OPC UA Device Support

Overview and Status

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Why OPC UA?

- Industrial standard (2006) to interface SCADA to PLCs
  - Covers data, alarms, events, historical data, remote methods
- Based on OPC Classic (Microsoft; 1996), plus
  - Portability
  - Safety (authentication, encryption)
  - Information modeling (user defined structures)
- Gaining momentum in industrial context as universal integration standard
- Siemens S7-1500 series PLCs include an embedded OPC UA server

EPICS Device Support

- Based on commercial C++ Client SDK
  - Vendor: Unified Automation (~3.5k€ for sources and 1yr support)
  - Binaries can be distributed royalty-free
  - Platforms: Windows and Linux
- Prototype by Bernhard Kuner (HZB / BESSY II)

- ITER use cases tested by F4E (Spain) and TCS (India):
  - Against S7-1516/1518 embedded OPC UA server
  - Against WinCC-OA embedded OPC UA server

Status

- Requirements Specification v1.0 reviewed and agreed: https://bit.ly/opcua-srs-10
- Design done (no formal doc yet)
- Implementation in progress, “usable pre-release” state
  - All basic data types and arrays thereof (*read/write/subscribe*)
  - User-defined structures (*read/subscribe*)
  - All applicable record types in EPICS Base

- Used in production at ITER, BESSY II

Roadmap

- Soon:
  - Support for server-side queues (sample faster than publish)
  - Writing of user-defined structures
- Later:
  - Read time stamps from within data structure
  - Support for OPC UA methods (remote execution of PLC FBs)
  - Support for (free) open62541 client library

- Under EPICS license, upstream repository on GitHub: https://github.com/ralphlange/opcua