

On-Call Responsibilities

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This document describes the plan to provide support for computing systems during commissioning and data taking.

Levels Of Expertise

Several levels of expertise are considered in this document

- A *User* is trained in basic operation of the systems to operate the experiment.
- An *On-Call Person* can:
 - Work through complicated processes that require a reasonable level of technical knowledge to successfully complete.
 - Debug simple problems.
 - Understand when a system expert is required and take appropriate action.
- A *System Expert* can provide in-depth debugging to the extent that they can add new functionality to the system.
- *RAL Networking* provide support for networking issues. MICE staff should only make limited changes to the networking equipment in MICE Local Control Room.
- *CASTOR* provide large scale storage for MICE data. MICE staff do not maintain this service.

Areas of Expertise

There are several computing and software subsystems that must be supported during operations.

- *Control room servers and computing hardware*: MICE operates several servers in the rack room that provide general purpose tools to support the experiment.
- *DAQ*: The Data Acquisition (DAQ) system is used to read out the detectors.
- *Controls and Monitoring*: The Controls and Monitoring software is used to control the experiment.
- *Online Reconstruction*: The Online Reconstruction servers are used to monitor correct operation of the MICE detectors by unpacking the data and providing real-time reconstruction outputs. Online Monitoring, which operates on the online reconstruction machine, is used to monitor the DAQ.
- *MLCR Services*: Correct operation of the MICE Local Control Room (MLCR) relies on networking, power and air conditioning units.
- *General Computing Services*: There are a number of general computing services used by the MLCR subsystems, such as backup facilities, operator PCs, the MICE electronic log book (ELog), and so on.

Computing and Software operates and uses additional equipment and services outside of the MICE Local Control Room. The only system that is required outside of the control room for operation of MICE is the CASTOR data store. MICE has sufficient local storage that it can operate for at least 7 days in the event of an unavailability of this service.

On-Call Responsibilities

The computing and software group will share On-Call cover provision for all subsystems listed above. The on-call person is required to be within one hour of RAL during operational periods in order to provide hands-on support in the event of a hardware failure or network non-connectivity.

On-Call Training

To be eligible to be on the the on-call rota, staff will be expected to be familiar with the operation of the linux operating system via the shell terminal and the basic techniques of computer programming.

The on-call person will receive the following training:

- Layout of the MLCR and rack room
- Principle Control Room servers
- Principles of networking
- Layout of the DAQ hardware; DAQ software architecture
- Controls and Monitoring software architecture
- Online reconstruction (MAUS) software architecture; online monitoring software architecture
- Use of online diagnostics tools (NAGIOS, CACTI, GANGLIA)

MICE will provide a specific list of procedures that the on-call person will be trained to perform. Documentation of the procedures will be provided. The on-call person is additionally expected to be competent to perform general repair work or raise to the relevant expert if required.

On-Call Staffing

MICE will create an on-call rota. The on-call rota will be staffed by a group of around 15 Computing and Software experts. It is expected the on-call rota will be required even in beam-off periods due to calibration runs, hardware testing and commissioning work that may be undertaken while beam is off. MICE will assign someone to maintain the on-call rota and ensure that MOM has contact details for the on-call person during running.

Expert Staffing

Expert support will be available within 3 days of a request being issued by the on-call person. This is sufficient to give international colleagues the possibility to travel should a problem arise that cannot be resolved by the local team.