From Configuration to Simulation: “vd” in EPICS IOC Development

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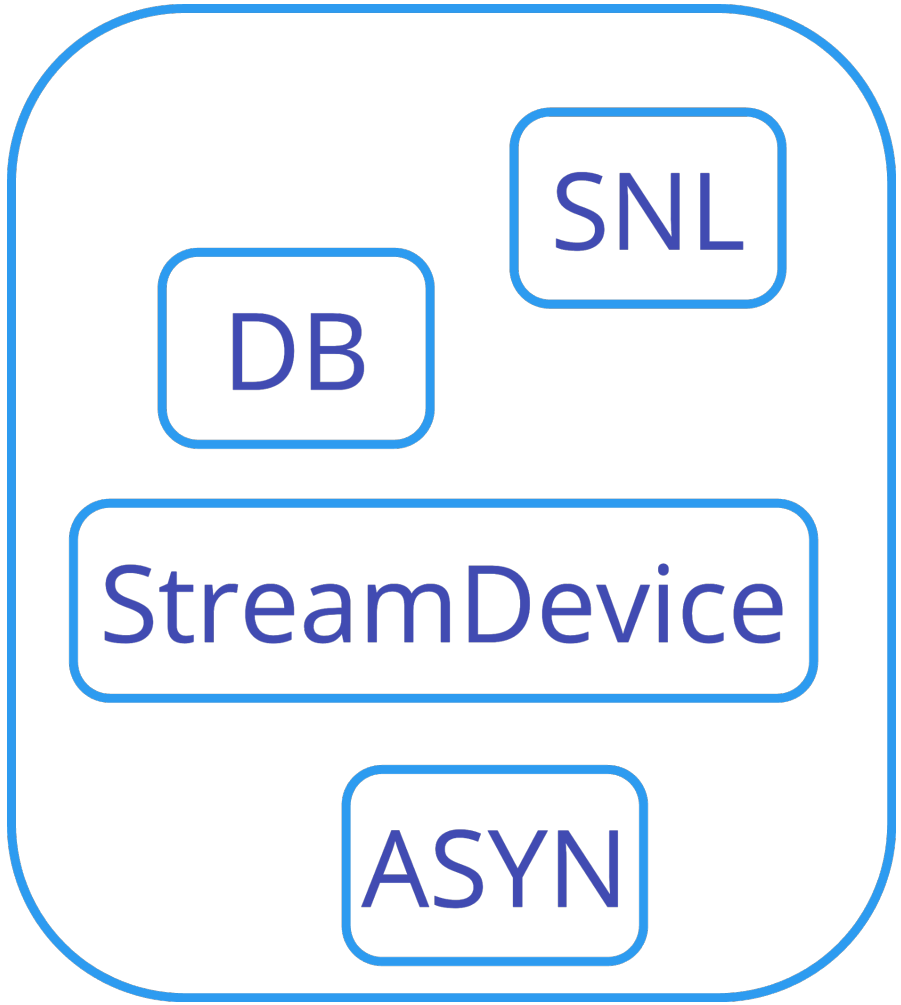
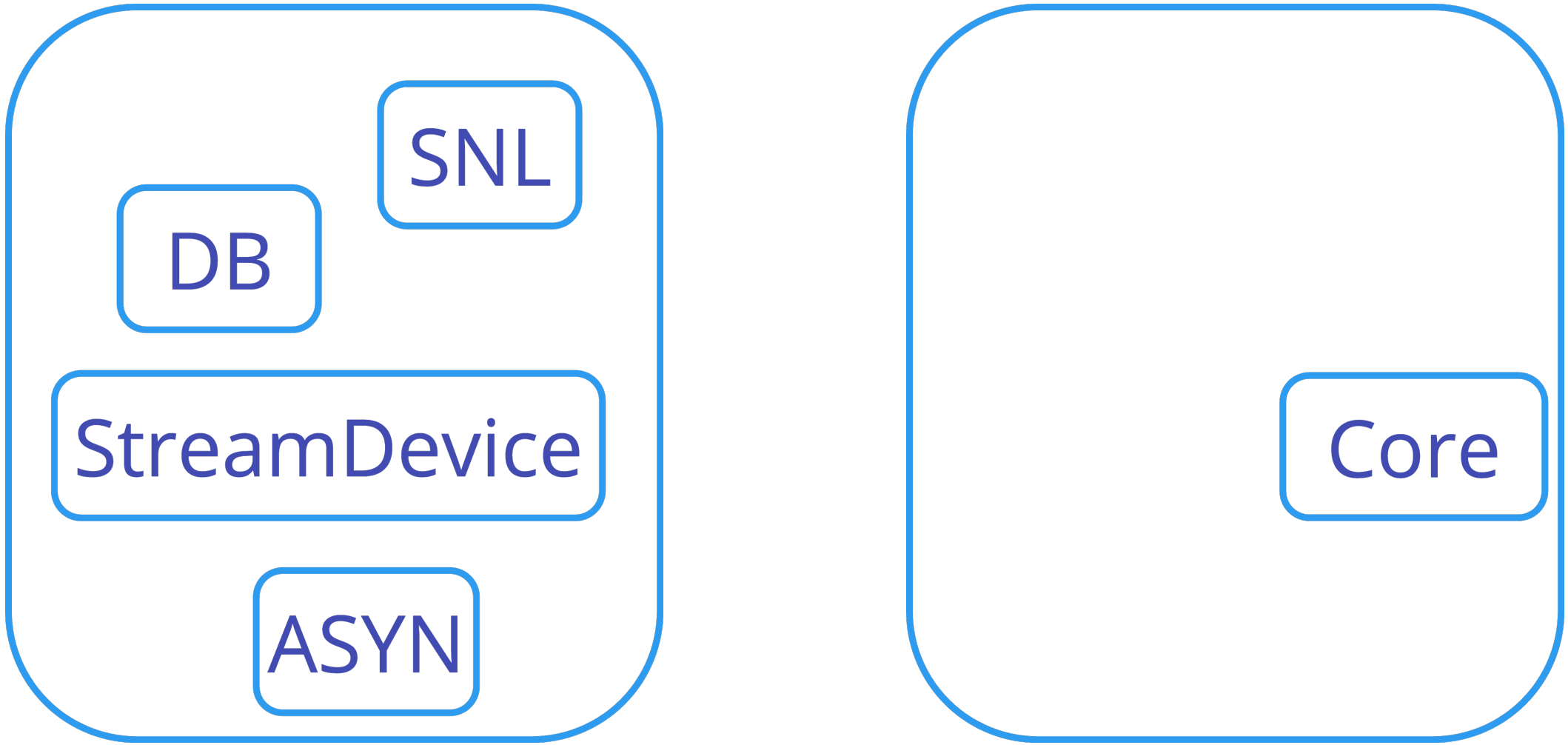
E9 Controls Ltd

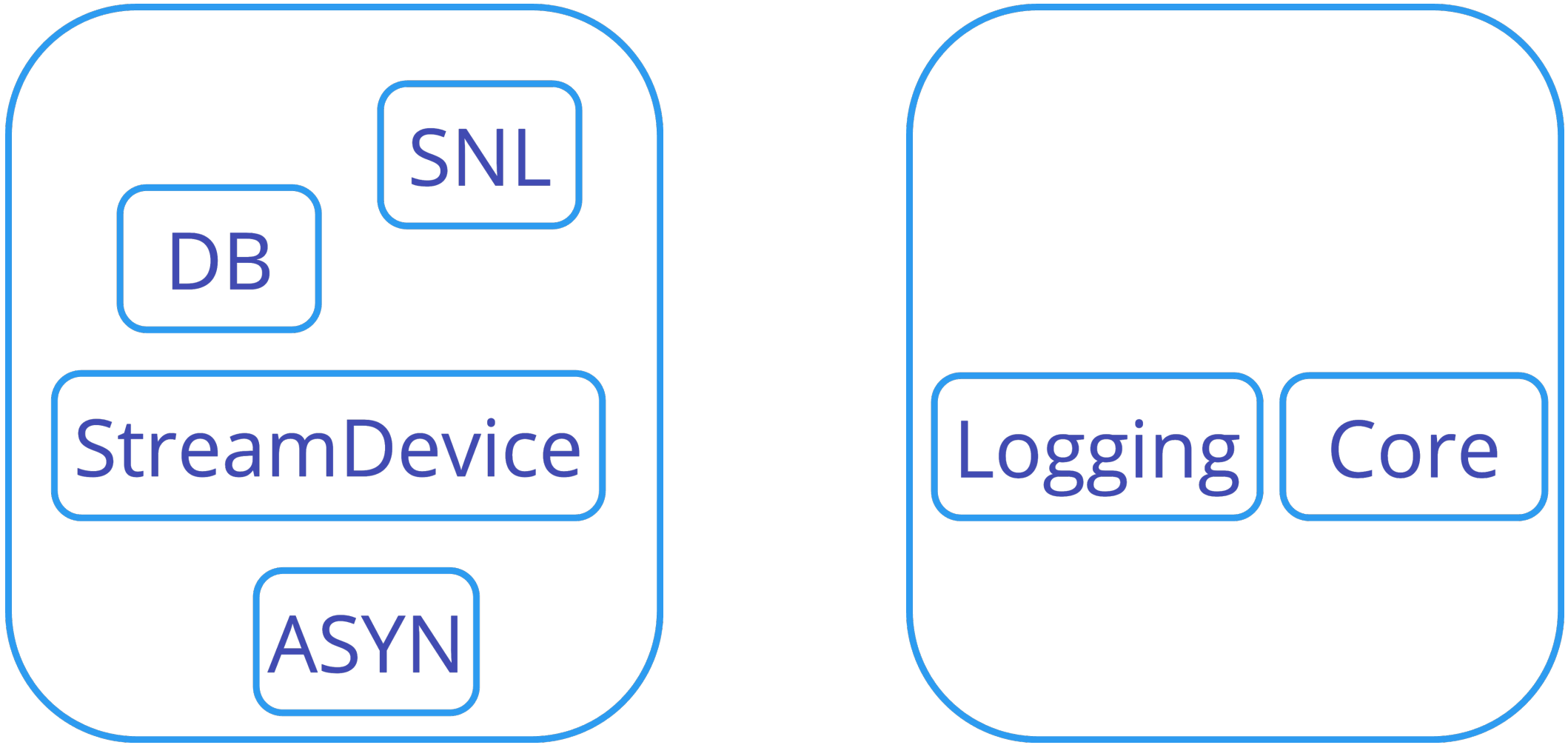
2024 Spring EPICS Collaboration Meeting, Pohang

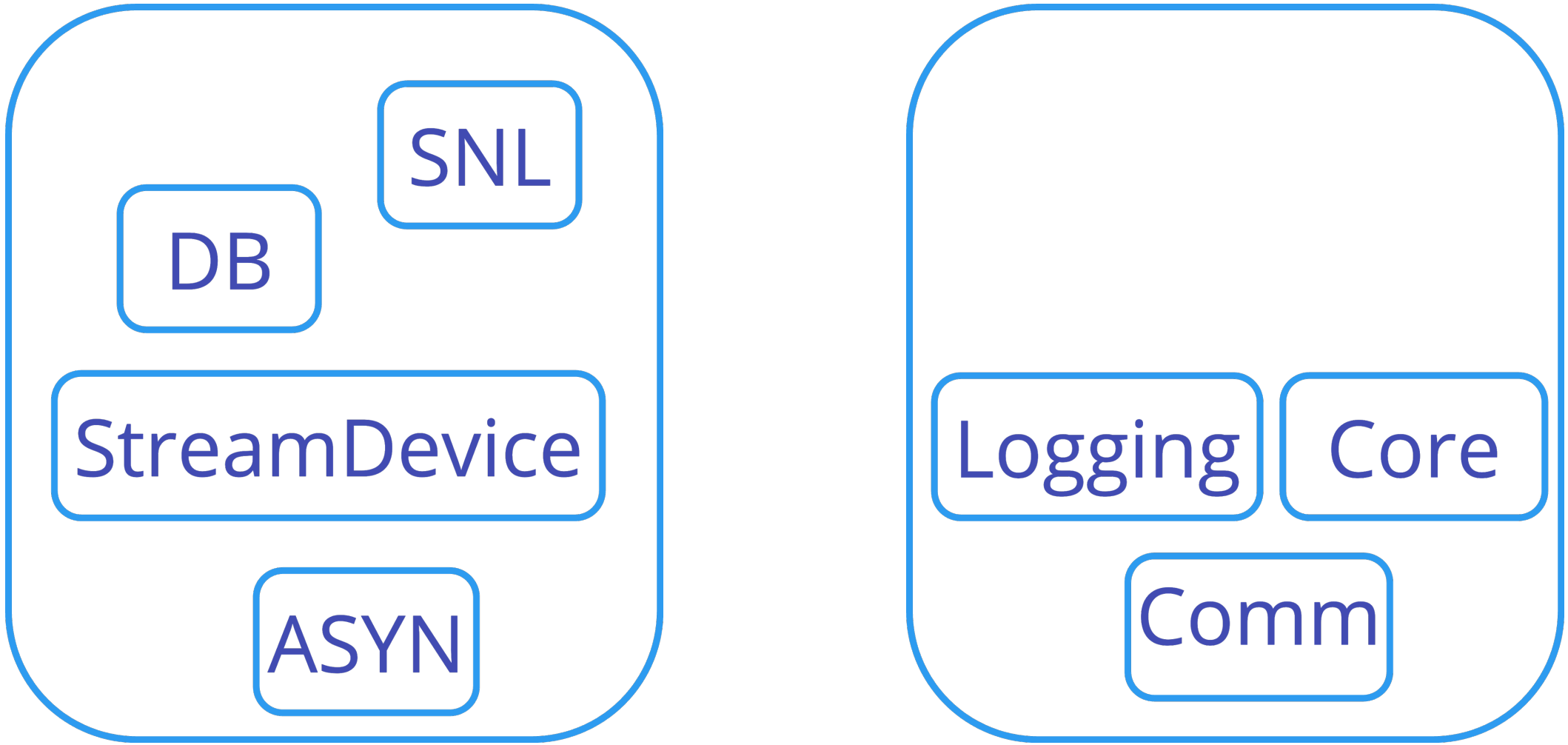
simulate device communication without coding

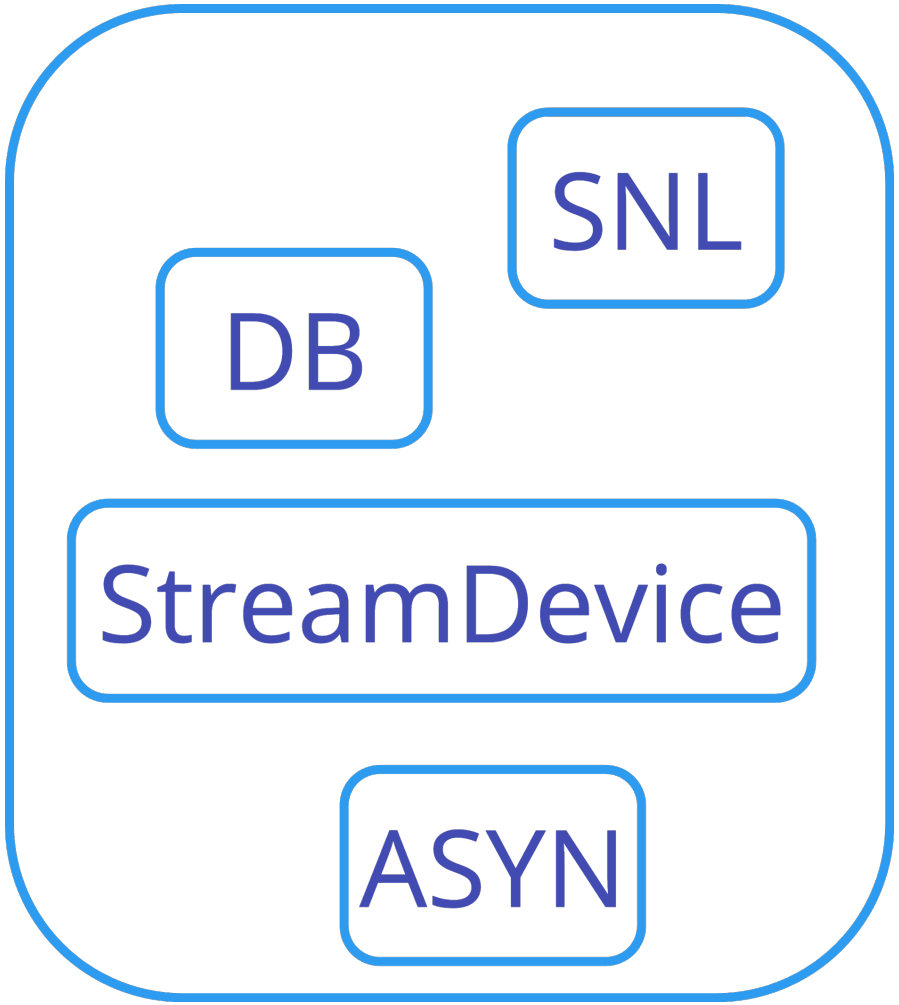
- device
- documentation
- EPICS knowledge
- time


SNL
DB
StreamDevice
ASYN


SNL
DB
StreamDevice
ASYN
Core


SNL
DB
StreamDevice
ASYN
Logging
Core


SNL
DB
StreamDevice
ASYN
Logging
Core
Comm


SNL
DB
StreamDevice
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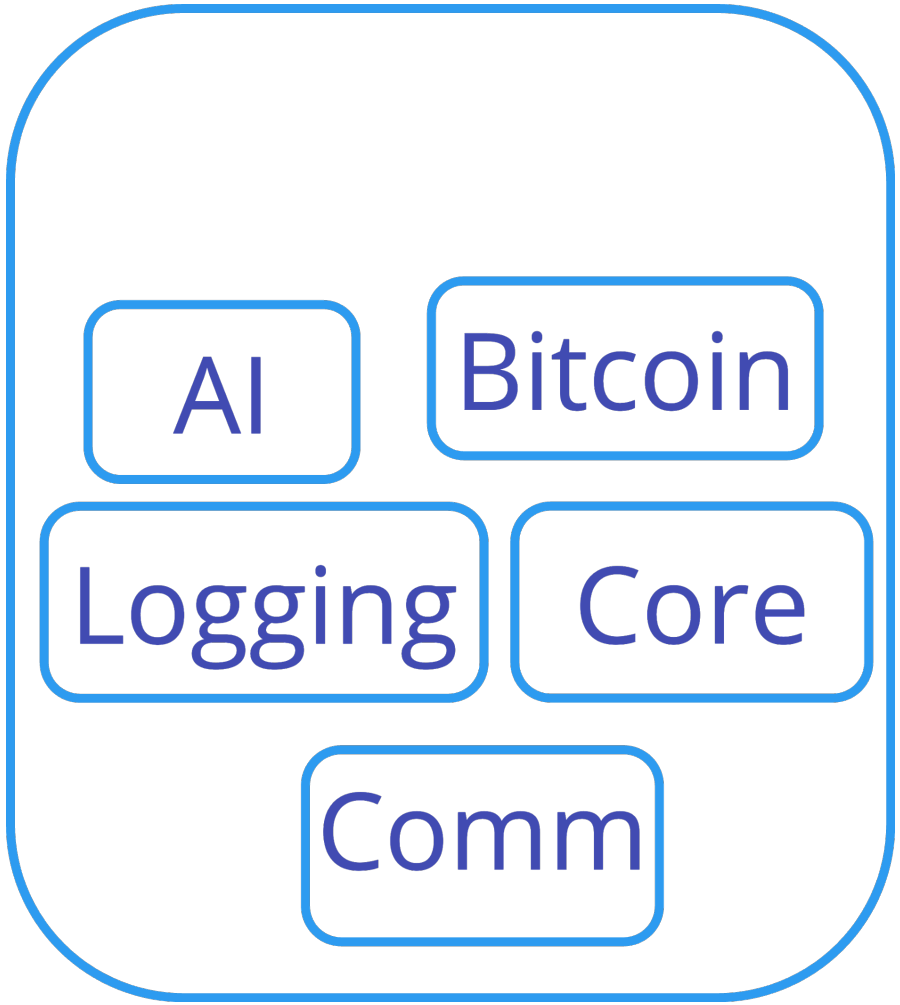
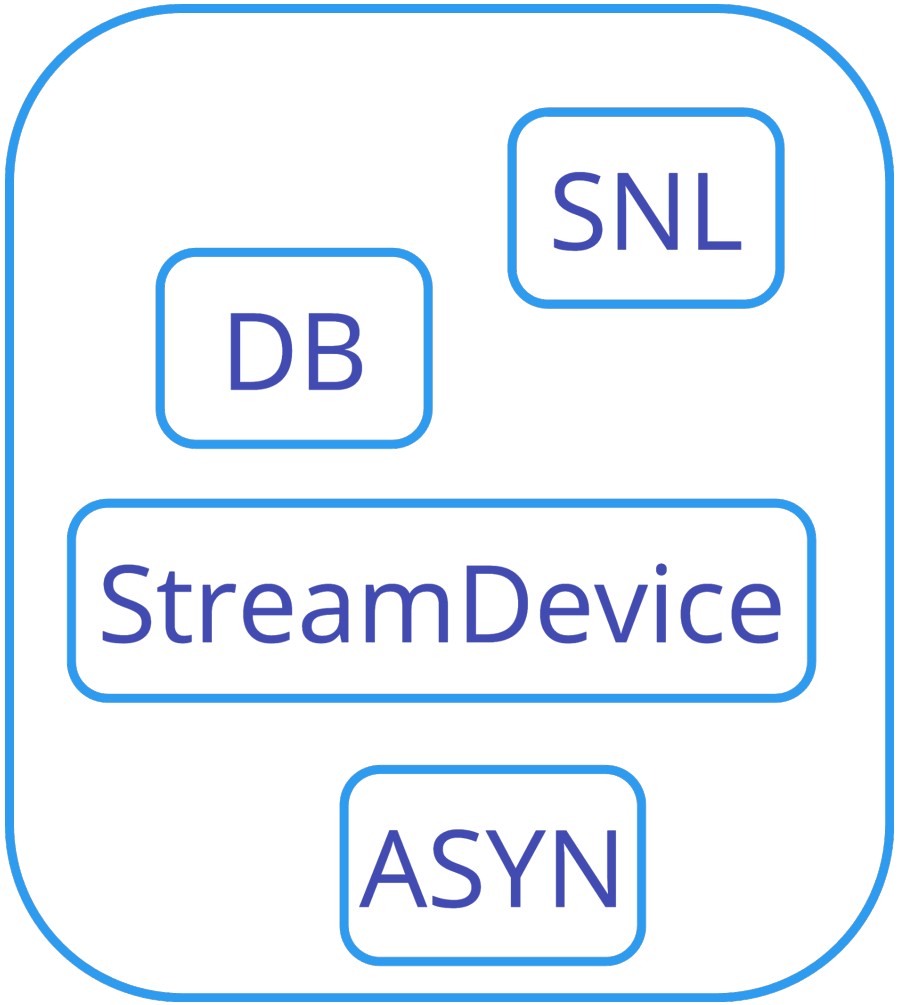

AI
Bitcoin
Logging
Core
Comm


SNL
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StreamDevice
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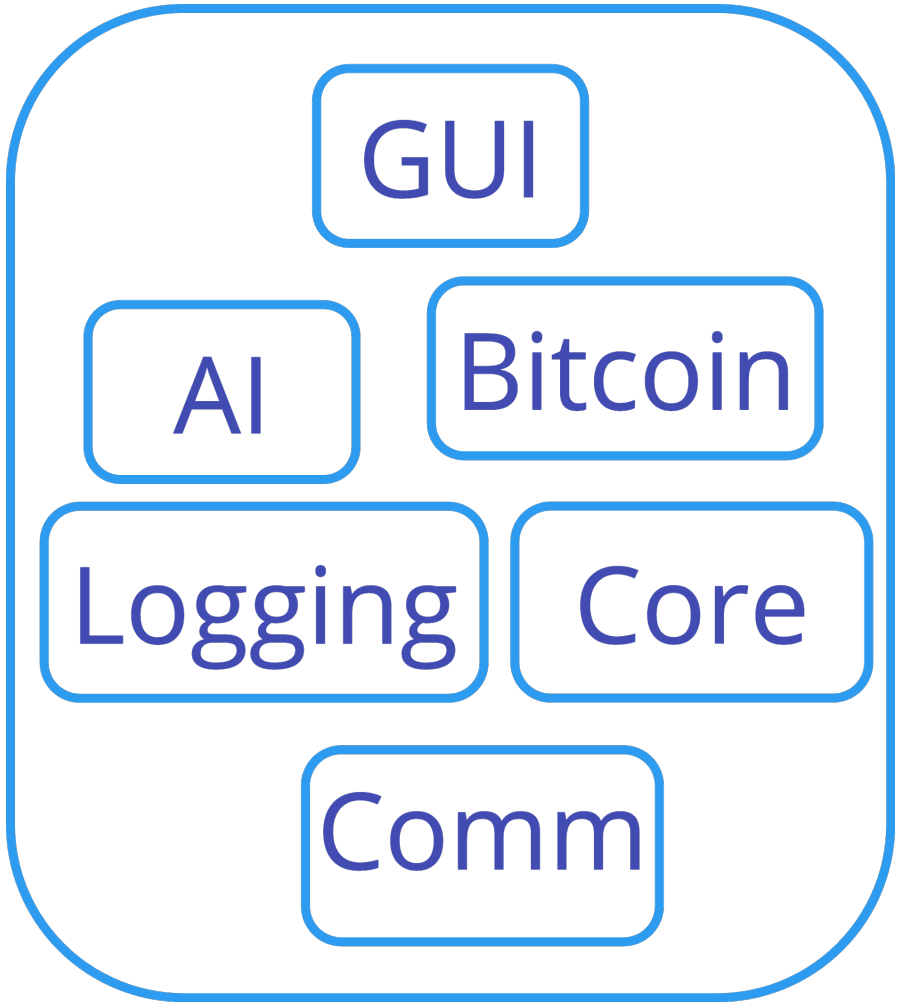
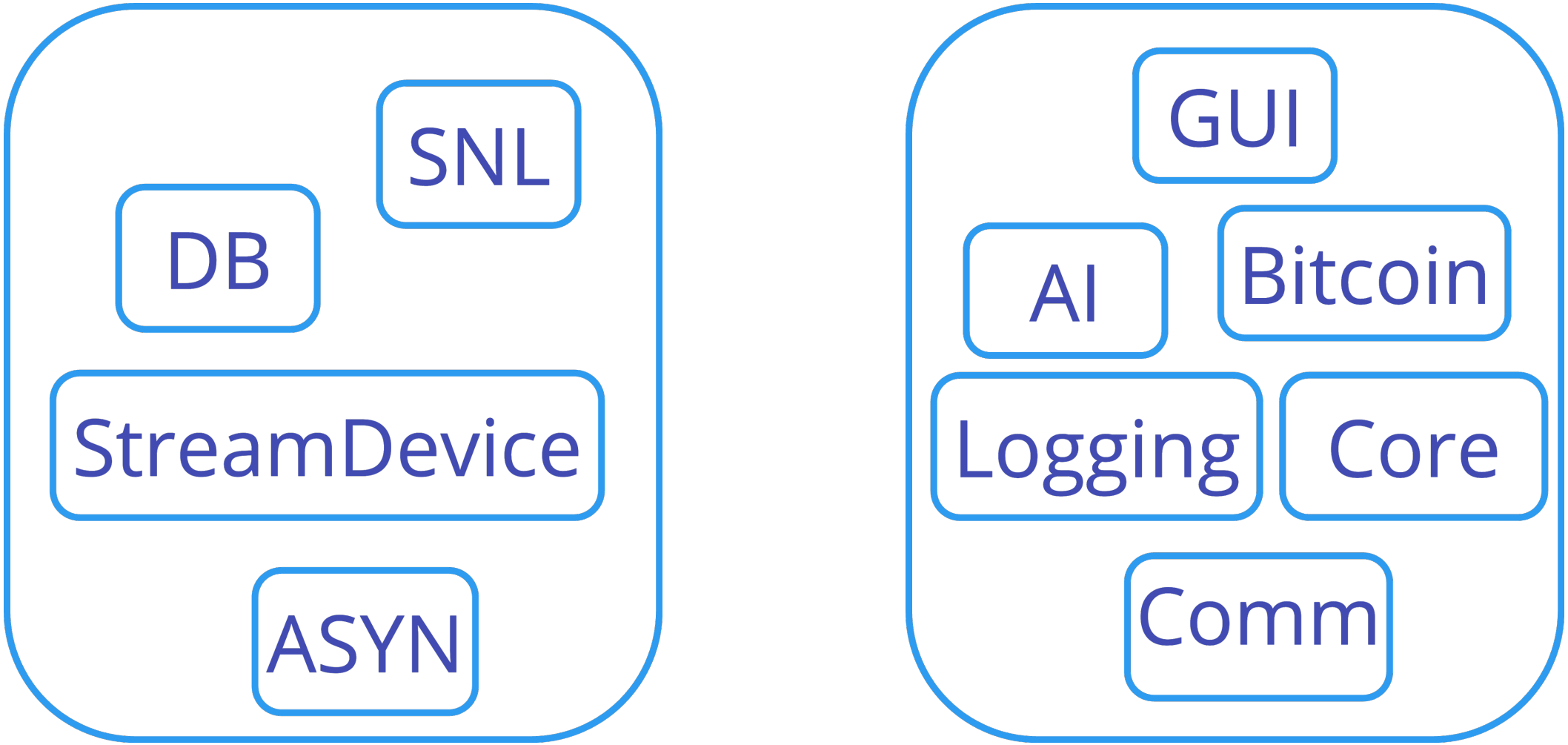

GUI
AI
Bitcoin
Logging
Core
Comm


SNL
DB
StreamDevice
ASYN
GUI
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Logging
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Comm
Communication Protocol

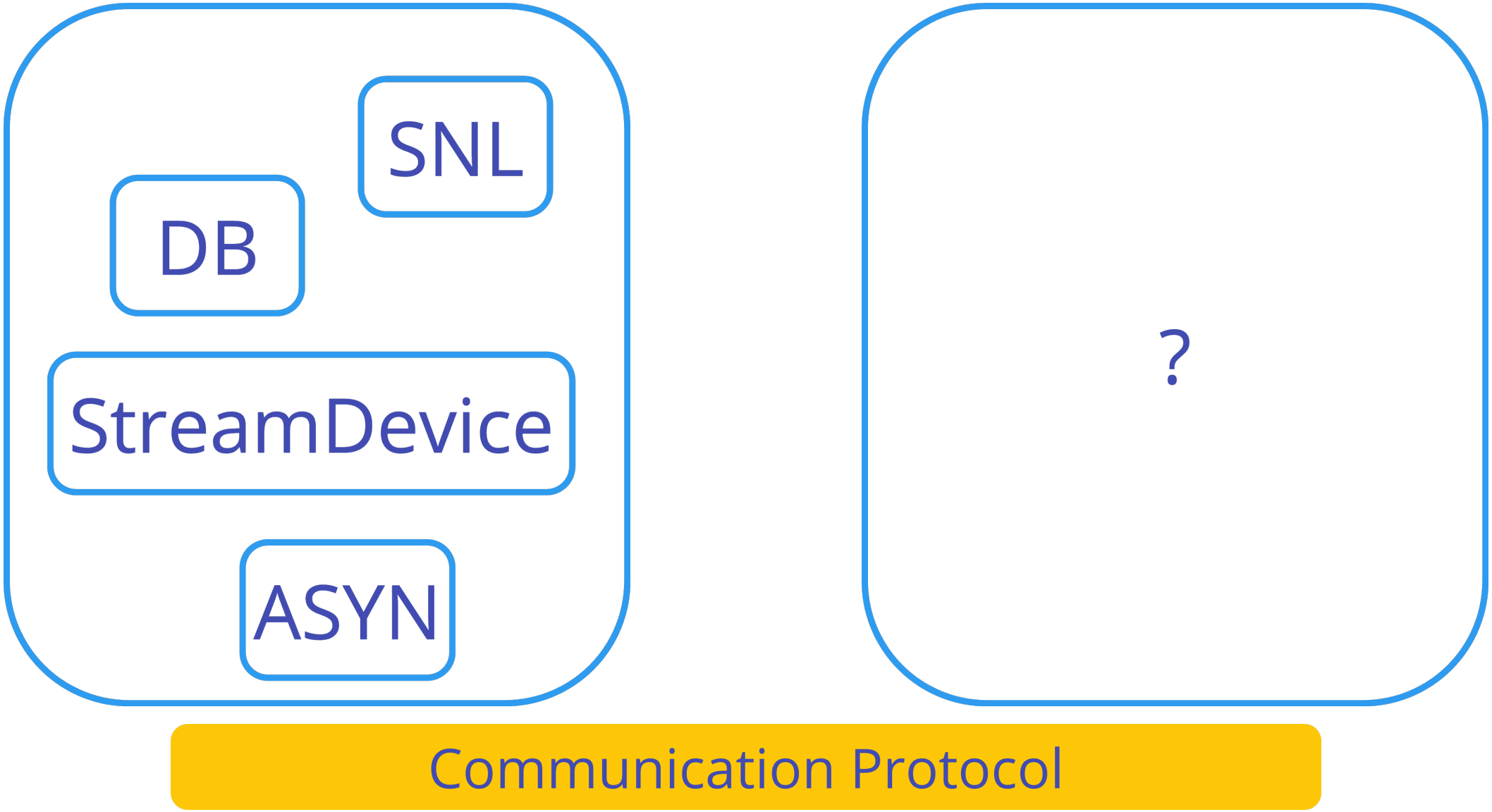
SNL

DB

StreamDevice

ASYN

Communication Protocol


SNL
DB
StreamDevice
ASYN
?
Communication Protocol

write a small script every single time

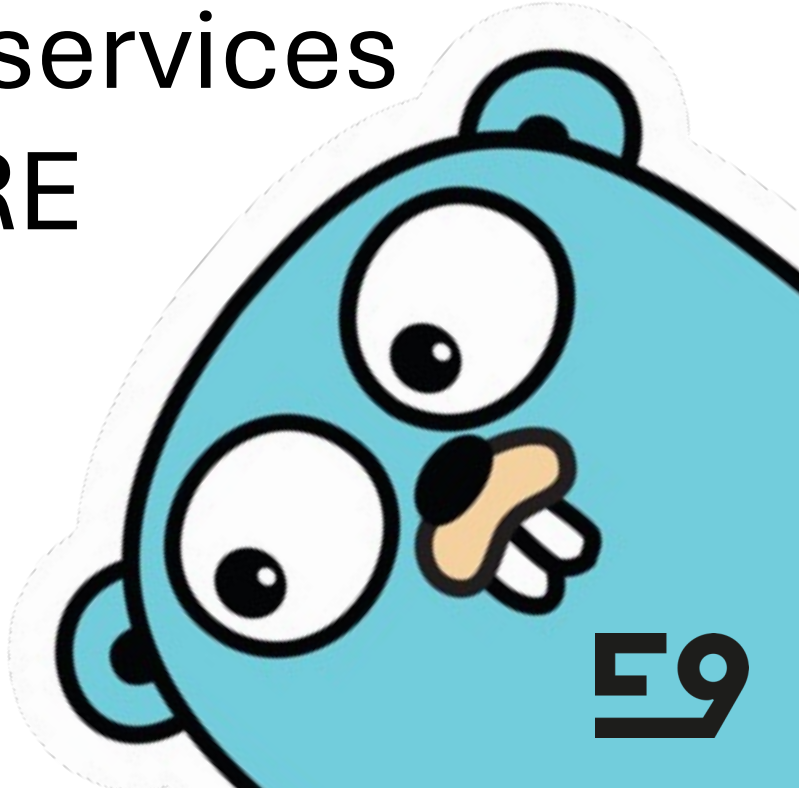
use existing tool (LEWIS)

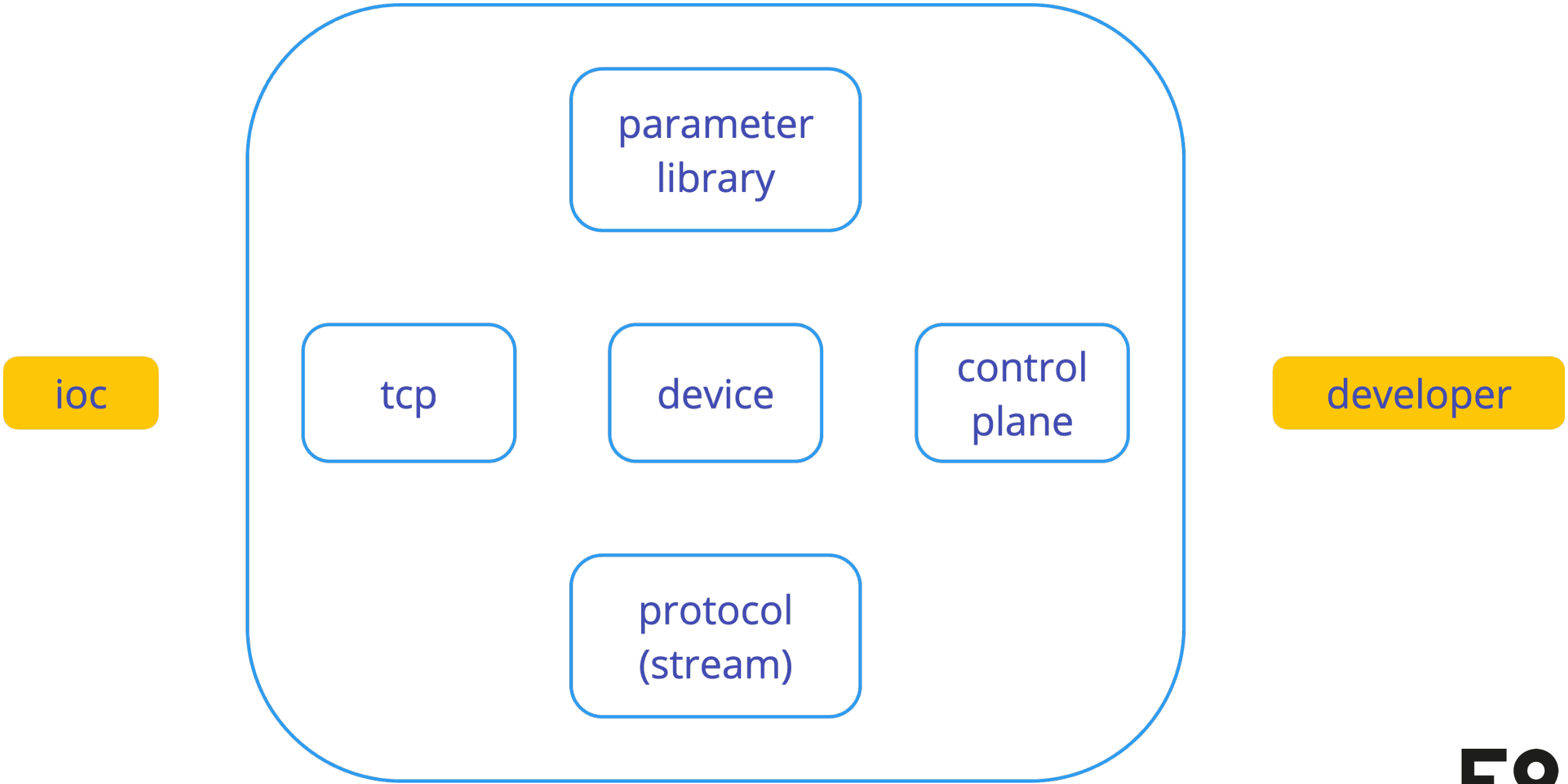
build a new tool

vd – virtual device

- easy to configure
- with a decent defaults
- multi-platform
- easy to install & run
- developer and CI-friendly

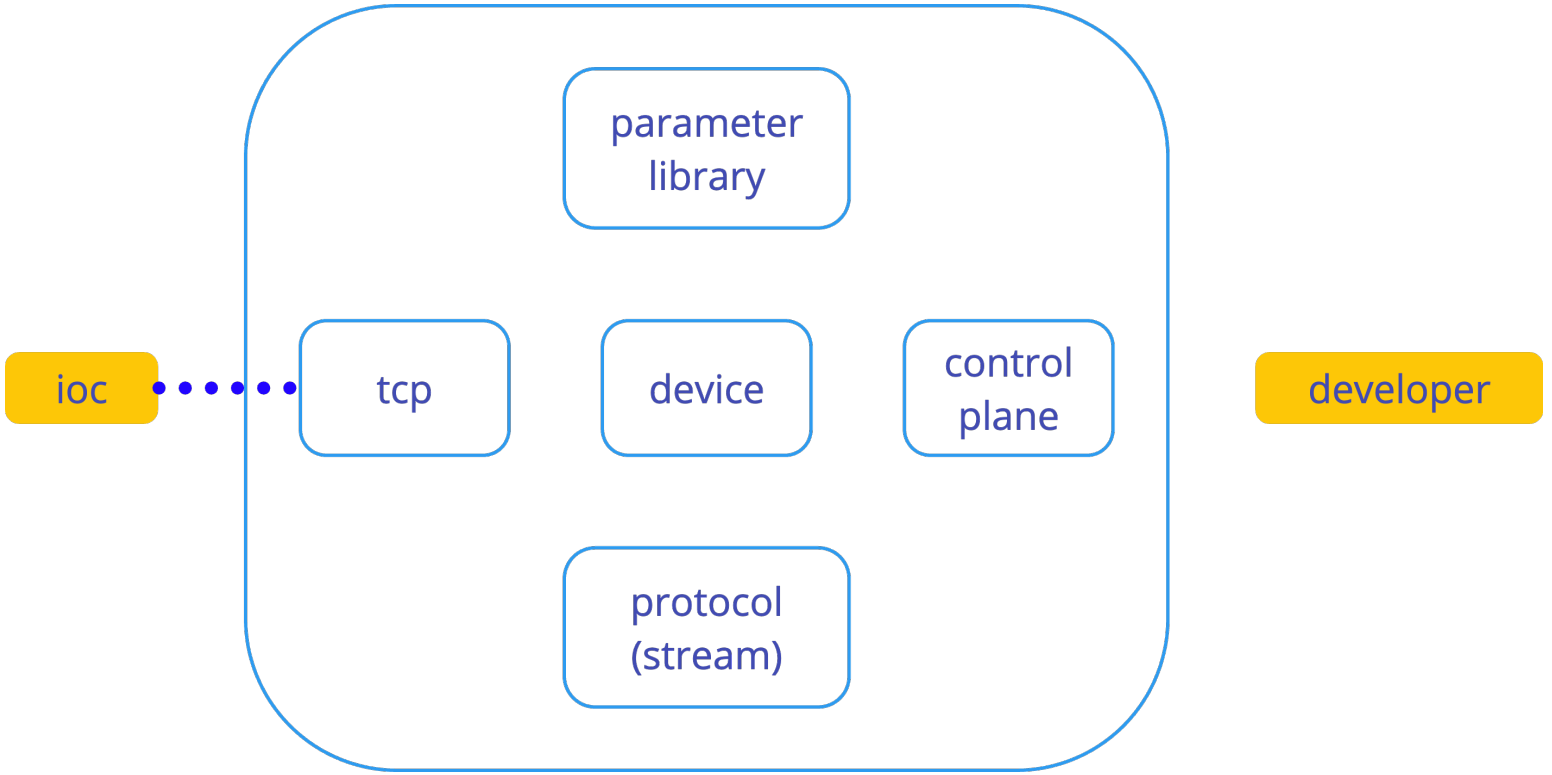
- single binary
- low boilerplate
- good support (open source)
- design for cloud & network services
- used widely in DevOps & SRE
- good fit for CLI



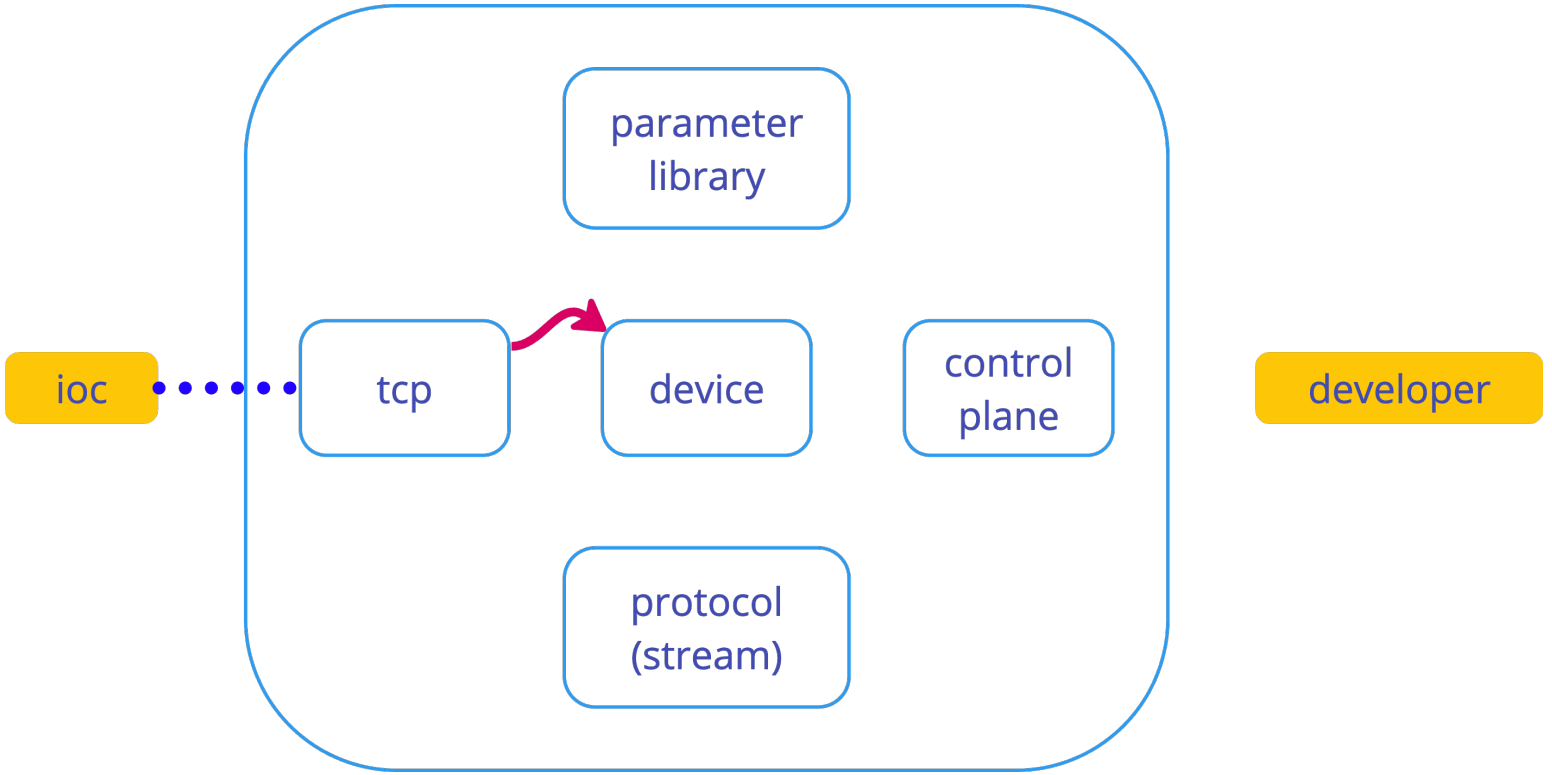

parameter library
tcp
device
control plane
protocol (stream)
ioc
developer

```
interm = "CR LF"
outterm = "CR LF"

[[parameter]]
  name = "current"
  typ = "int"
  val = 300

[[command]]
  name = "get_current"
  req = "CUR?"
  res = "CUR {%d:current}"

[[command]]
  name = "set_current"
  req = "CUR {%d:current}"
  res = "OK"
  dly = "2s"
```

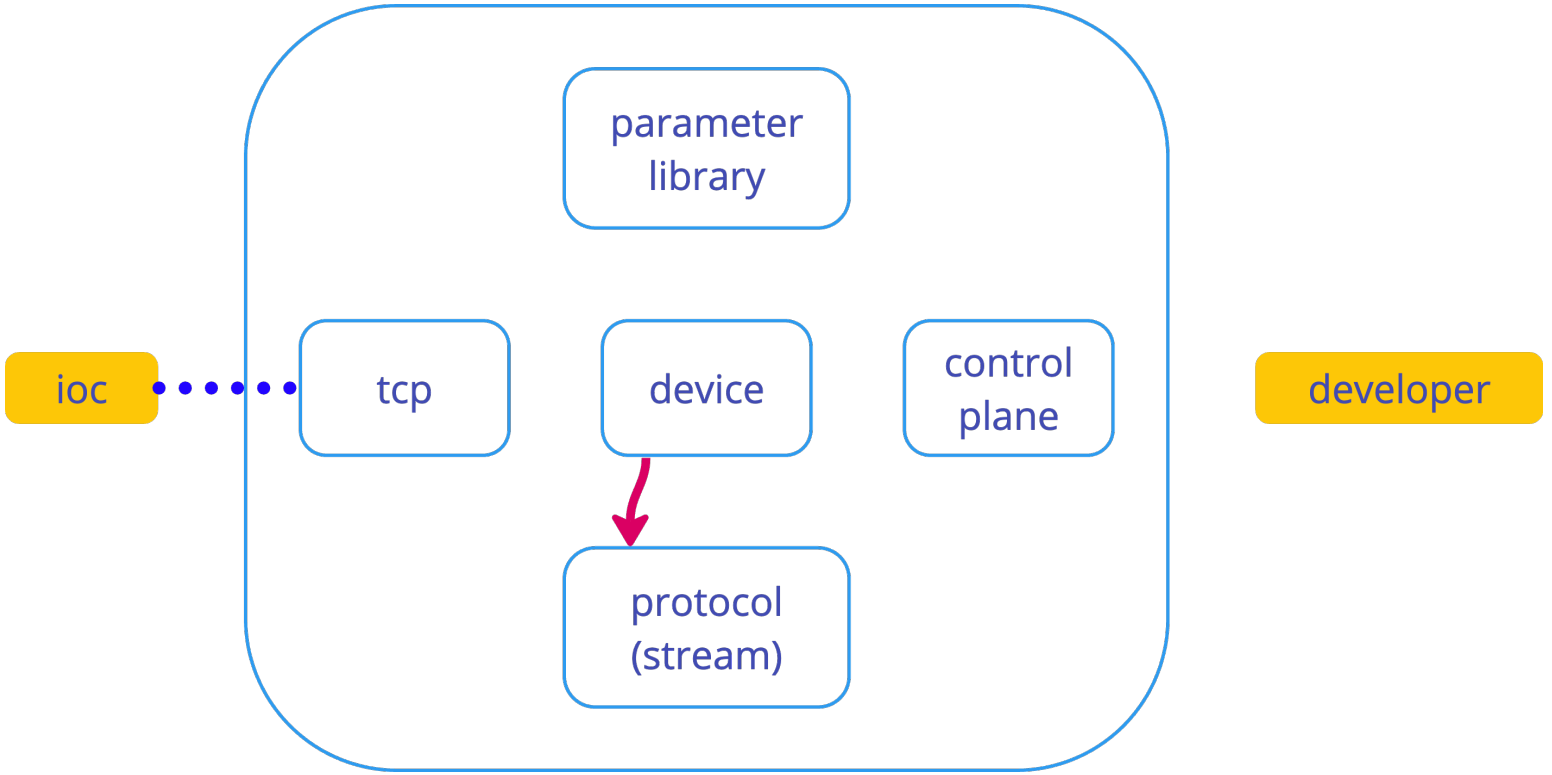
client connects



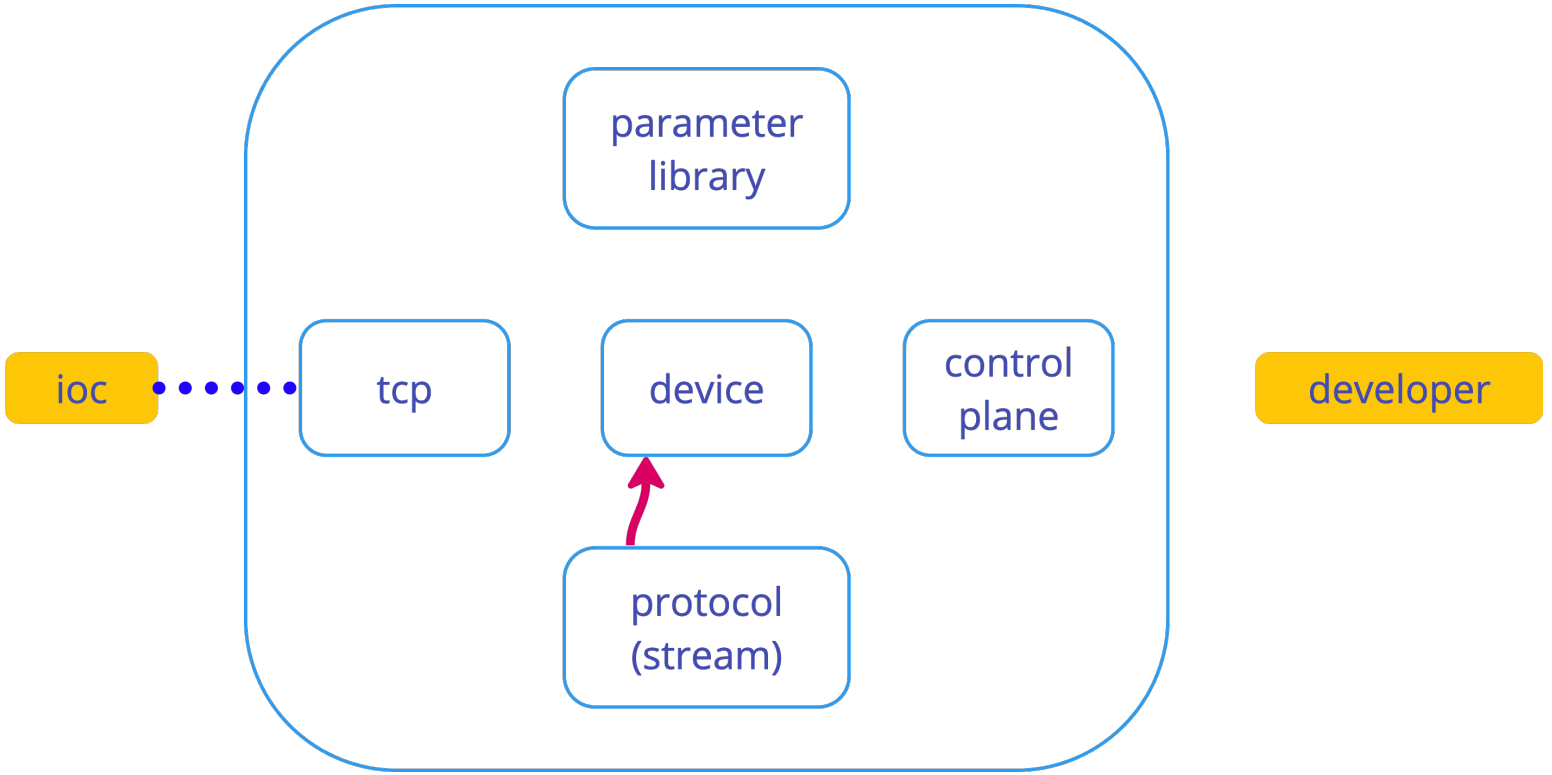
bytes received



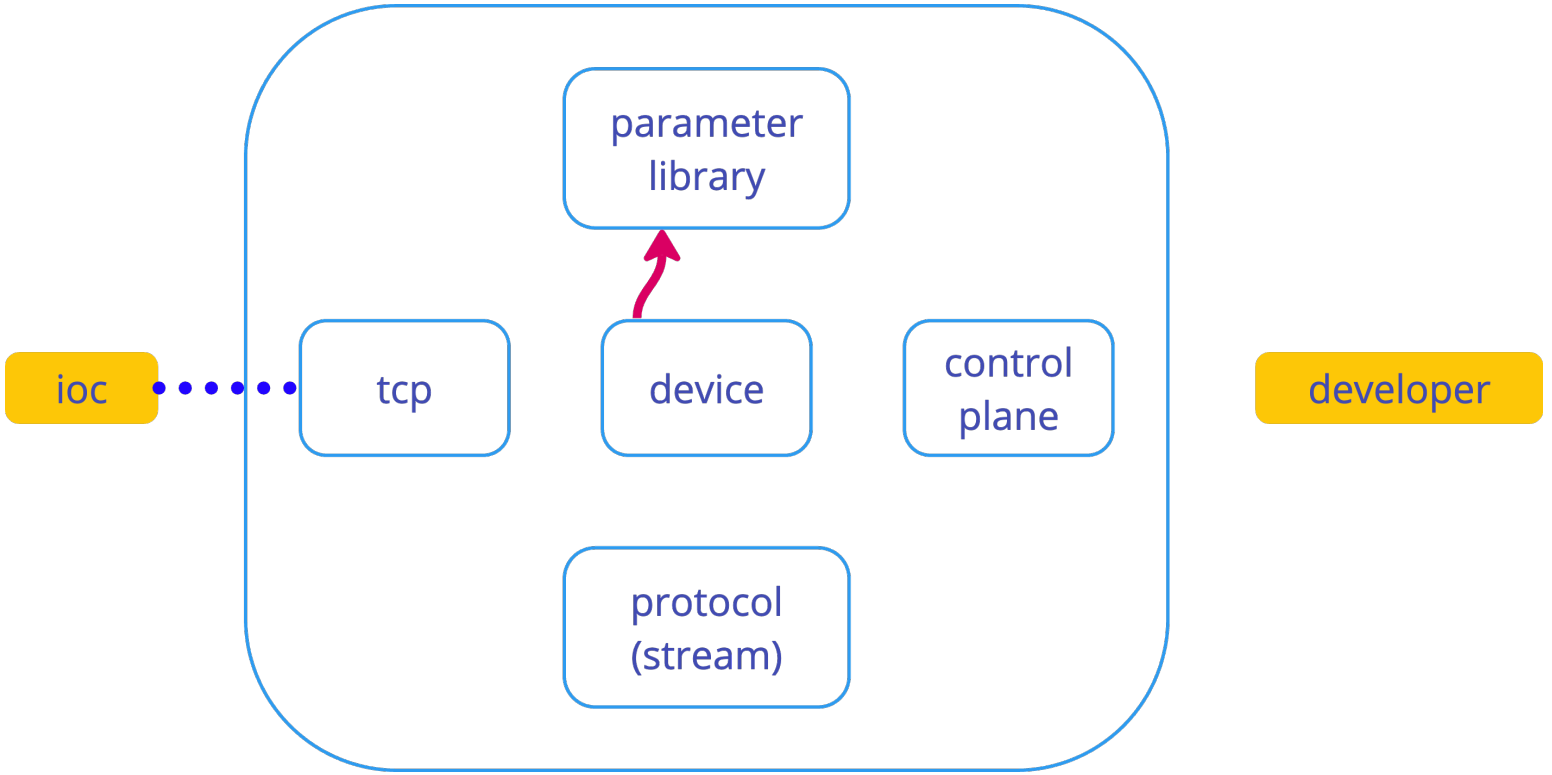
decode bytes



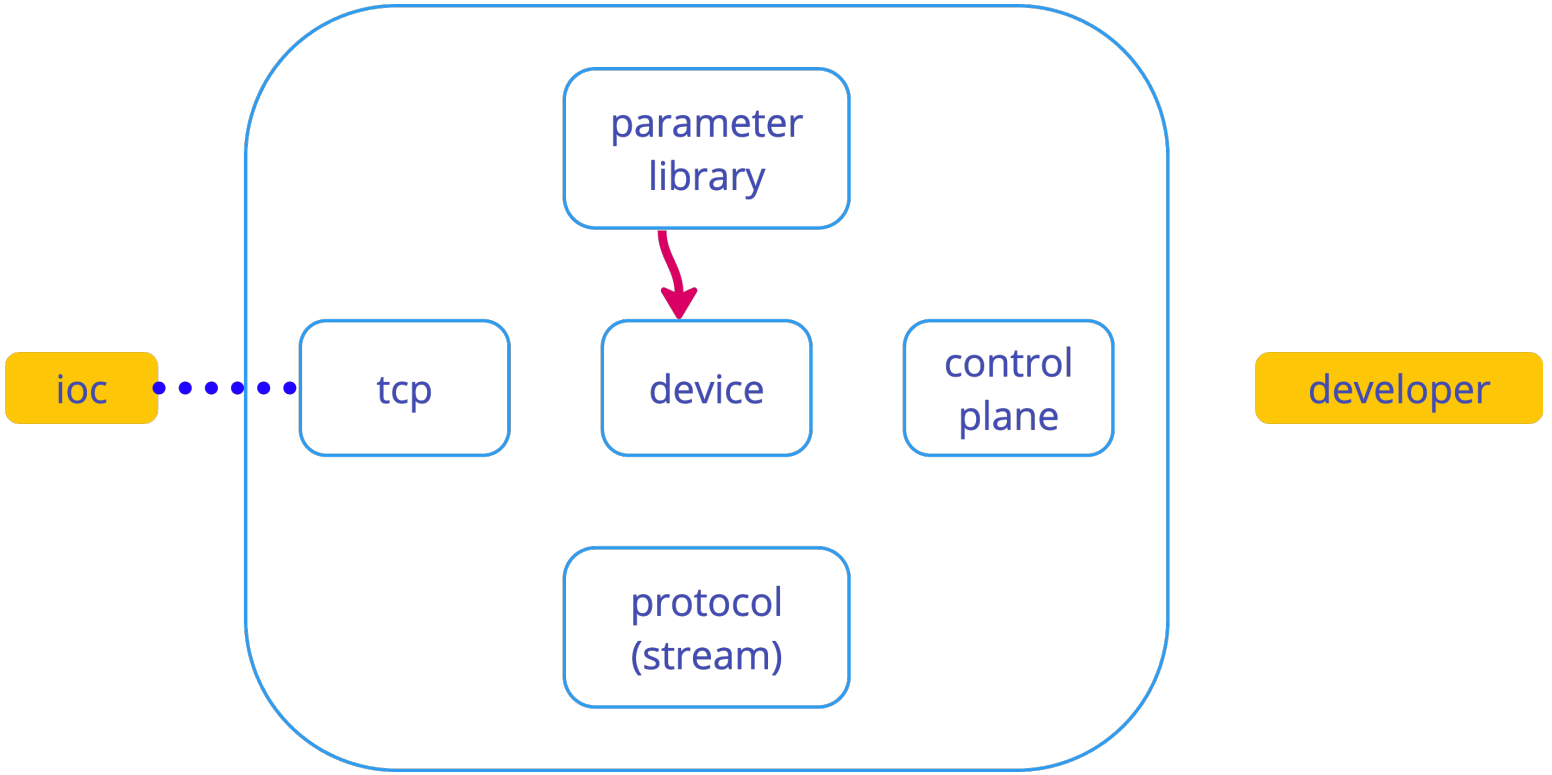
transaction



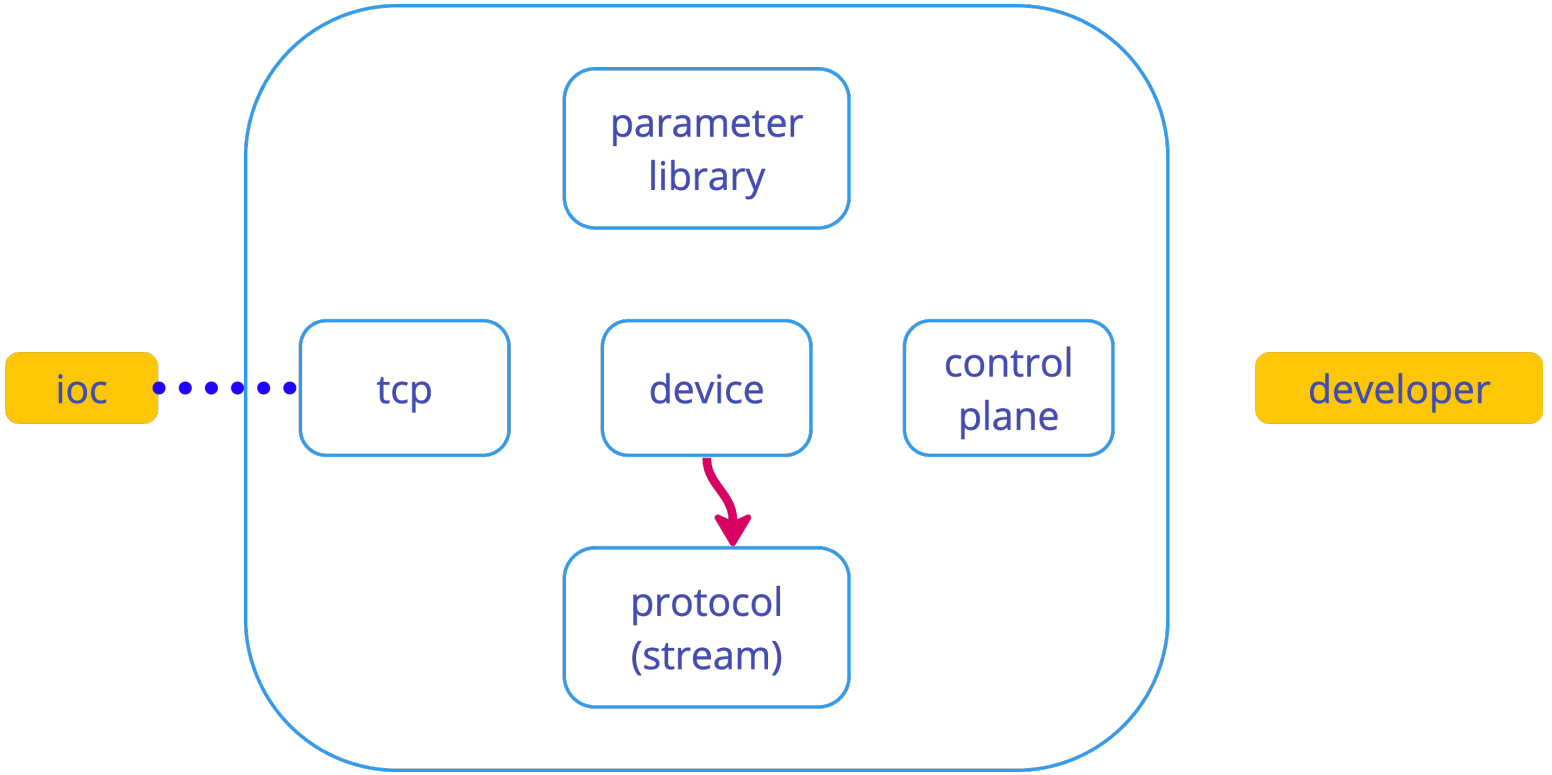
get/set value



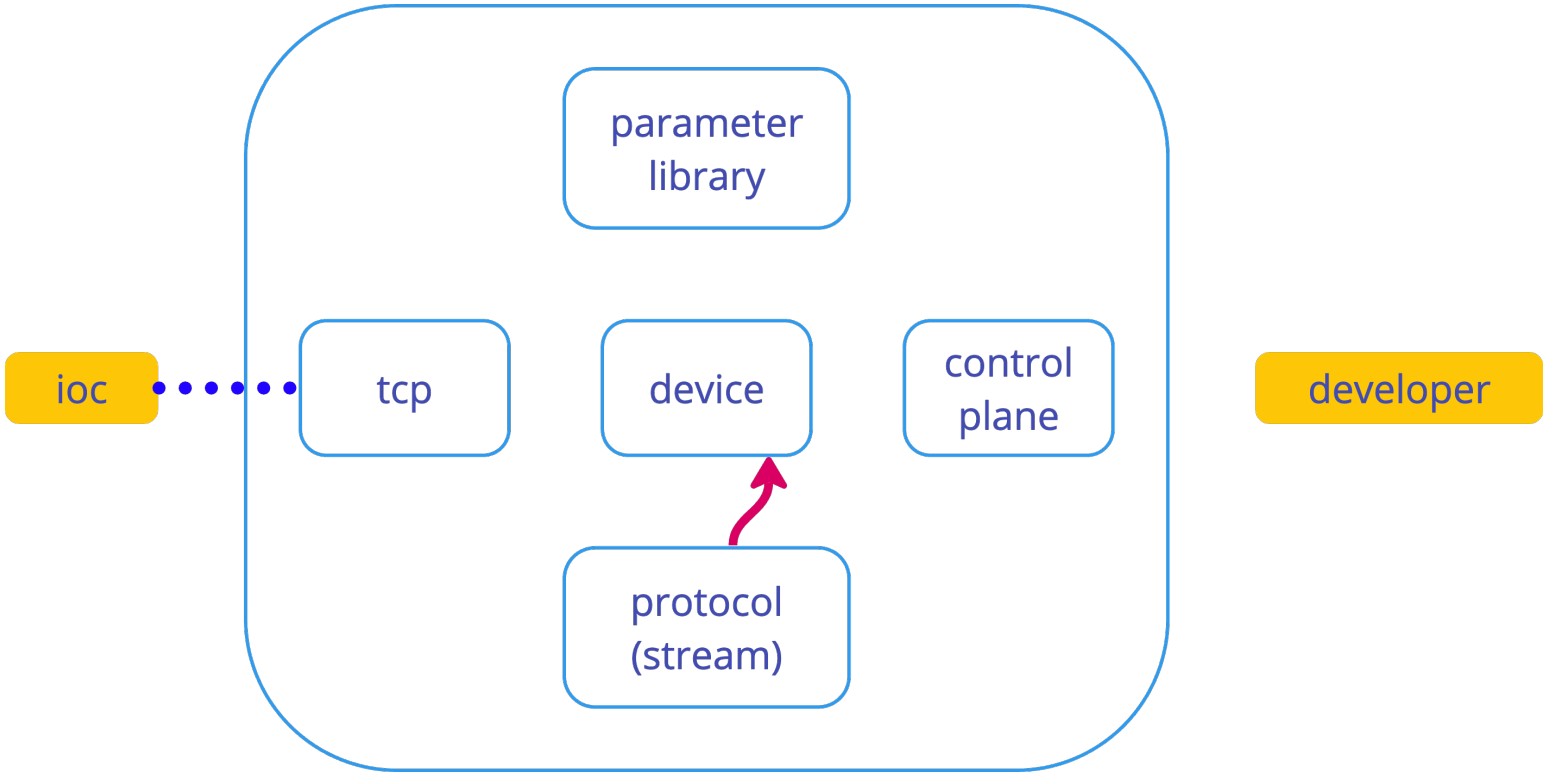
value/confirmation



encode answer



bytes


parameter library
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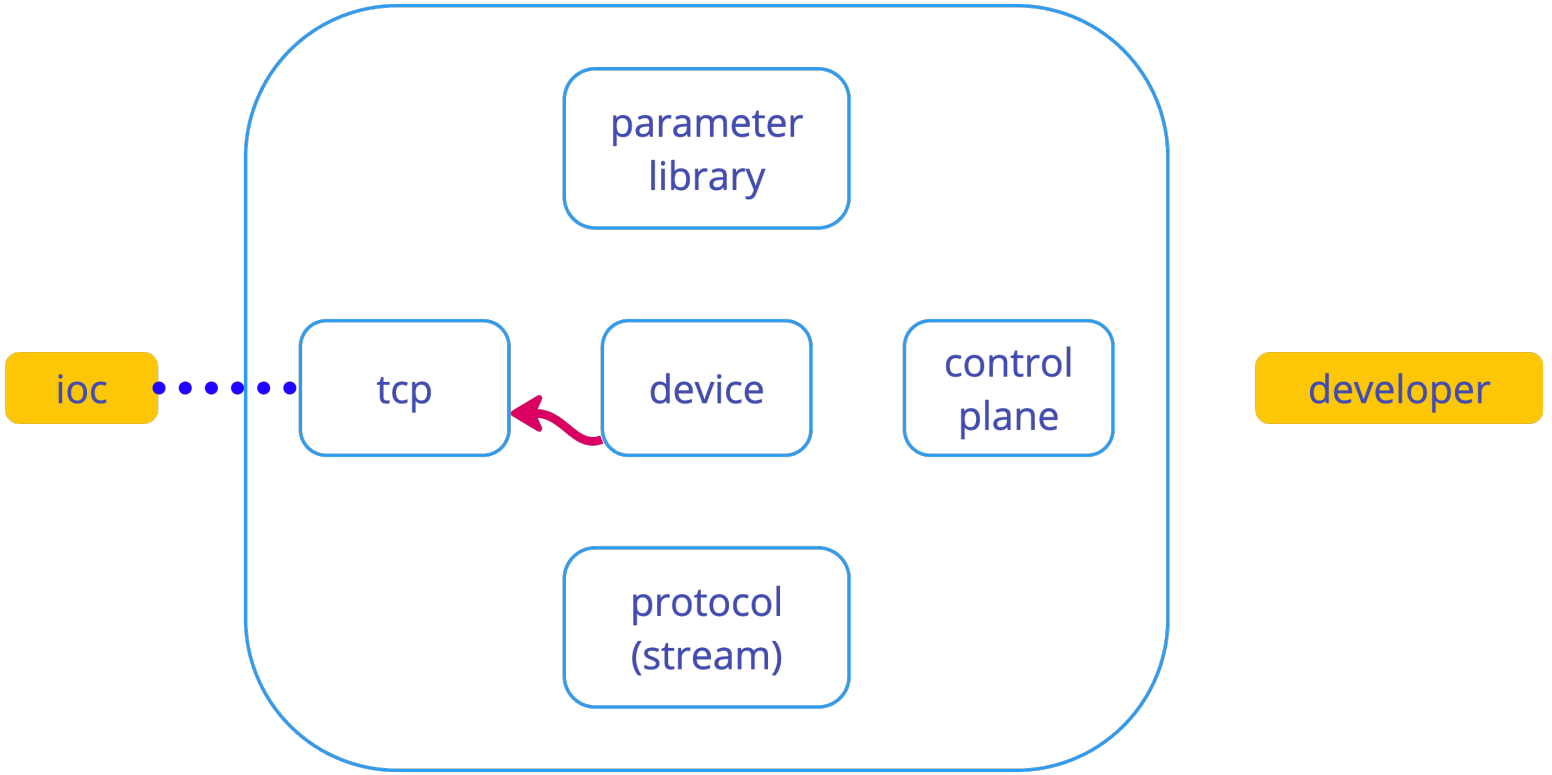
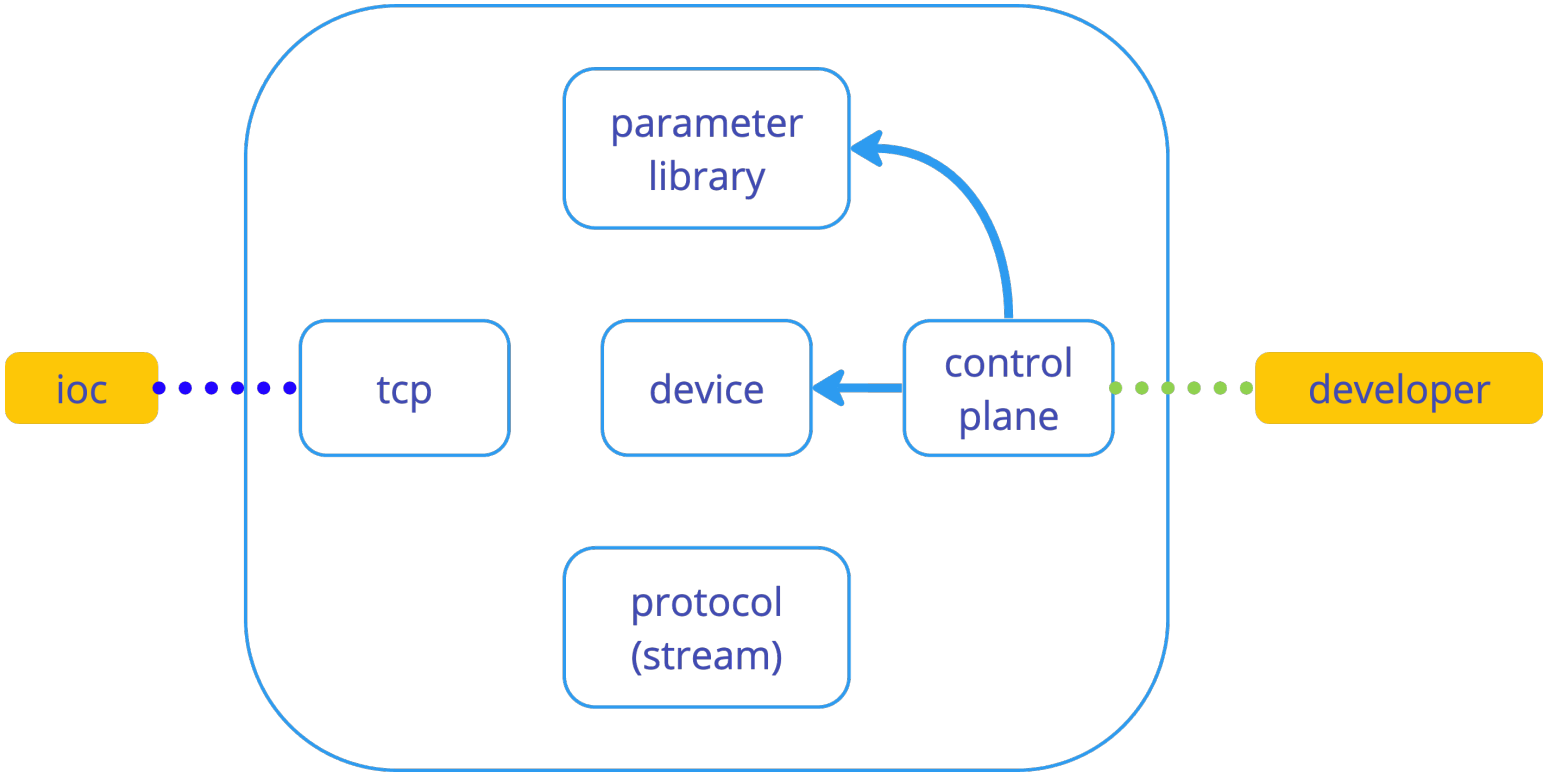
protocol (stream)

return bytes



control internals



demo

- new tool that helps troubleshoot communication
- easy to use
- more protocols are around the corner
- can be used in CI
- free & open source (AGPLv3)

github.com/e9ctrl/vd

marcin@e9controls.com

kacper klys & indra kurniawan

questions?