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VIRTUALISATION OF BEAMLINE CONTROL SYSTEMS

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Virtualisation technologies have been introduced to control systems at the Australian Synchrotron (AS) and results of recent virtualisation on a couple of beamlines are presented here.

Reasoning and motivation for having beamline Virtual IOCs (Input Output Controller's) are: replacement of aging computers with physical ones is becoming expensive, desire for reduction of computing infrastructure complexity, invest and build on new technologies that are scalable/ upgradable (currently VMware vSphere architecture/stack has four virtual machine hosts), need to reduce maintenance and replacement effort, increase reliability and reduce beamline down time.

Good progress and positive results using virtualisation technologies for beamline control systems has been experienced. No issues with deployed Virtual IOCs were found so far. In the future we recommend to virtualise all soft IOCs across the beamlines wherever performance allows.

Small and Wide Angle X-ray Scattering (SAXS/WAXS) beamline has almost all of the control systems virtualised. Both Photon Delivery System (PDS) and End Station soft IOCs have been virtualised. Only three IOCs – Data Acquisition IOC (running on VxWorks Operating System) and two Pilatus detector controllers (SUSE linux). They will remain running on these due to tight Real Time (RT) requirements.

Infra Red (IR) Microscope and Far IR beamline control systems have also been virtualised.

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