Alarm System

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Basic Idea

**Alarm System**

1) Indicate alarms
2) Detail: Which PV? When? What value?...
3) Guidance
4) Related Displays
5) Keep alarms until acknowledged & cleared

**PV**

- **VAL:** 20
- **HIHI:** 20
- **HSV:** MAJOR

**PV**

- **VAL:** 10
- **HIGH:** 5
- **HSV:** MINOR

“Check XYZ. Try opening ABC. Call Fred.”
Implementation

Alarm Server
Monitors PVs, updates current state

Apache Kafka
- Alarm Configuration
  - Which PVs to monitor
  - Guidance
  - Display Links
- Current State
  - Which PVs are in alarm?

CS-Studio Alarm UI
Initial Setup

1. Install Kafka (typically as Linux service)

2. Check that “Accelerator” config exists
   cd ~/epics-train/tools
   ./list_topics.sh
   ./monitor_topics.sh Accelerator

   If nothing shown:
   ./create_alarm_topics.sh Accelerator

3. Start alarm server (typically also as Linux service)
   alarm_server

https://github.com/shroffk/phoebus/blob/master/app/alarm/Readme.md
Configuration

• Open CS-Studio Applications, Alarm, Alarm Tree

• Right-click, Add Component
  – Node “Fishtank”
  – Add Guidance and Display link
Configuration …

• Right-click on new “Fishtank”, Add Component
  □ PV “training:heat_V”
  □ Description
    Anything’s better than the PV name
  □ Specific Guidance and Displays
    Should have guidance. Otherwise, why is this an alarm?
  □ Enabled? Latch? Annunciate?
    Usually: Yes, otherwise: Why bother?
  □ Delay?
    Hack for noisy alarm trigger PVs
  □ Automated Actions
    □ mailto:fred@google.com
Example Alarm Workflow

• Cause an alarm
  caput training:setpoint 60

• Inspect Alarm
  – Watch as alarm is indicated
  – Open associated display

• Handle It
  – Acknowledge
  – Reduce setpoint
  $\rightarrow$ Clear
Alarm Tree

• Primary **configuration** tool

• Hierarchical
  - Guidance, Displays apply to sub-nodes

• Operational useful to
  - Check if numerous alarms originate in the same area
  - Acknowledge or disable complete subtrees
Alarm Table

• Primary **operations** tool
• Ideally empty
• View/sort/acknowledge alarms
• Open guidance and displays
Alarm Area Panel

Useful for ‘Overview Displays’

Indicates ‘across the room’:

All OK?
Alarm Annunciator

Annunciates the description of alarms

Basic “heads up” to check alarm table for details
Alarm System

- Alarm Server monitors PVs, tracks alarms
- Alarm Tree to configure
  - PV?
  - Guidance?
  - Displays?
- Alarm Table, Area Panel, Annunciator to use
  - Acknowledge
  - Open Displays