

Debugging CS-Studio Phoebus Version 4.6.10 Used for the Development of the Alarm System

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The previously functional alarm system core programs lost the communication connection with Phoebus alarm test system’s softIOC. This note presents the debugging of the issue.

While working on the development of the Phoebus alarm system [1], it was discovered that the alarm core programs [2] and the alarm user interface display screens suddenly stopped connecting to the EPICS process variables (PVs) from the alarm test system’s EPICS softIOC, which was using Phoebus V4.6.10.

To debug the communication connection failure, the Phoebus alarm test system was used. The test system, Fig. 1, consists of an EPICS softIOC [3], which produces PVs that use EPICS channel access to communicate with the Phoebus core programs and the alarm system user interfaces.

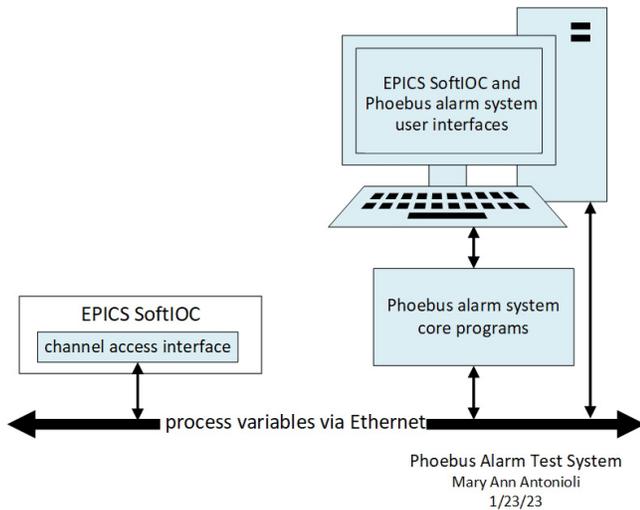


FIG. 1. Phoebus alarm test system.

Debugging ascertained that the Phoebus alarm system core programs, user display screens, and *PV List* would not connect to the EPICS softIOC PVs. Common to all four was Phoebus V4.6.10 usage of EPICS channel access protocol. The status of the EPICS softIOC was checked by using the EPICS softIOC control console. The softIOC reported no errors and showed that the PVs were active.

The system was then tested using an independent EPICS client instead of a Phoebus application. The Motif Editor and Display Manager (MEDM) program was run on the alarm test system to see if another program could read and write PVs from the test system softIOC. MEDM did connect and communicate, indicating that the EPICS softIOC was providing valid PVs to the network via EPICS channel access.

Suspecting that EPICS channel access was not working in Phoebus V4.6.10, all the associated channel access configuration files and environmental variables were checked. No

anomalies were found. The system was then restored to Phoebus V4.6.6. All Phoebus V4.6.6 applications, including the alarm system core programs and user display screens, connected and communicated with the softIOC PVs.

With the failure of the communication connection with the alarm test system EPICS softIOC PVs isolated to Phoebus V4.6.10, the system was rebuilt from the same original source and configuration files. After the Phoebus V4.6.10 applications were recompiled, the alarm core programs, user display screens, and other Phoebus applications were retested. All applications connected and communicated with the softIOC PVs.

Figure 2 shows the Phoebus V4.6.10 debugging flowchart.

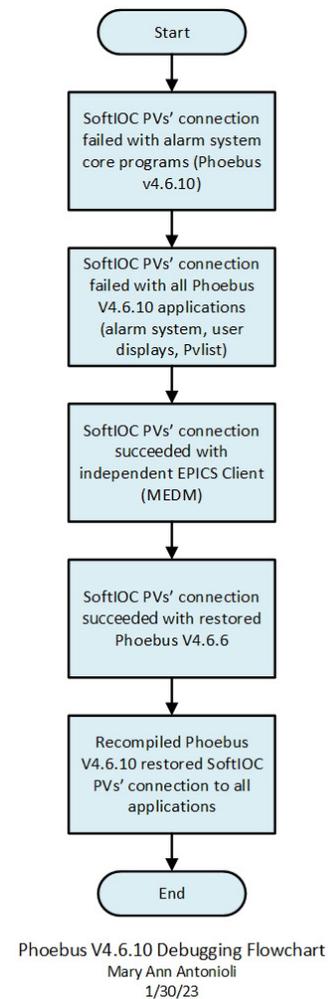


FIG. 2. Phoebus debugging flowchart.

In conclusion, the debugging of Phoebus V4.6.10 for the alarm system development has been completed. Debugging indicated that a Phoebus V4.6.10 executable file, possibly associated with EPICS channel access, had been corrupted, most likely due to a power glitch while the alarm system was operating.

- [1] [P. Bonneau, et al., *Proposal to Implement Alarm System in Control System Studio Phoebus for the Hall C Neutral Particle Spectrometer*, DSG Note 2021-37, 2021.](#)
- [2] [P. Bonneau, et al., *Automated Startup and Sequencing of the CS-Studio Phoebus Alarm System Core Programs*, DSG Note 2022-16, 2023.](#)
- [3] [P. Bonneau, et al., *Development of the EPICS Software Input/Output Controller for Testing the Phoebus Alarm System of the Hall C Neutral Particle Spectrometer*, DSG Note 2022-06, 2022.](#)