

# Troubleshooting NI cRIO Crashes/Freezes

Brian Eng  
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## Troubleshooting NI cRIO Crashes/Freezes

Upgrading the software on cRIO hardware needs to be periodically done in order to apply software bugfixes and security updates. All of the gas system controllers (locations: forward carriage, gas shed, space frame) are currently running the suite of software based on LabVIEW 2019, the plan was to upgrade to 2021 in iterative steps. First a development controller was upgraded and tested to insure that no major issues were found in the upgrade process itself. This was completed without any issues.

After the successful upgrade on the development system the forward carriage controller was upgraded as part of the LTCC upgrade. This also was completed successfully. Next the gas shed was upgraded. While initially this appeared to work properly after several hours the controller stopped responding as indicated by a stopped heartbeat signal. More troubleshooting found that the time interval to failure wasn't fixed, but could be minutes to hours. Generally the system would require a hard reset as networking was still working (controller responds to ping commands) but all network software (NI MAX, LabVIEW, SSH) would timeout when trying to connect.

- **One out of three cRIO controllers upgraded from LabVIEW 2019 to 2021 experienced issues**
- **Adding additional logging code showed no issues with resource usage/allocation**
- **NI confirmed similar behavior on their test setup and are looking for a root cause**

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Per NI technical support's suggestion crash logging code was added to the GUI VI as part of the startup application. The main part of this code would be to log available memory and storage space to check for resource exhaustion. Unfortunately, all this code indicated was that the GUI VI would stop, but that the resource usage was not the cause.

In parallel with implementing logging on JLab hardware NI was attempting to duplicate our hardware setup to see if they can reproduce the error. After several attempts they were able to duplicate the issue and have begun to see about finding a root cause. In the meantime the production cRIO controller for the gas shed was reverted to 2019 where it has remained running without issue. In addition the forward carriage controller has remained on 2021 also without any issues.