

# A Software Event Summation System for MDSplus

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## Abstract

The MDSplus data acquisition and management system uses software events for communication among interdependent processes anywhere on the network. Actions can then be triggered, such as a data-acquisition routine, or analysis, or display programs waiting for data. A small amount of data can be passed with these events, such as a shot number. Since programs sometimes need more than one data set, we developed a system on NSTX to declare composite events using logical AND and OR operations. The system is written in the IDL language, so it can be run on Linux, Macintosh or Windows.

Like MDSplus, the Experimental Physics and Industrial Control System (EPICS) is a core component of the NSTX software environment. The event summation system provides an IDL-based interface with EPICS. This permits EPICS-aware processes to be synchronized with MDSplus-aware processes, to provide, for example, engineering operators and subsystems information about physics data acquisition and analysis.

Reliability was a more important design consideration than performance for this system; the system's architecture includes features to support this. The system has run for weeks at a time without requiring manual intervention. Hundreds of incoming events per second have been handled reliably. All incoming and declared events are logged with a timestamp. The system can be configured easily through a single, easy-to-read text file.

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Preferred Listing Category: Data Acquisition