

Windows as an IOC

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Those Makefiles are really complicated...

When EPICS_BASE is c:\epics\base ...

- Basic tools
 - Cygwin is the key, bash shell, file name translation: C:\windows == c:/windows (www.cygwin.com)
 - Perl (www.activestate.com)
 - Epics source distribution (www.aps.anl.gov/epics)
 - Visual C++ 6 or .Net (Microsoft and \$\$\$)
- Basic environment
 - All of above in %PATH%
 - EPICS_HOST_ARCH=win32-x86
 - \$EPICS_BASE/bin/win32-x86 in PATH

It builds, it really does



Two last details:

- **RELEASE file**
 - » EPICS_BASE=c:/epics/supTop/base
- **CONFIG_SITE**
 - » Comment out CROSS_COMPILER_TARGET_ARCHS

Make in base

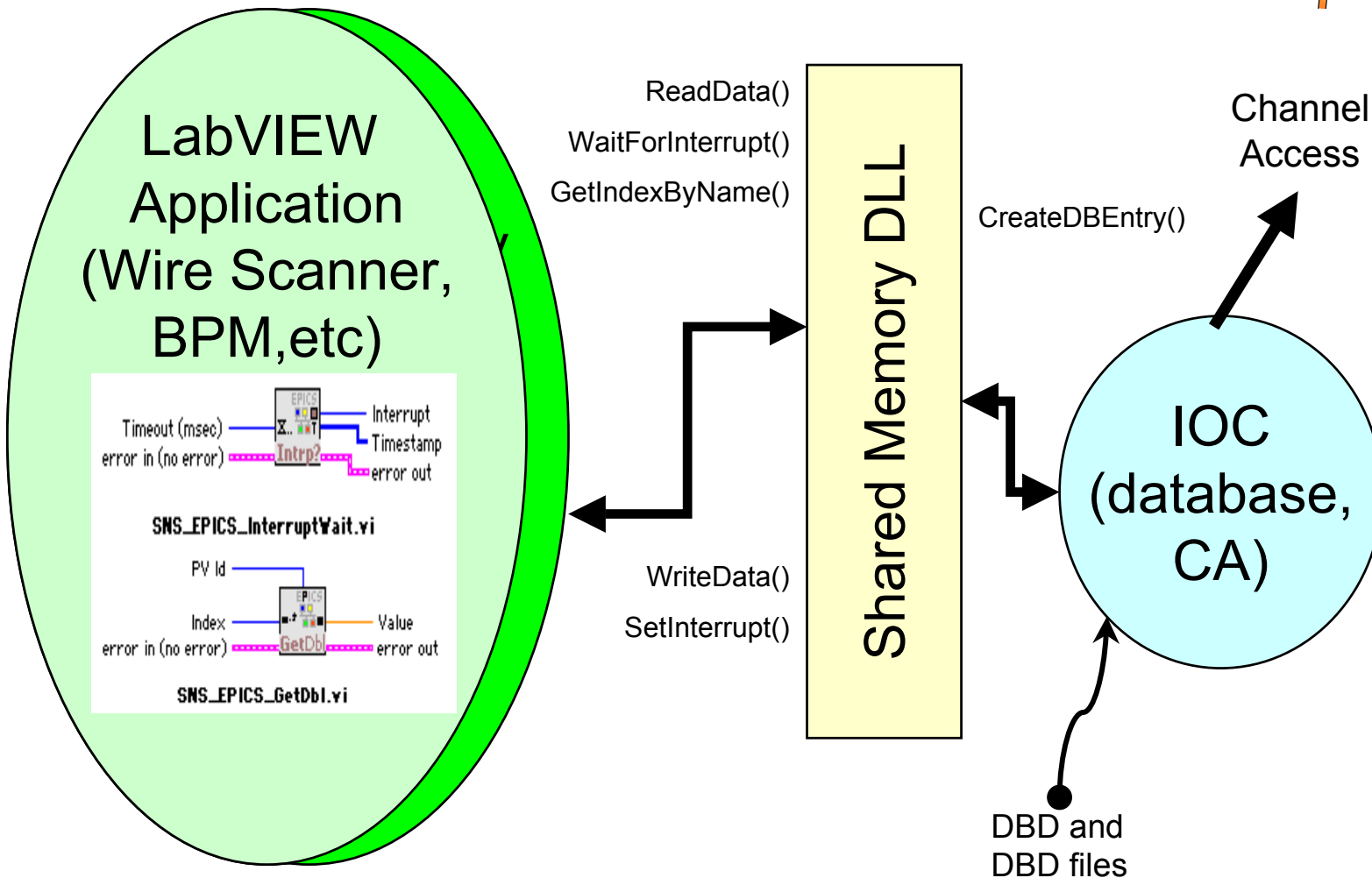
This works because of the great work of the 3.14 team at APS and LANL.

The application:



- SNS diagnostics consist of rack mount PCs running embedded XP and LabVIEW with PCI cards for Timing, DAQ, Motion, and Vision
- Wanted a simple and fast interface to LabVIEW and other applications to get data to channel access
- ActiveX CAS ???
- IOC core and shared memory can use db files created by tools or Oracle database.
- Other apps can be included in system.

The concept:



Implementation:



- A shared memory DLL for windows
 - » Support multiple data types
 - » Support arrays
 - » Be able to pass events (AKA interrupts)
 - » Support time stamps for data
 - » Dynamic PV name instantiation in shared memory
- Device support to do I/O with the dll
 - » Create and configure the shared memory using info from the IOC database
 - » INP or OUT DBLINKS contain shared memory PV name and interrupt number.
 - » Waveform records instantiate arrays in shared memory (in and out)

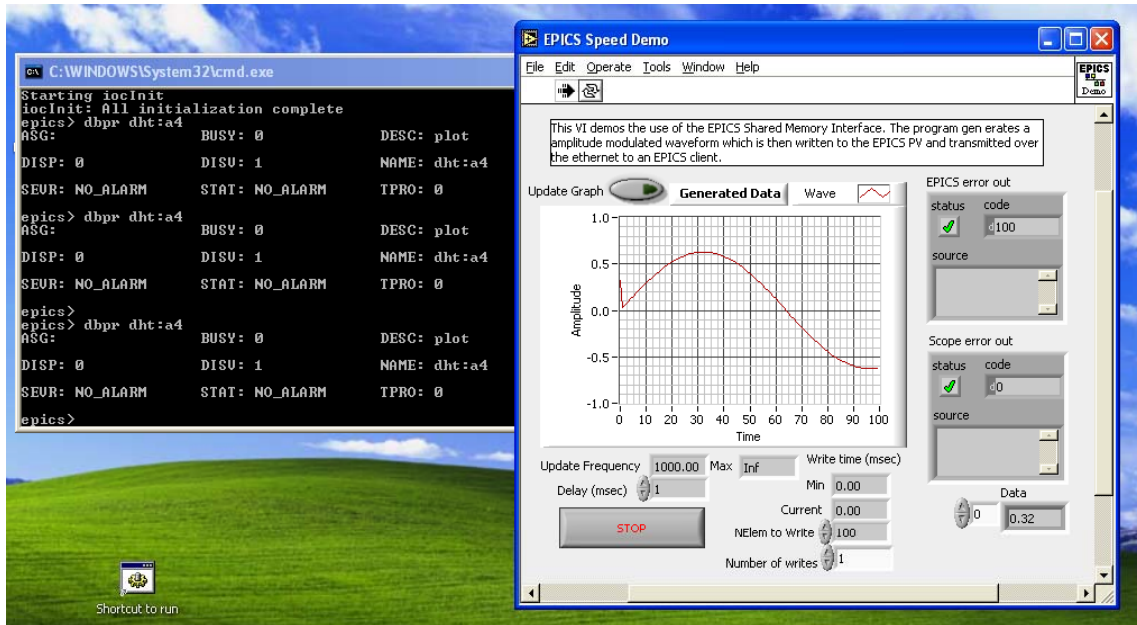
Deployment



MEBT Diagnostic systems based on windows with IOC or ActiveX with ChannelAccess. All systems will be using IOC. Total number of SNS diagnostic systems will be in the hundreds.

- 5 Wire Scanners
- 6 Beam Position Monitors
- 1 Beam Current Monitor (two toroids)
- 1 Laser wire (under development)

Performance results



Windows XP, 800 Mhz

- Waveform of 100 floats @ 1000 Hz uses 4% of CPU
- Write data takes about 30 μ sec (in LabVIEW to SM)

Status



- “Original” shared memory dll is the LANL “da” dll, that Matt Stettler and Lisa Day wrote. This worked with an in-process channel access server (ActiveX).
- Lisa is currently changing “da” to use epicsSM as a back end to maintain front interface compatibility for the LANL diagnostics. This will eliminate channel access from the labView process.
- Wim is developing VI interfaces to directly access the dll.