

EPICS Device Support Intro

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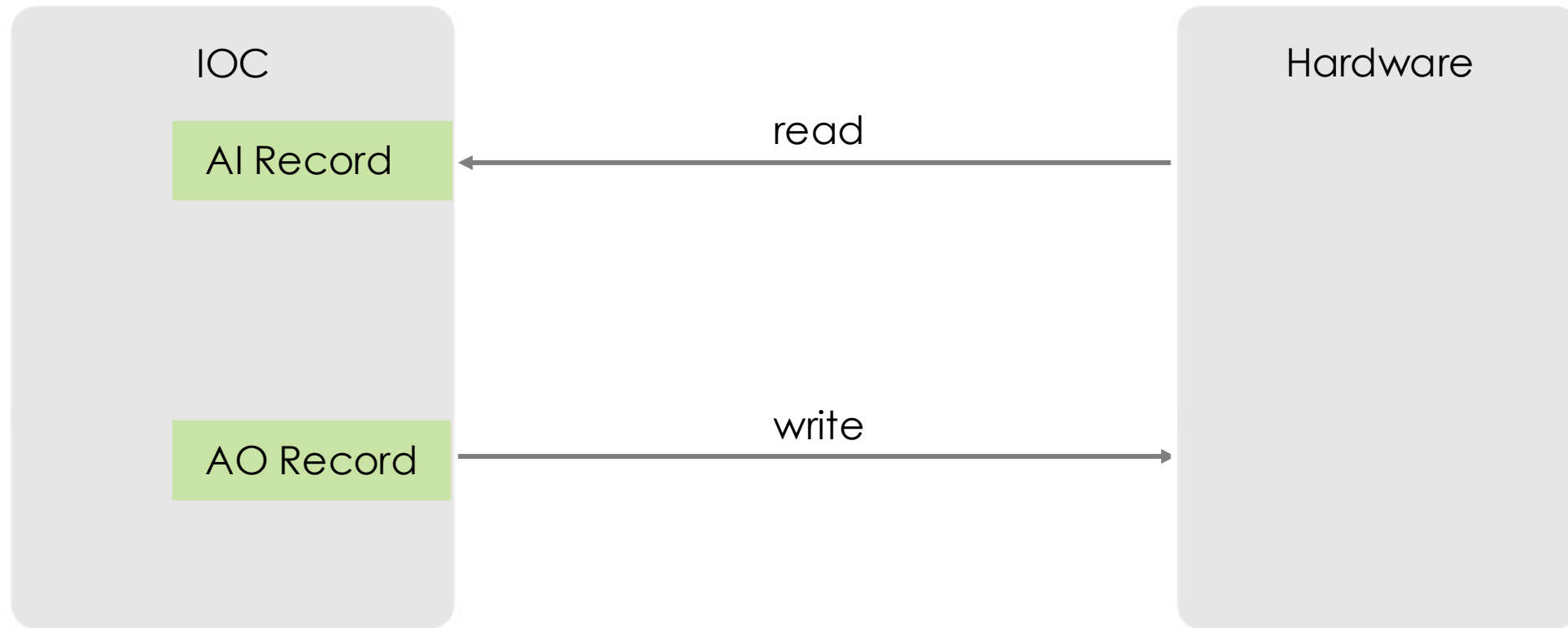
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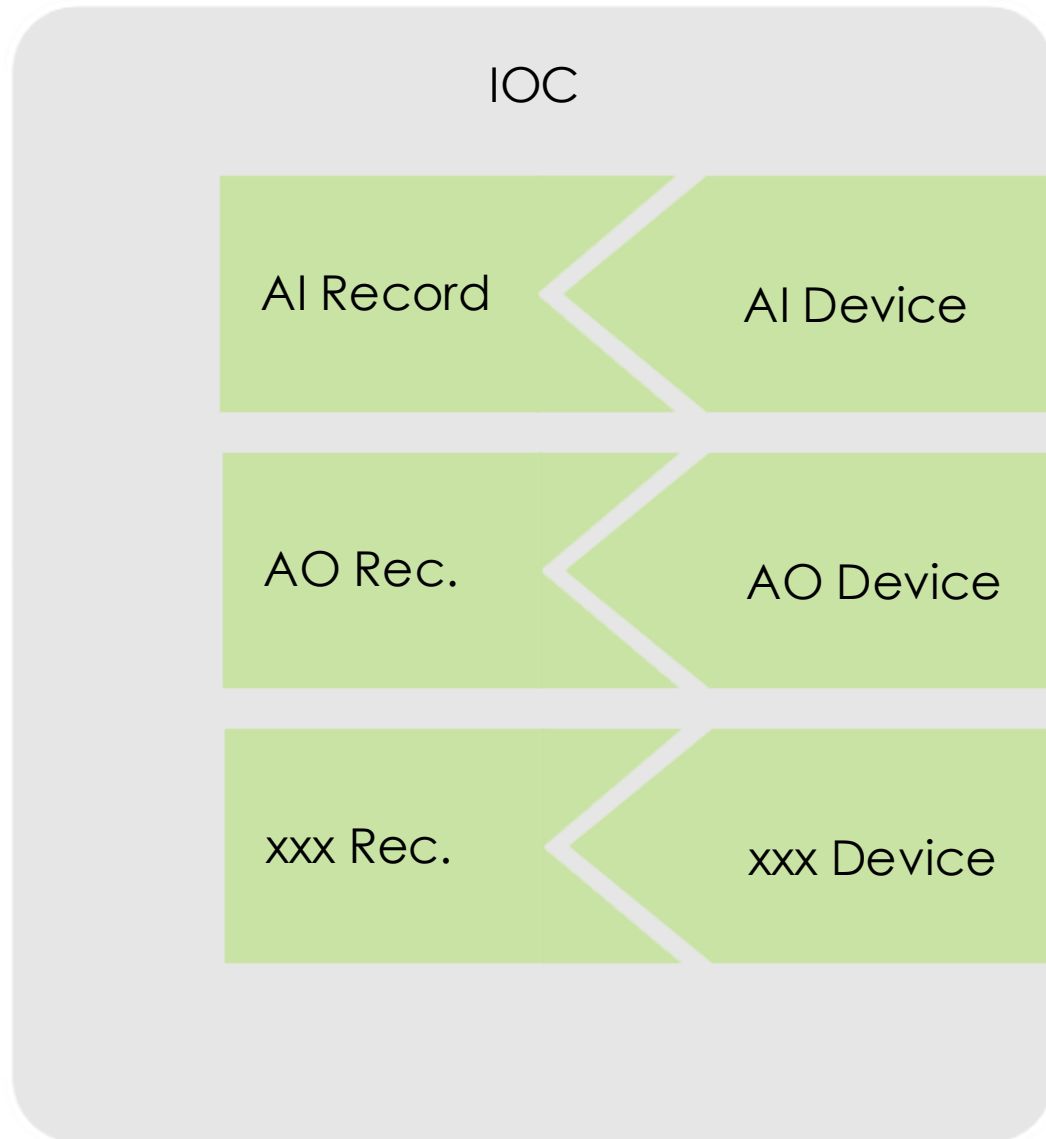


**U.S. DEPARTMENT OF
ENERGY**

Device Support: Connect Records to Actual Hardware



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```
long my_read_code(aiRecord *rec)
{
    // Somehow get value like 1234
    // from hardware and place in record...
    rec->rval = 1234;
    // Return 0 for OK,
    // 2 if you set rec->rval
    return 0;
}
```

```
long my_write_code(aoRecord *rec)
{
    // Somehow send value from record
    // to hardware ...
    printf("Should set hardware to %d\n",
           rec->rval);
    return 0;
}
```

Device Support: Devil in the Details

- Boilerplate to associate

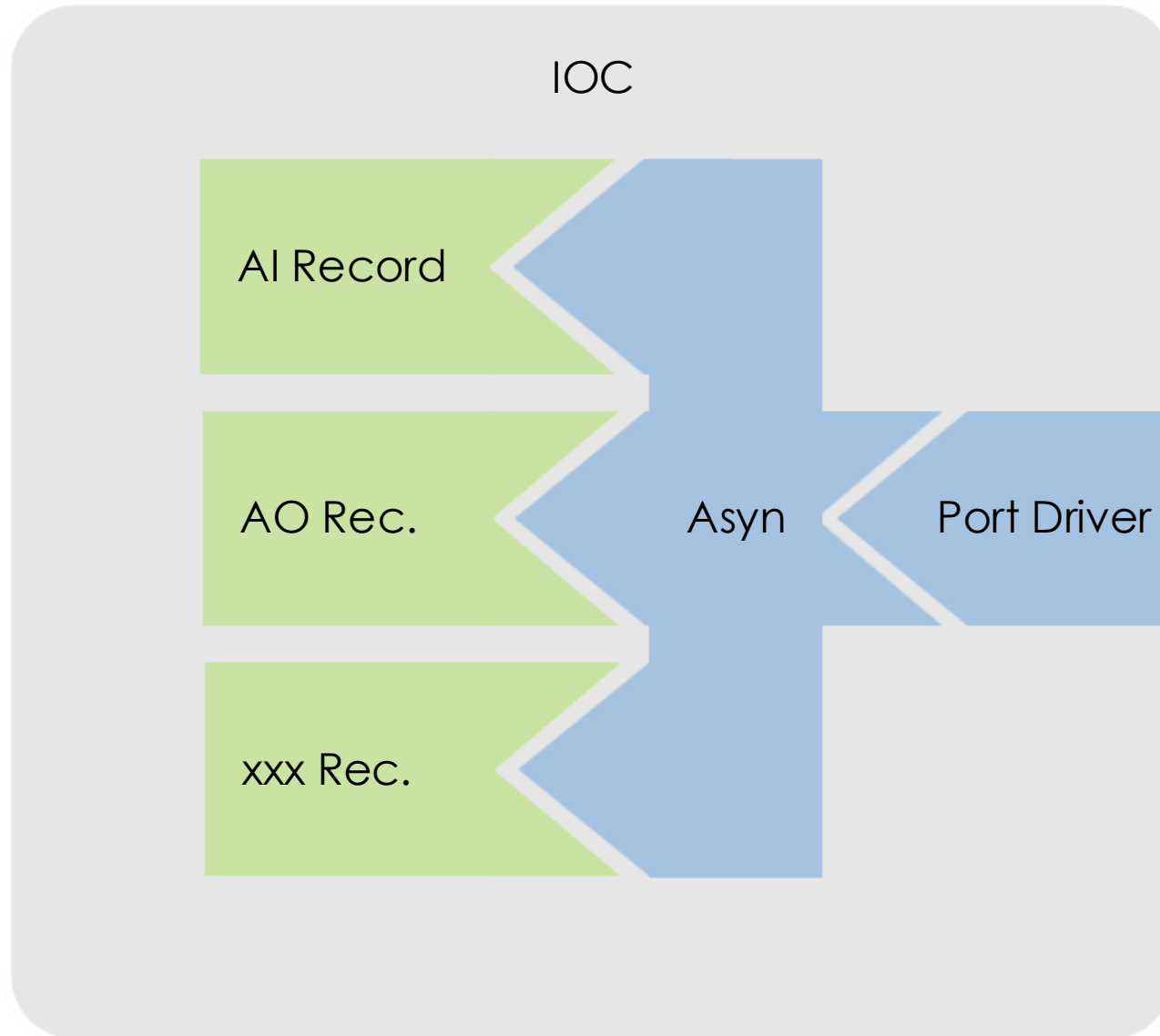
- AI record with `field(DTYP, "MyXXXDevice")`
with `long my_read_code(aiRecord *rec)`
- AO record with `field(DTYP, "MyXXXDevice")`
with `long my_write_code(aoRecord *rec)`

- Specific to each record type

- .. but ai, mbbi, mbbiDirect, longin, ... fundamentally all handle a number, why duplicate code?

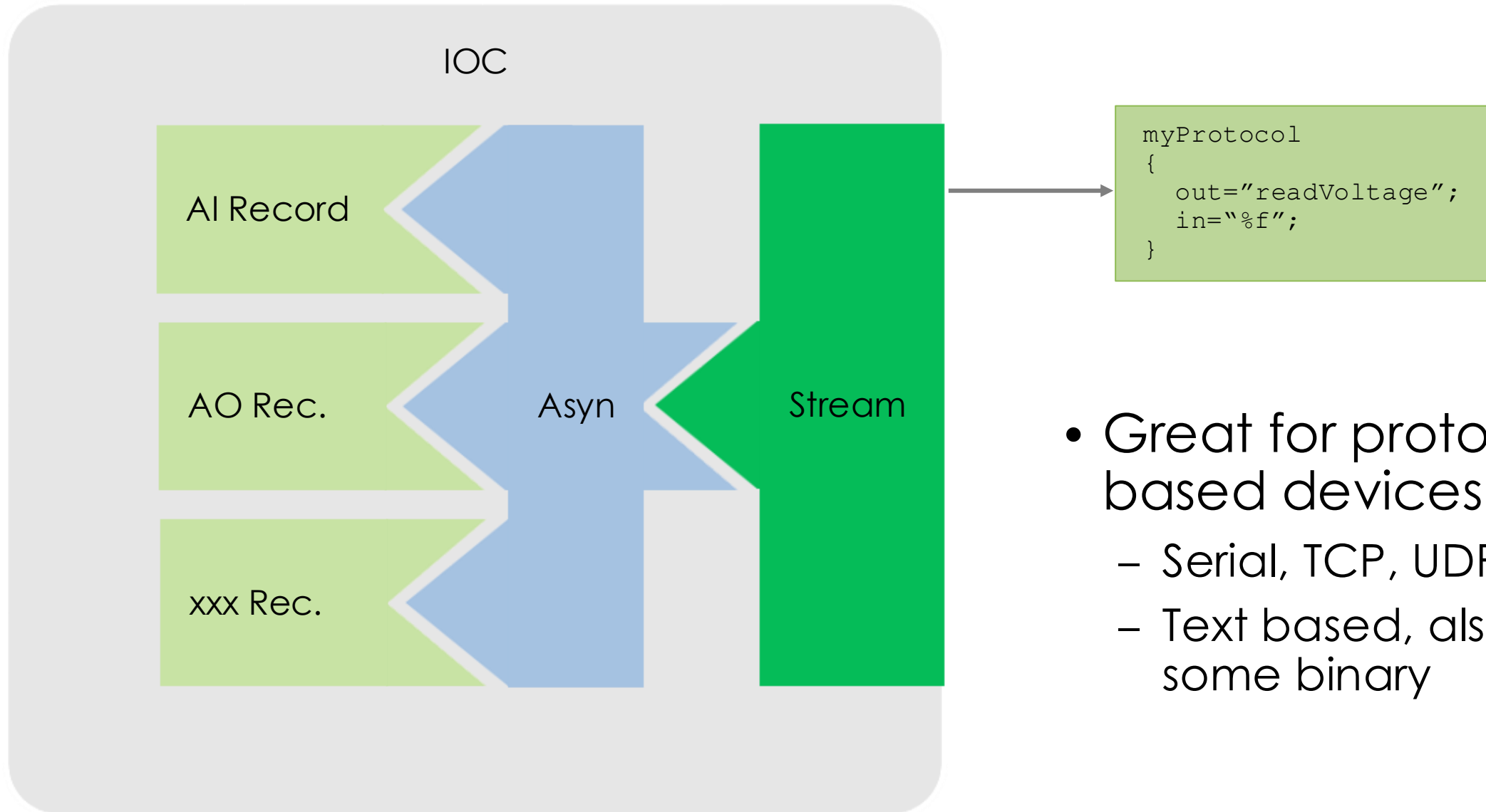
- `my_xxx_code` must not block!

Asyn: Another Layer of Abstraction



- Asyn acts as “Device Support”
- Transfers data between “port” and records
- Helpers if “port” is serial, TCP, UDP, needs to be re-opened on error

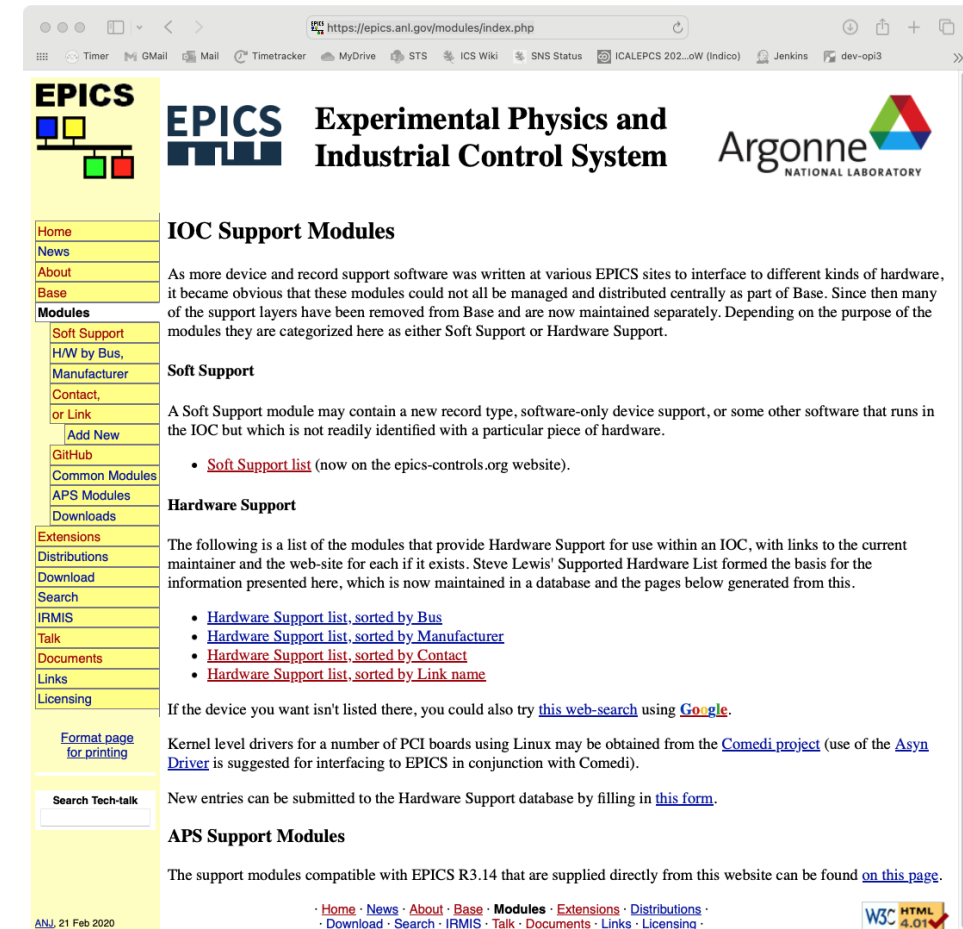
Stream: Yet Another Layer of Abstraction



- Great for protocol-based devices
 - Serial, TCP, UDP
 - Text based, also some binary

Need to integrate an XYZ device?

1. Check <https://epics.anl.gov/modules/index.php>
or <https://epics-controls.org/resources-and-support/modules/hardware-support/>
2. Ask tech-talk
 - *We are trying to commission an Edwards scroll pump nXDS 10i*
 - ← *we have an Edwards nXDS 15i..via streamdevice*
3. Try to use stream device
4. Write your own
 - Check if ASYN helps. Do you want to implement
 - a) Port Driver?
 - b) AI, AO, BI, BO device support?



The screenshot shows the EPICS IOC Support Modules page. The page header includes the EPICS logo and the text "EPICS Experimental Physics and Industrial Control System" and "Argonne NATIONAL LABORATORY". The main content is titled "IOC Support Modules" and explains that as more device and record support software was written at various EPICS sites, it became obvious that these modules could not all be managed and distributed centrally as part of Base. Since then many of the support layers have been removed from Base and are now maintained separately. Depending on the purpose of the modules they are categorized here as either Soft Support or Hardware Support.

Soft Support

A Soft Support module may contain a new record type, software-only device support, or some other software that runs in the IOC but which is not readily identified with a particular piece of hardware.

- [Soft Support list](#) (now on the epics-controls.org website).

Hardware Support

The following is a list of the modules that provide Hardware Support for use within an IOC, with links to the current maintainer and the web-site for each if it exists. Steve Lewis' Supported Hardware List formed the basis for the information presented here, which is now maintained in a database and the pages below generated from this.

- [Hardware Support list, sorted by Bus](#)
- [Hardware Support list, sorted by Manufacturer](#)
- [Hardware Support list, sorted by Contact](#)
- [Hardware Support list, sorted by Link name](#)

If the device you want isn't listed there, you could also try [this web-search](#) using [Google](#).

Kernel level drivers for a number of PCI boards using Linux may be obtained from the [Comedi project](#) (use of the [Asyn Driver](#) is suggested for interfacing to EPICS in conjunction with Comedi).

New entries can be submitted to the Hardware Support database by filling in [this form](#).

APS Support Modules

The support modules compatible with EPICS R3.14 that are supplied directly from this website can be found [on this page](#).

Navigation links: Home, News, About, Base, Modules, Extensions, Distributions, Download, Search, IRMIS, Talk, Documents, Links, Licensing.

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