Summary:
Push Alarms Mini-Workshop

Geoff Savage, Bernd Schoeneburg, Matthias Clausen
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.

23 April 2007
Alarm Pusher
Message Key:
SE = Significant Event
FIL = Filter configuration
RC = Run Control
FM = Filtered SE Message
● = Filter

23 April 2007
Alarm Pusher
DZero Alarm Display

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Status: Connection to server started
Alarm Logging Facility

2. New approach avoiding ALH disadvantages and use with CSS

![Diagram showing various components related to Alarm Logging Facility]

- IOC
- ICS (Inter Connection Server)
- JMS (Java Message System)
- LDAP
- JMS Queue
- Filter
- Actions
- Database (archive)
- CSS Displays
- Redundant server processes
- Persistence store
- Requests
- Events
- Messages
- Acknowledge
- Archive

23 April 2007
AlARM PusHER
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CSS Alarm Display

Control System Studio

[File] [CSS] [Window] [Help]
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

23 April 2007
Alarm Pusher
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