machine	Java Hotspot Client VM					Java Hotspot Server VM						
	Platforms	Solaris			Linux			Windows				Other	



Alarm tool (from FLASH)

Device Tree

Device instances

Property error

Messages

The screenshot displays the Alarm tool interface. On the left is the 'Device Tree' panel, showing a hierarchical structure of devices including TTF2.SYSTEM, TTF2.FEL, TTF2.RF, TTF2.EXP, TOSY.MOTOR, CRD.MOTOR, MBDEV1..SVR, MBDEV1, 14ACC7.BR, 14ACC7.BU, 14ACC7.BL, 14ACC7.S4M1, 14ACC7.I01, 14ACC7.S2M2, 14ACC7.S6M1, 14ACC7.S6M2, 14ACC7.S2M1, 14ACC7.S4M2, 14ACC7.BO, 14ACC7.S0M, MBDEV2..SVR, 14ACC7.S7M2, 14ACC7.S8M2, ED.MICRA, 14ACC7.S7M1, MBDEV2, CRD.EXP, TIMER, DELAY, ADCDMA, THZ.ADC, BPM, ORS.OS.1.2, ORS.OS.0.1, ICCD1.CAMERA, PBA.OPTIC, TTF2.DIAG, and TTF2.VAC. The main area is divided into two message logs. The top log, titled 'Recent messages of all devices: 810', shows a table of error messages with columns for Location, Property, Time, and Message. The bottom log, titled 'History of selected location: TTF2.EXP/CRD.MOTOR/MBDEV1 100/346', shows a table of messages with columns for Time, Name, Severity, and Message. A white box with the text 'Java display' is overlaid on the bottom right of the message logs.

Location	Property	Time	Message
TTF2_UTIL/UNDU_TEMP/N/UND1	ERROR	16:02:08,288 06.03	fatal error in read_modbus: nothing to fetch ...
TTF2_UTIL/UNDU_TEMP/N/UND4	ERROR	16:02:37,212 06.03	fatal error in read_modbus: nothing to fetch ...
TTF2_UTIL/UNDU_TEMP/N/UND5	ERROR	16:02:20,177 06.03	fatal error in read_modbus: nothing to fetch ...
TTF2_UTIL/UNDU_TEMP/N/UND3	ERROR	16:02:20,176 06.03	fatal error in read_modbus: nothing to fetch ...
TTF2_UTIL/UNDU_TEMP/N/UND6	ERROR	16:02:16,805 06.03	fatal error in read_modbus: nothing to fetch ...
TTF2_UTIL/UNDU_TEMP/N/UND2	ERROR	16:02:15,261 06.03	fatal error in read_modbus: nothing to fetch ...
TTF2_UTIL/UNDU_TEMP/N/UND1	ERROR	15:53:10,662 06.03	OK
TTF2_UTIL/UNDU_TEMP/N/UND1	ERROR	15:53:07,396 06.03	fatal error in read_modbus: nothing to fetch ?
TTF2_UTIL/UNDU_TEMP/N/UND4	ERROR	15:52:41,718 06.03	OK
TTF2_UTIL/UNDU_TEMP/N/UND4	ERROR	15:52:36,107 06.03	fatal error in read_modbus: nothing to fetch ?
TTF2_UTIL/UNDU_TEMP/N/UND3	ERROR	15:52:25,364 06.03	OK
TTF2_UTIL/UNDU_TEMP/N/UND5	ERROR	15:52:22,301 06.03	OK
TTF2_UTIL/UNDU_TEMP/N/UND2	ERROR	15:52:22,300 06.03	OK
TTF2_UTIL/UNDU_TEMP/N/UND3	ERROR	15:52:19,952 06.03	fatal error in read_modbus: nothing to fetch ?
TTF2_UTIL/UNDU_TEMP/N/UND5	ERROR	15:52:19,645 06.03	fatal error in read_modbus: nothing to fetch ?
TTF2_UTIL/UNDU_TEMP/N/UND6	ERROR	15:52:18,216 06.03	OK
TTF2_UTIL/UNDU_TEMP/N/UND6	ERROR	15:52:15,341 06.03	fatal error in read_modbus: nothing to fetch ?
TTF2_UTIL/UNDU_TEMP/N/UND2	ERROR	15:52:14,927 06.03	fatal error in read_modbus: nothing to fetch ?
TTF.VAC/LEAK_D/CLEANR.L2	ERROR	15:51:36,787 06.03	Error in detector headStatus: 0x200 toggled

Time	Name	Severity	Message
01:18:07 26.02.2008			error in read_modbus: write to modb...
08:50:51 02.01.2008			OK
08:50:51 02.01.2008			OK
07:44:34 02.01.2008			error in read_modbus: write to modb...
07:42:53 02.01.2008			OK
07:42:38 02.01.2008			error in read_modbus: write to modb...
07:41:40 02.01.2008			OK
07:20:38 02.01.2008			error in read_modbus: write to modb...
07:20:02 02.01.2008			OK
07:19:38 02.01.2008			error in read_modbus: write to modb...
07:19:13 02.01.2008			OK
07:17:49 02.01.2008			error in read_modbus: write to modb...
07:16:22 02.01.2008			OK
07:12:21 02.01.2008			ERROR
07:11:49 02.01.2008			MB READ.1 1st read block: error in u...
07:11:49 02.01.2008			OK
07:11:36 02.01.2008			error in read_modbus: write to modb...
07:10:06 02.01.2008			OK
07:09:06 02.01.2008			error in read_modbus: write to modb...



Summary

- Xerror clients Xview GUI is tested;
- Error/Info server is under development;
- Alarm server needs help & some learning;

- We expect some help from DESY experts.