

# EPICS: CSS-Phoebus

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## EPICS Alarm System in Phoebus

I am developing an EPICS alarm system based on CS-Studio Phoebus. Phoebus will be used for new EPICS system development and will replace the existing Eclipse-based CS-Studio systems as detailed in my note [DSG Note 2021-37](#) and talk [DSG Talk 2021-17](#).

I am working on the configuration and initial start-up of the Phoebus alarm server. The server is an alarm system support program that monitors process variables (PV's) on the network via EPICS channel access.

Based on a template in the Phoebus source code, I wrote an `alarm_server.service` file. This file is used by Linux at computer boot time to automatically start the alarm server. The file contains parameters used by the alarm server at startup such as the environmental variables and the alarm system configuration name.

When starting the `alarm_server.service`, an error occurred stating: Failed to determine user credentials: No such process. I looked deeper into the code and found another program called `procServ` is used in conjunction with the alarm server. I looked through the Phoebus source code and it does not have `procServ` and the documentation does not mention this dependency.

From my research, I determined `procServ` is used as an interactive command wrapper which allows remote access via telnet to the alarm system command console while the system is in operation. Written by the EPICS collaboration, `procServ` is also used with other EPICS processes such as soft IOC's. I downloaded the `procServ` source code from GitHub. I also obtained and installed the telnet protocol handling library required by `procServ`. I successfully built, installed, and tested `procServ`.

I restarted the `alarm_server.service` and the alarm server console successfully read the configuration file and began the initialization process. When the alarm server initialization reported "Started Phoebus Alarm Server", an error from the alarm server console is shown indicating "Main process exited, status=2/INVALIDARGUMENT".

- **Developing CS-Studio Phoebus based controls, monitoring, and alarm system - to be implemented on Hall C detectors**
- **Debugging startup of alarm server**
- **Plan to implement message streaming (block diagram on slide #2) interface for alarm server**

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I investigated this error and concluded that one or more command line arguments supplied to the alarm server program when invoked by *procServ* was incorrect. I tested the individual arguments and found the path to the alarm server directory was incorrect in the *alarm\_server.service* file. When this was corrected, the alarm server initialization successfully progressed passed this initial error. Figure 1 shows the successful start of the alarm server initialization.

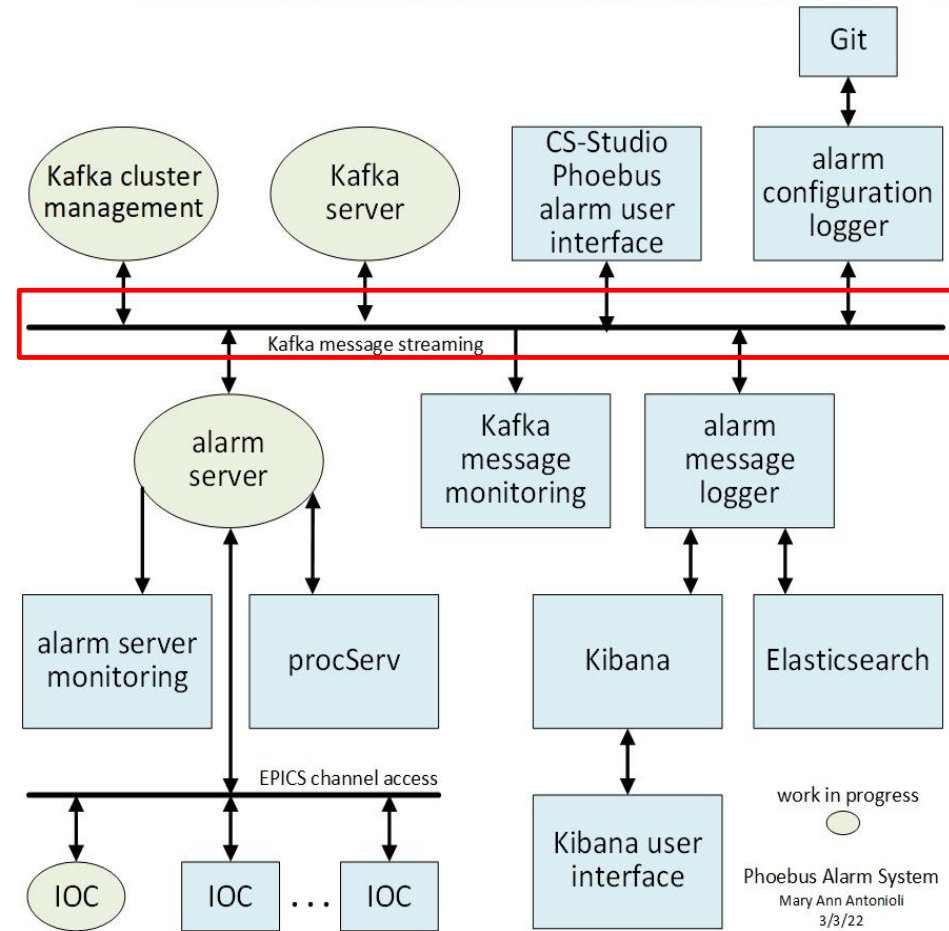
I restarted the alarm system initialization process. When the alarm server console reported "*Fetching passed alarm states*", an error from the alarm server console is shown indicating "*connection to node could not be established*". I investigated this error and determined that the database implemented with Apache Kafka must be configured for the alarm system and operational before starting the alarm server. This alarm server dependency was mentioned nowhere.

I plan to get Apache Kafka configured and operational as the next step in the development of the Phoebus alarm system.

```
[bonneau@fedora ~]$ sudo systemctl status alarm_server.service
● alarm_server.service - Phoebus Alarm Server
   Loaded: loaded (/etc/systemd/system/alarm_server.service; enabled)
   Active: active (running) since Mon 2022-02-14 15:06:29 EST; 3min 28s ago
     Main PID: 3713 (procServ)
       Tasks: 1 (limit: 37986)
      Memory: 300.0K
         CPU: 11ms
    CGroup: /system.slice/alarm_server.service
            └─3713 /usr/bin/procServ --foreground --noautorestart --name alarm-server --chdir /home/bonneau/Downloads
```

Feb 14 15:06:29 fedora systemd[1]: Started Phoebus Alarm Server.

FIG.1. Start of the Phoebus Alarm System Server



Phoebus Alarm System Programs

[DSG Note 2021-37](#)  
[DSG Talk 2021-17](#)