

Extending at2sim to model ROS modular units

(Author: R.Cranfield)

(Last mod: 18-Nov-02, RC)

This note describes a proposal to provide a model of a ROS modular unit based on the new implementation of at2sim. In addition to some specific new task code, it requires some extension of the existing at2sim base classes to allow for, 1), input and output ports for interconnection of ROS components in addition to those connecting to the main TDAQ network, and, 2), data request messages that refer to several ROBins at once.

IOM & ROBin stars

It is proposed to model the IOM and the ROBins as *applications*.

The TriggerIn thread of the IOM would correspond to the *Dispatcher* class, whilst the IOM's RequestHandler threads would be coded as *tasks*.

In the ROBins, the *Dispatcher* class would be used to handle the message queues. The ROBin's behaviour would be modelled with just a single *task* (at least to begin with), corresponding to coding the ROBin as a simple polling loop.

Ports

The IOM application needs second input and output ports to connect to the ROBins (through an external multiplexer representing the bus or private network of the ROS modular unit). These can be called netInput2 and netOutput2, and coded just like *netInput* and *netOutput*.

A network-based ROBin application will similarly need a second output port if it is to send data direct to the main network.

Multi-ROBin requests

In the current DC model each RoI data request goes to a single ROS emulator, determined by looking up the RoI in the *robLUT* table. For a ROS built from ROS modular units, RoI requests sent to the IOM of the modular unit would refer to several ROBins, and would thus have to be constructed by merging what are currently separate requests. This would require the definition of a new "multi-ROBin" RoI data request message type, and extension of the RoI request preparation code in *L2PUWorkerTask*. There would also have to be a mechanism by which a *L2PUWorkerTask* could identify which ROBins belong to a given ROS modular unit.