OAK RIDGE National Laboratory

EPICS Device Support Intro

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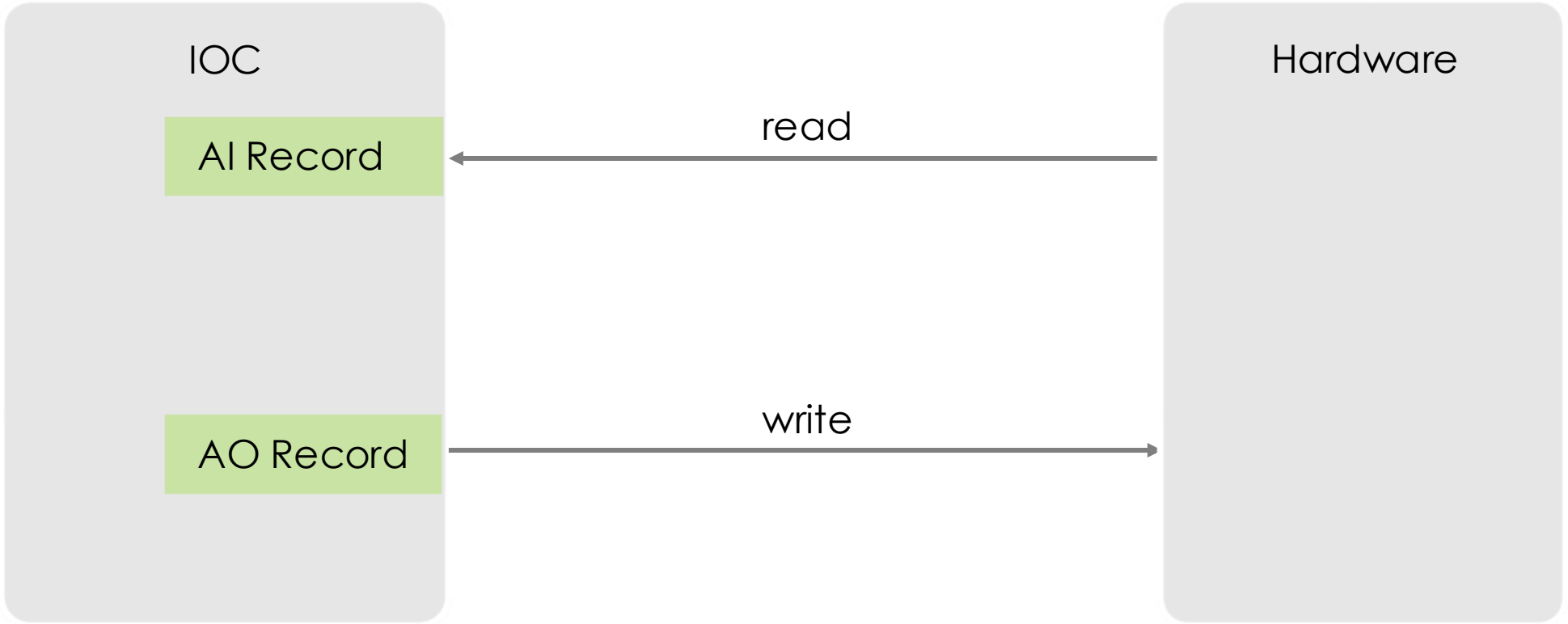
U.S. DEPARTMENT OF ENERGY

Device Support: Connect Records to Actual Hardware



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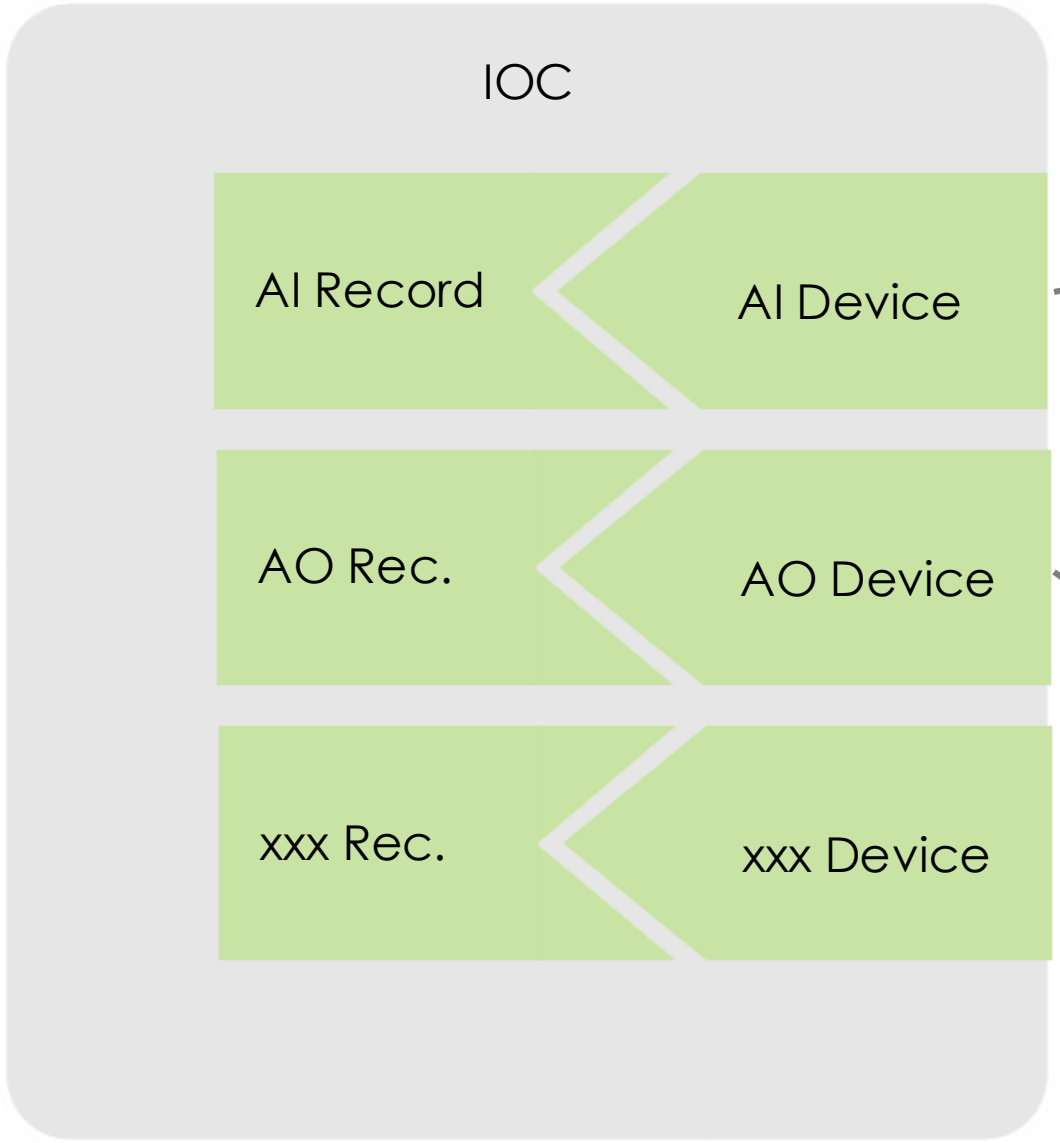


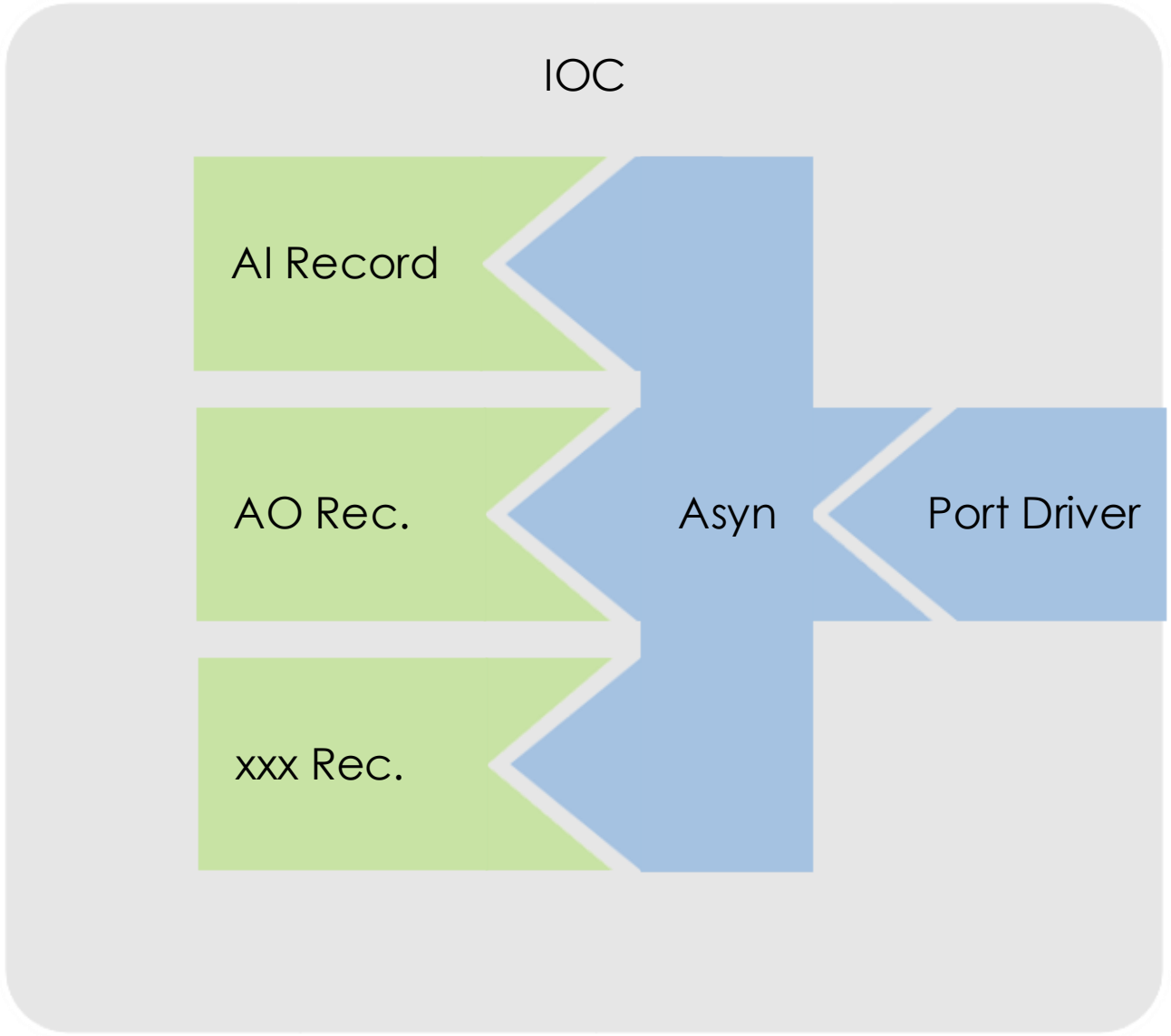

```
long my_read_code(aiRecord *rec)
{
    // Somehow get value like 1234
    // from hardware and place in record…
    rec->rval = 1234;
    // Return 0 for OK,
    // 2 if you set rec->val
    return 0;
}
```

```
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

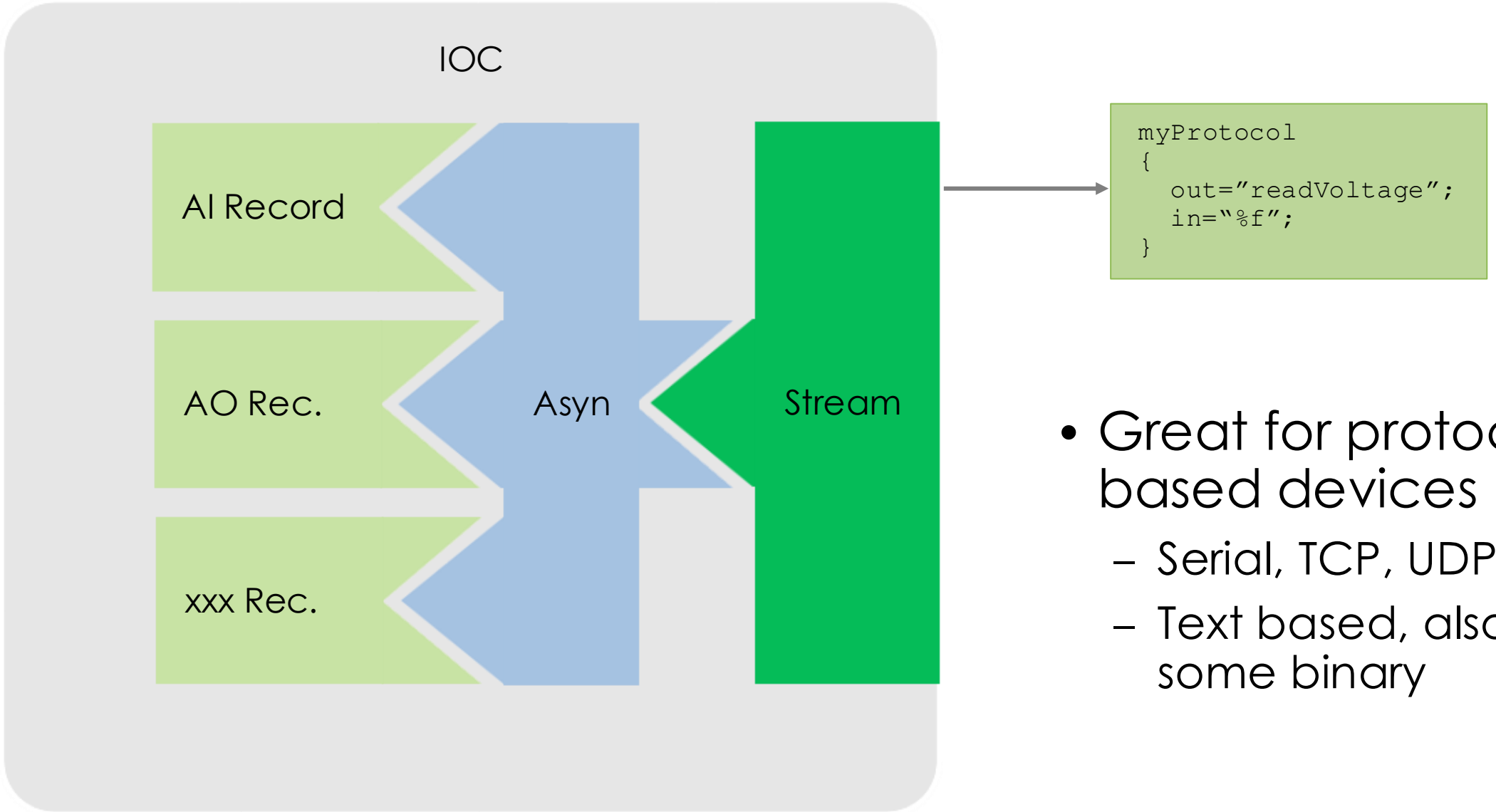
- Boilerplate to associate
  - AI record with `field(DTYP, "MyXXXDevice")`
    with `long my_read_code(aiRecord *rec)`
  - AO record with `field(DTYP, "MyXXXDevice")`
    with `long my_write_code(aoRecord *rec)`
- Specific to each record type
  - .. but ai, mbbi, mbbiDirect, longin, … fundamentally all 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?