

Summary:

Push Alarms Mini-Workshop

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Some History

- ◆ DZero has been doing this since 2000
 - Originally presented to the EPICS collaboration at the SNS meeting in 2000
 - EPICS R3.13.1.1
- ◆ Last year (2006) after the Argonne workshop Matthias came by Fermilab for a discussion
- ◆ Since then Bernd developed DESY implementation
 - See previous talk
- ◆ Official “Alarm Pusher” hook installed in R3.14.9
- ◆ Met last night for 1.5 hours to get issues on the table and see where we are
 - Thanks to all who attended

Why?

◆ DESY

- We want all alarms from all IOCs!
- ALH depends on X-windows
- ALH is integrated with display
- When workstation is closed ALH stops
- Configuration needed for all channels

◆ DZero

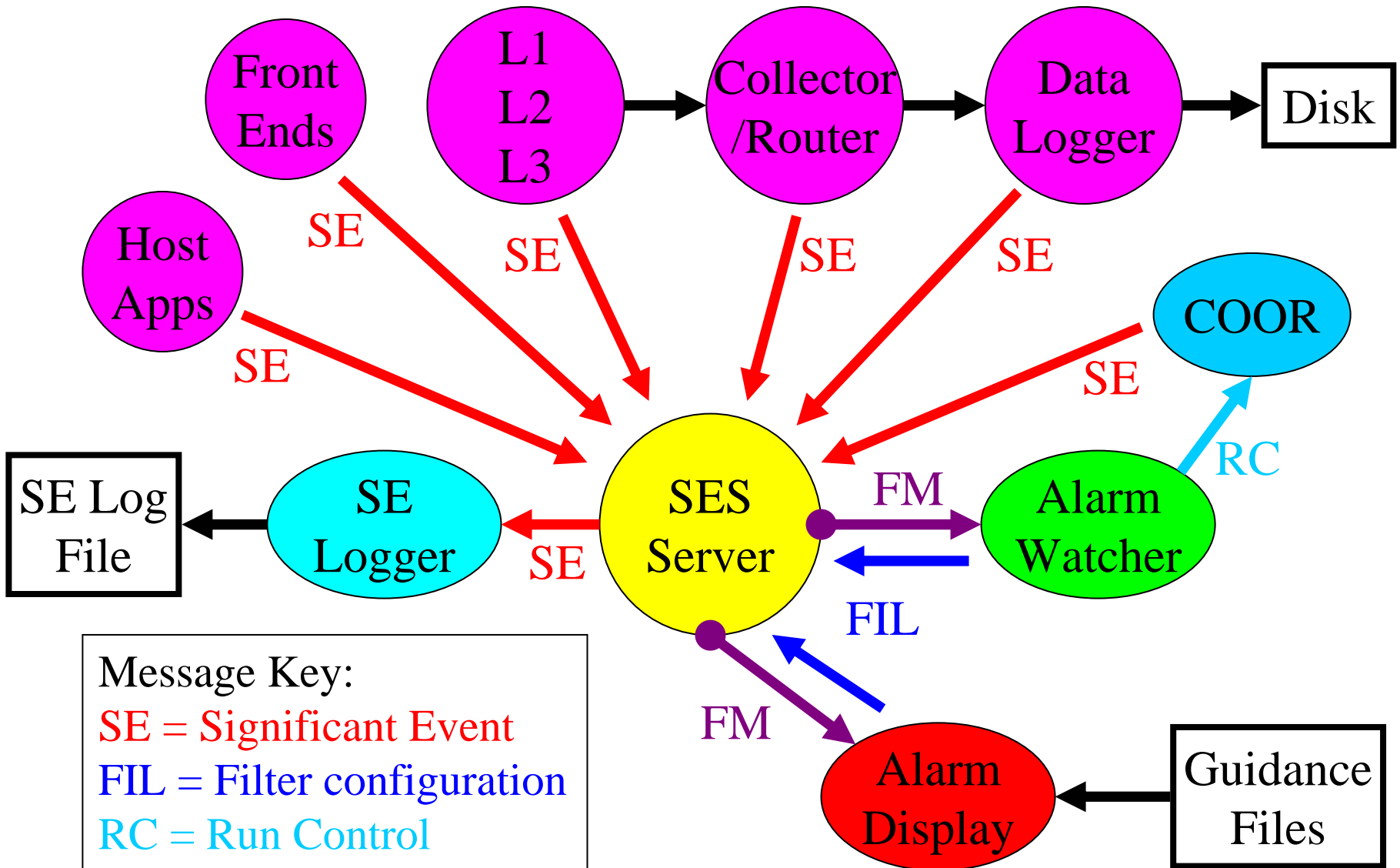
- Get alarms by configuring EPICS records

No “special” configuration files

The Hook is there in R3.14.9

```
/* Hook Routines */
RECGBL_ALARM_HOOK_ROUTINE recGblAlarmHook = NULL;
.....
if (sevr!=nsev || stat!=nsta) {
    /* HOOK for alarm logging */
    if (recGblAlarmHook)
        (*recGblAlarmHook) (pdbc, stat, sevr);
.....
```

Call the hook function whenever the status or severity of a record changes.



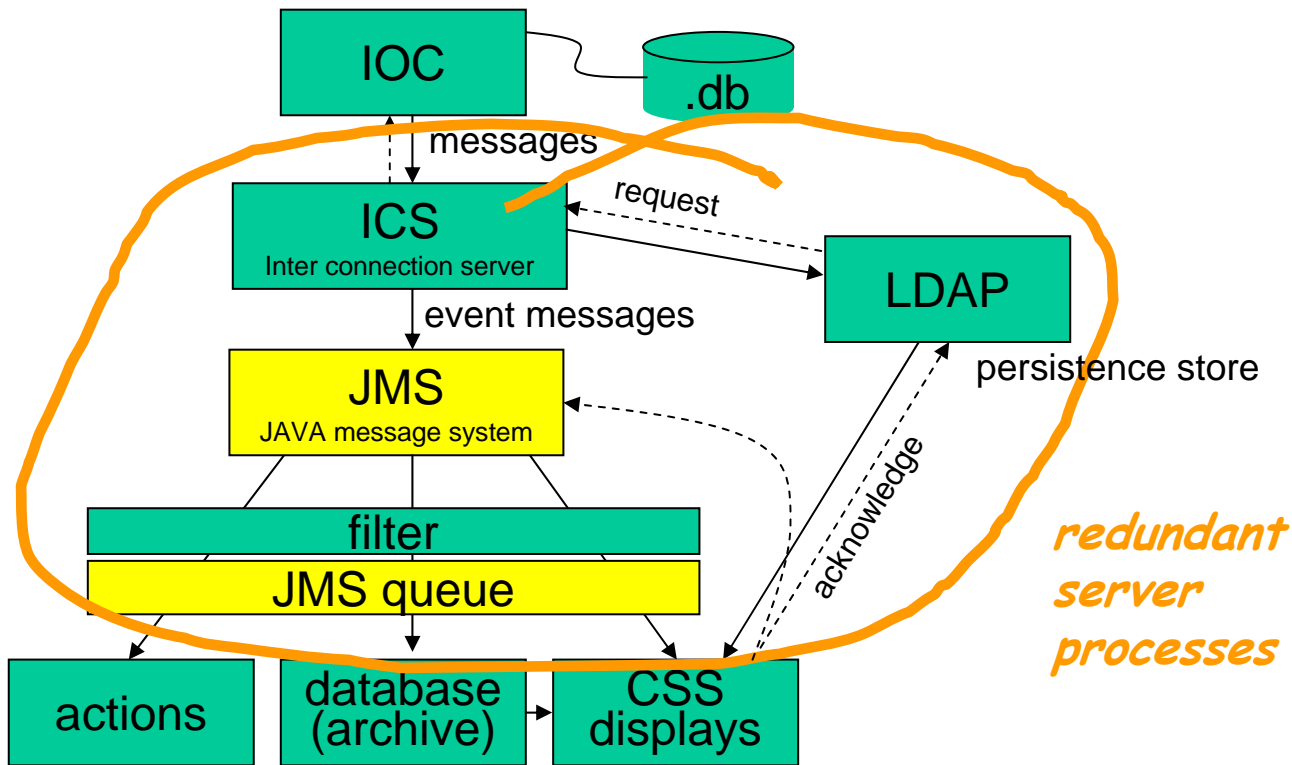
DZero Alarm Display

	MAJOR	MINOR	INVALID	ACKED	DISABLED	GOOD
CAL and ICD	0	13	1	0	103	58
CFT	0	28	0	28	20	4
LICTT	0	1	0	0	0	1
MUO	2	2	0	0	6	0
SMT	0	3	0	0	15	1
LUM	0	0	0	0	0	0
Control	0	8	0	0	0	0
Online	3	2	0	0	14	0
SDAQ	0	0	0	0	0	0
Magnet	0	0	0	0	0	0
Level 3 DAQ	0	0	0	0	0	0
Level 2	0	0	0	0	0	0
Level 1	0	1	0	0	0	0
FPD	0	1	0	5	11	0
Trigger	0	1	0	0	0	0
STT	0	42	0	0	24	0
Alarm Watcher	0	1	0	0	34	0

Status: Connection to server started

Alarm Logging Facility

2. New approach avoiding ALH disadvantages and use with CSS



Control System Studio

File CSS Window Help

CSS Management CSS Alarms

Console Namespace Browser JMS Log viewer JMS Log archive viewer JMS Alarm viewer

TYPE	EVENTTIME	NAME	SEVERITY	STATUS	VALUE	TEXT	USER	HOST	APPLI
event	2007-04-25 07:45:05.745	CTA:PIC001_ai	MAJOR	LOLO				kryoCTA	
event	2007-04-25 07:47:51.066	CTA:KOMP_ABSCHALT_bi	MAJOR	STATE				kryoCTA	
event	2007-04-25 07:47:51.581	CTA:ALARME_2_OUT_0_bo	MAJOR	STATE				kryoCTA	
event	2007-04-25 07:47:51.599	CTA:MV106_bo	MAJOR	STATE				kryoCTA	
event	2007-04-25 07:49:47.211	CTA:TTR_NO_lim	MAJOR	LOW				kryoCTA	
event	2007-04-25 07:49:56.461	CTA:TTR_ATM_bo	MAJOR	STATE				kryoCTA	
event	2007-04-25 08:04:29.815	CTA:H10_bo	MAJOR	STATE				kryoCTA	
event	2007-04-25 07:47:51.599	CTA:HORN_bo	MAJOR	STATE				kryoCTA	
event	2007-04-25 08:21:14.566	alarmTest:RAMPC_calc	MAJOR	HIHI				Bernds Test-IOC	
event	2007-04-25 08:22:16.067	alarmTest:RAMPB_calc	MAJOR	HIHI				Bernds Test-IOC	
event	2007-04-25 08:22:00.949	alarmTest:RAMPA_calc	MAJOR	HIHI				Bernds Test-IOC	
event	2007-04-25 07:44:38.923	CTA:PIC001_ai	MINOR	LOW				kryoCTA	
event	2007-04-25 08:20:04.574	alarmTest:RAMPC_calc	MINOR	HIGH				Bernds Test-IOC	
event	2007-04-25 08:22:14.067	alarmTest:RAMPB_calc	MINOR	HIGH				Bernds Test-IOC	
event	2007-04-25 08:22:19.351	alarmTest:RAMPA_calc	MINOR	HIGH				Bernds Test-IOC	
event	2007-04-25 08:04:30.862	CTA:HORN_bo	NO_ALARM	NO_ALARM				kryoCTA	
event	2007-04-25 08:22:12.367	alarmTest:RAMPC_calc	NO_ALARM	NO_ALARM				Bernds Test-IOC	
event	2007-04-25 08:22:17.567	alarmTest:RAMPB_calc	NO_ALARM	NO_ALARM				Bernds Test-IOC	

Requirements Differ

◆ DESY

- Accelerator
- Redundancy
- CSS integration

◆ DZero

- Detector
- Part of a larger system
- Use existing communication software (TCP/IP)
- Use to verify physics data quality

Implementation Differences

◆ DESY

- UDP
- Redundant server support
- Messages = name, value pairs
- Maintain history when message queue fills

◆ DZero

- TCP/IP
- Added fields to use CA for control
- Well defined message structure
- Additional Alarm severity that pauses runs
- Ignore history when message queue fills

Implementation Similarities

- ◆ Make current status available to clients
- ◆ Handle absent server and network issues
- ◆ Detect when a record scans for the first time.
 - Add an EPICS field?
- ◆ Oscillating alarms
 - The Canadians know how to do this and explained it to the Americans, Thanks.
- ◆ String messages

Summary

- ◆ The Hook is there in R3.14.9
 - You can develop a system for pushing alarms
- ◆ Yesterday we put many issues on the table that need to be digested
 - Complex topic
 - Differing requirements direct implementations
- ◆ Need to consider adding more fields to support the push alarm model
 - FSCN - first scan
 - ASND - turn on/off alarm sending on per record