RoIB on-call scope & training for ATLAS TDAQ

Given the low incidence of failures of the RoIB hardware, the need for actual maintenance activity has been minimal so far. Currently a small group of individuals, primarily from Argonne, are available for support. In expanding the pool of support personnel we do not want to increase the overall manpower cost by adding more of a training burden than the current support burden nor do we want to increase the chances of support activity causing problems due to inappropriate actions taken by less experienced individuals. In an attempt to strike that balance we describe here the activities that newly trained on call individuals should be able to do, the training required and the additional support resources that will be needed to follow up in any cases where the less experienced on call individuals will be unable to completely fix the problem.

The point of on call support is to maintain a working TDAQ system with minimal downtime. To that end the current RoIB system has been designed to have sufficient redundancy that any single point of failure can be rapidly dealt with by using that redundancy. The on call expert should be able to deal with a single channel, input or output, failure by disabling the supervisor and commissioning a new one if necessary or by swapping the LVL1 input to a different RoIB input and reconfiguring the OKS database to properly reflect such hardware reconfigurations. In the event of a builder or input card failure the on call should be able to switch the fibers and OKS configuration to use the hot spare in the running crate. Finally if the presence of the failed card presents problems due to a backplane issue the on call should be able to disengage the offending card from the backplane (i.e. remove the card).

The on call expert should be able to replace an LSC or an LDC mezzanine but this should only be done after consulting with or calling in a more experienced expert. Card replacements should be done by a more experienced expert. The need for this is anticipated to be extremely rare.

Diagnosing FILAR or supervisor failures can and will be done without interfering with system operation after the failing system is removed. This should be done by the experienced experts and need not be considered part of the on call activity.

Since all of the above require some experience with run control and the OKS database a prerequisite for RoIB on call training should be qualification for run control shifts. Hands on training should be done by an experienced expert. Since actual failures are extremely rare an overlap period is not likely to be very meaningful so the training will have to be sufficiently comprehensive to enable the above actions.

Additional resources that will provide support beyond that described above will include a facility maintained at Argonne to test and repair broken hardware. The preseries system has a complete set of cards, an SBC, VME crate, backplane and clock module. It is intended to provide spares for any failures in the main system on a temporary basis if necessary.