



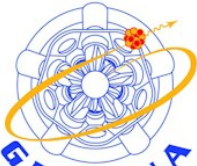
- Almost all DAQ programs both in the IOCs and on the cluster are written, at the top level, in SNL
 - The main control structures are states and transition between states
 - syntax is C-like and C code can be embedded or called
 - interface to EPICS PVs is integral to language
 - a state program can have multiple state sets, each a separate thread.
- Each program has <name>.st, <name>IF.c, and <name>IF.h



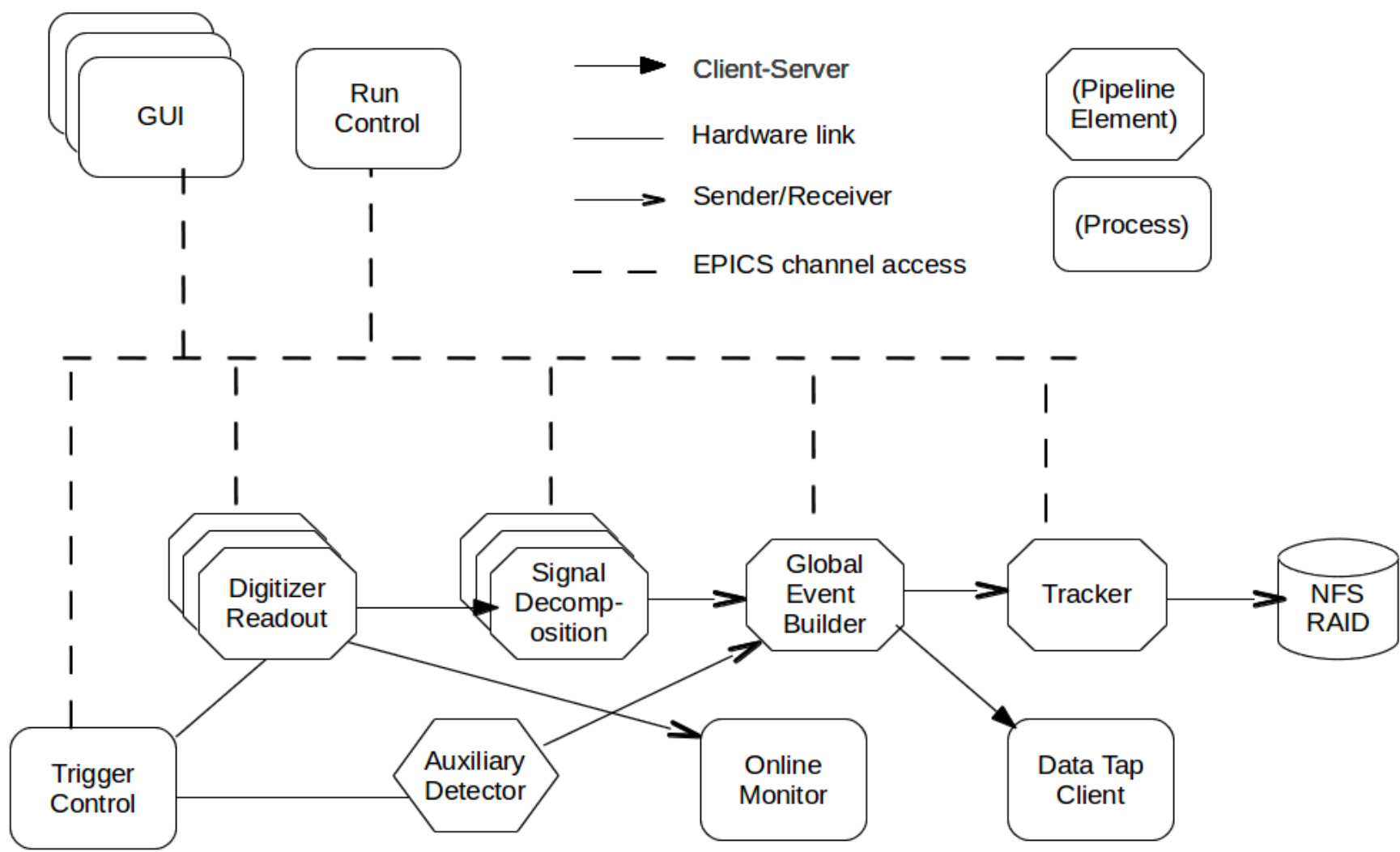
The Basic DAQ States

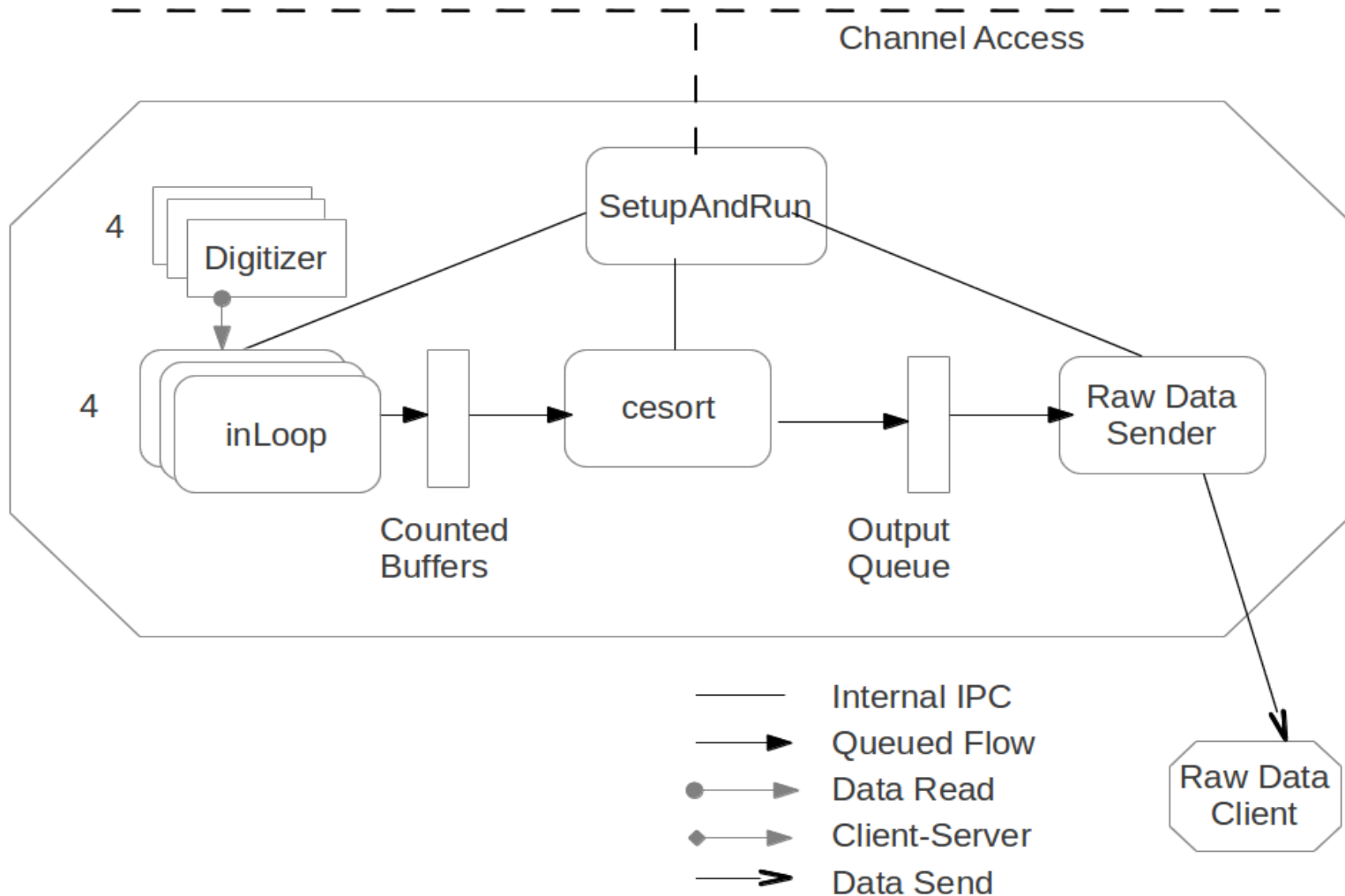


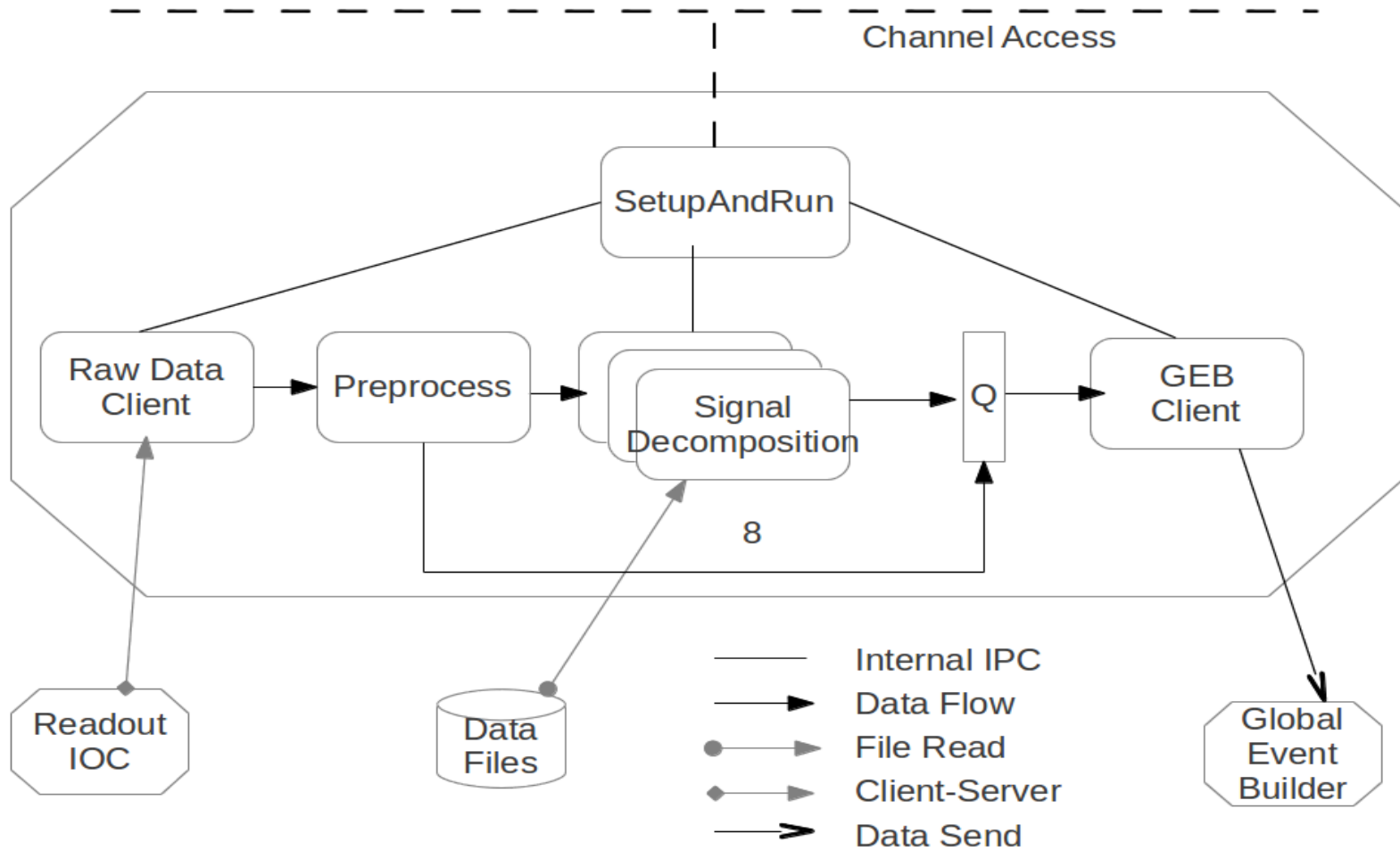
- All the DAQ programs have these same two basic states
 - Setup state
 - In setup, it is allowable to change hardware and run parameters
 - Run state
 - This is the state where data is acquired, runtime-processed, and saved
- Transition between Setup and Run is controlled by PV `Online_CS_StartStop`
- That PV is served by the soft ioc `gretClust` on dogs

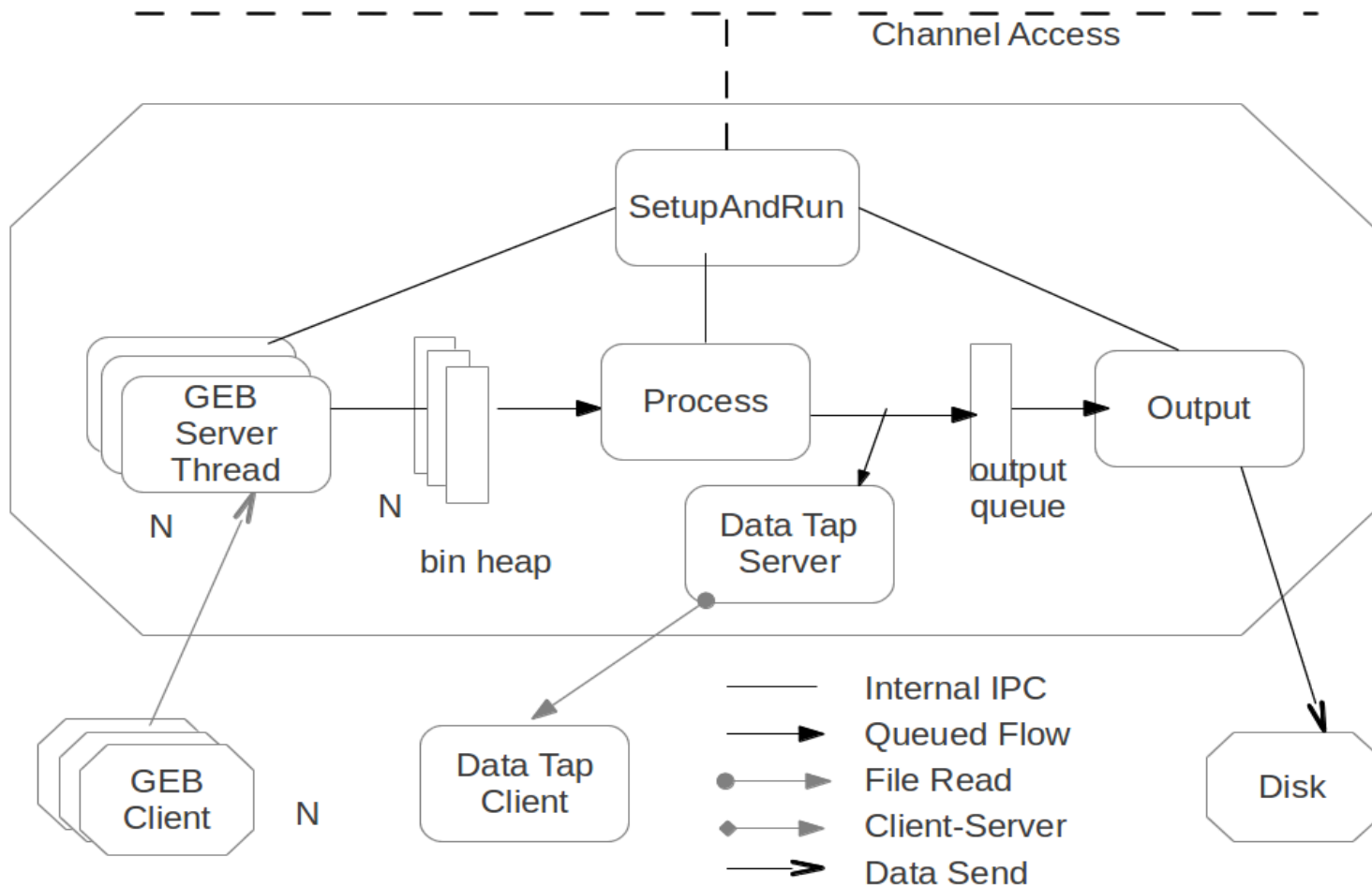


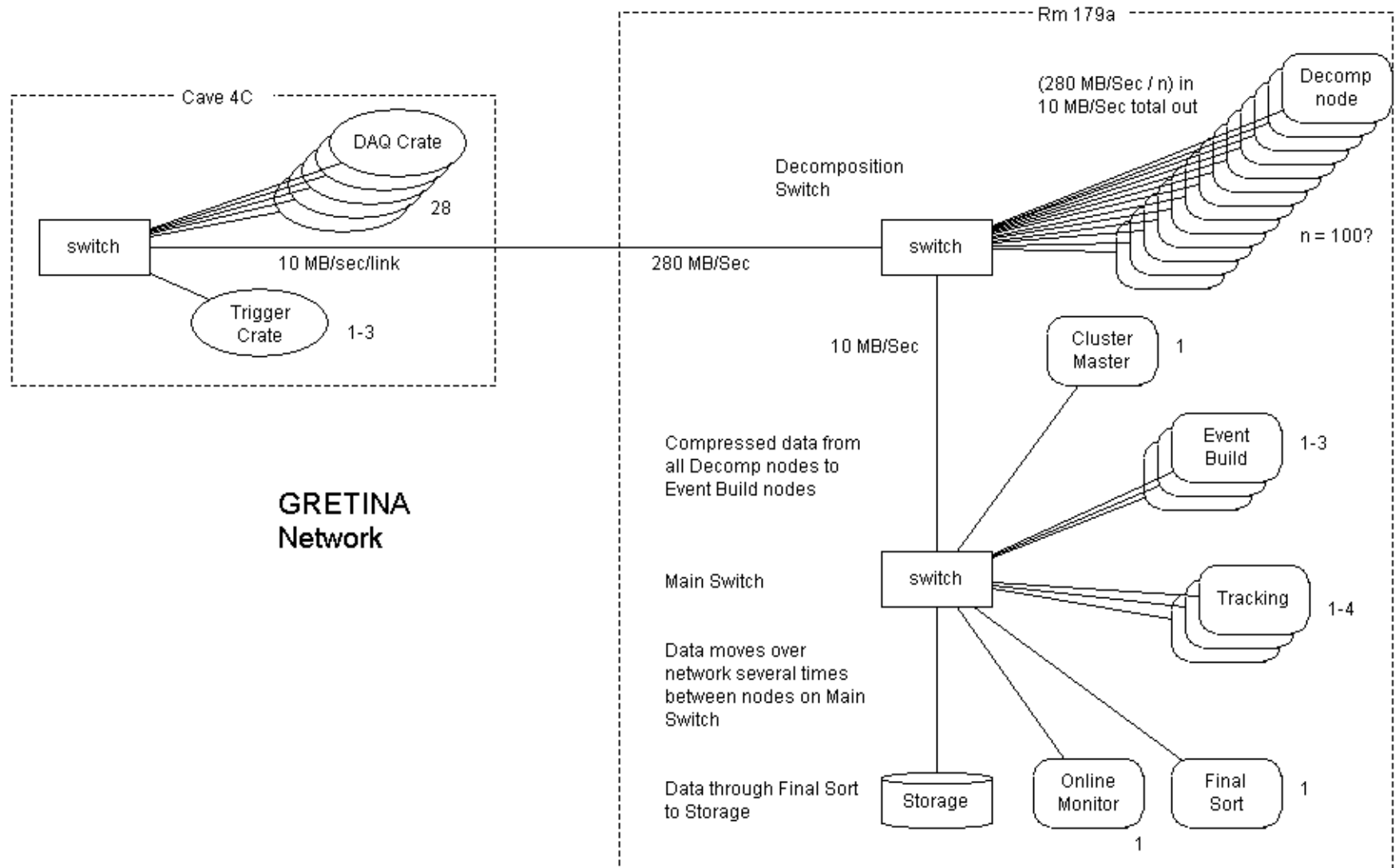
Processes and Communications

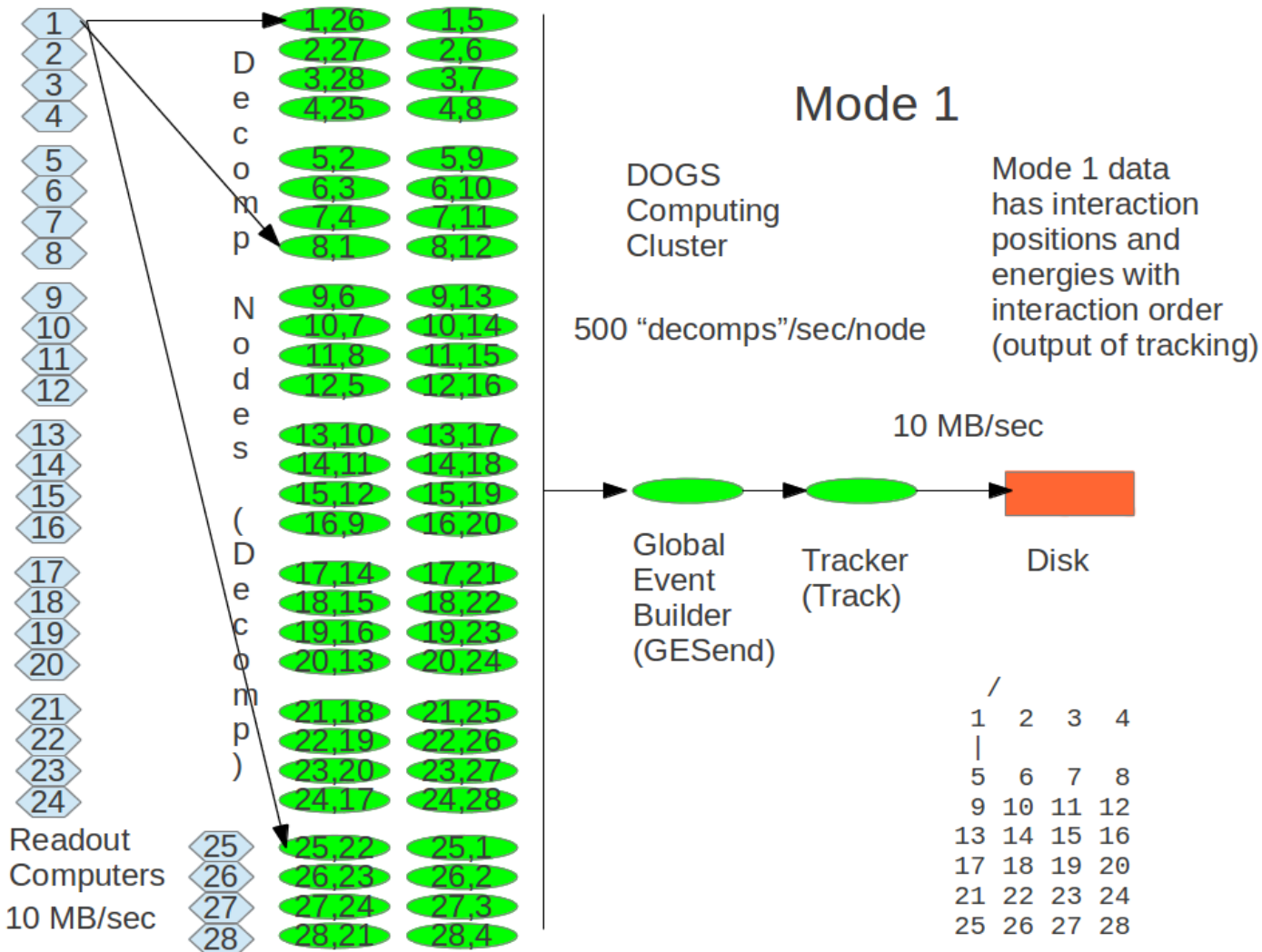


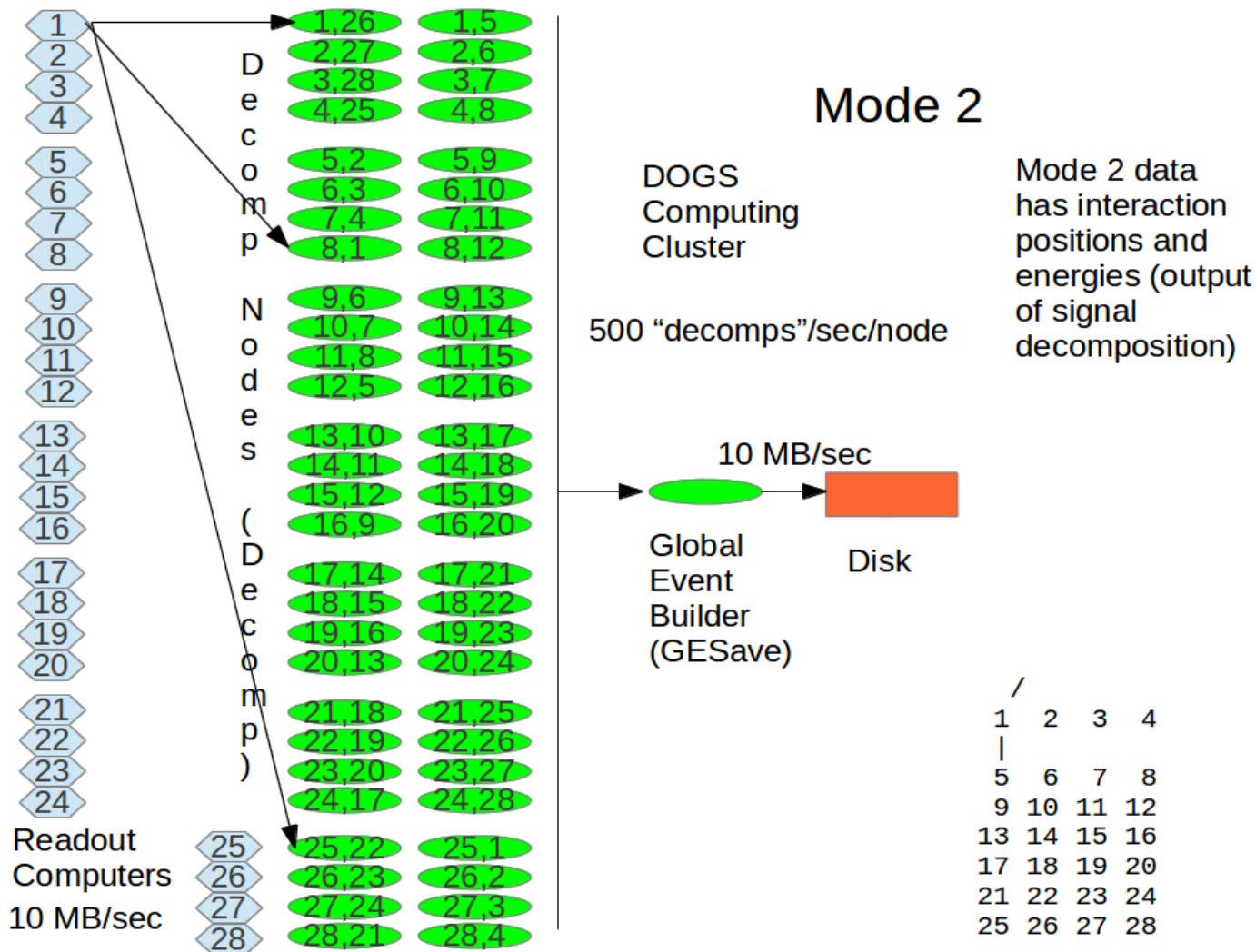


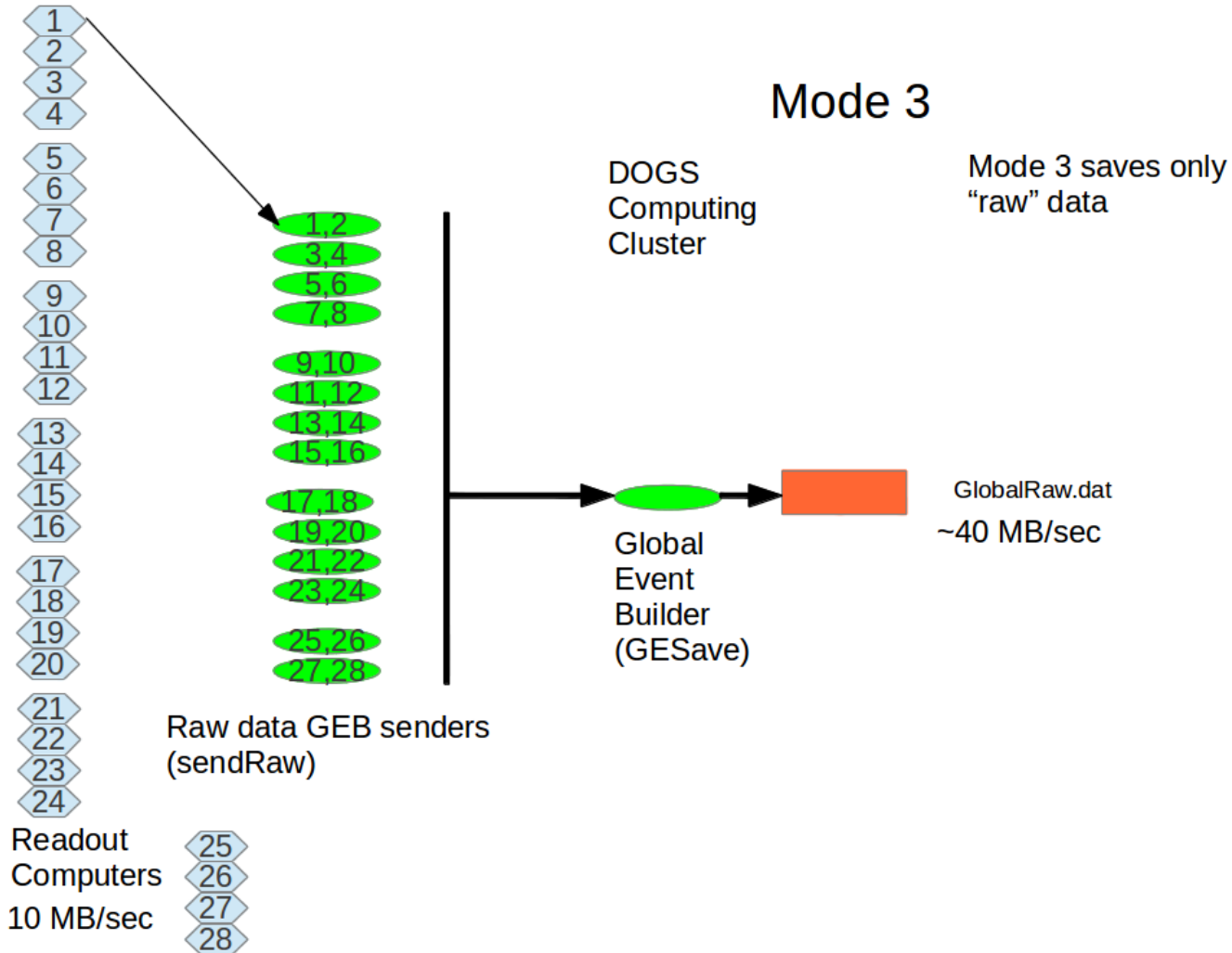


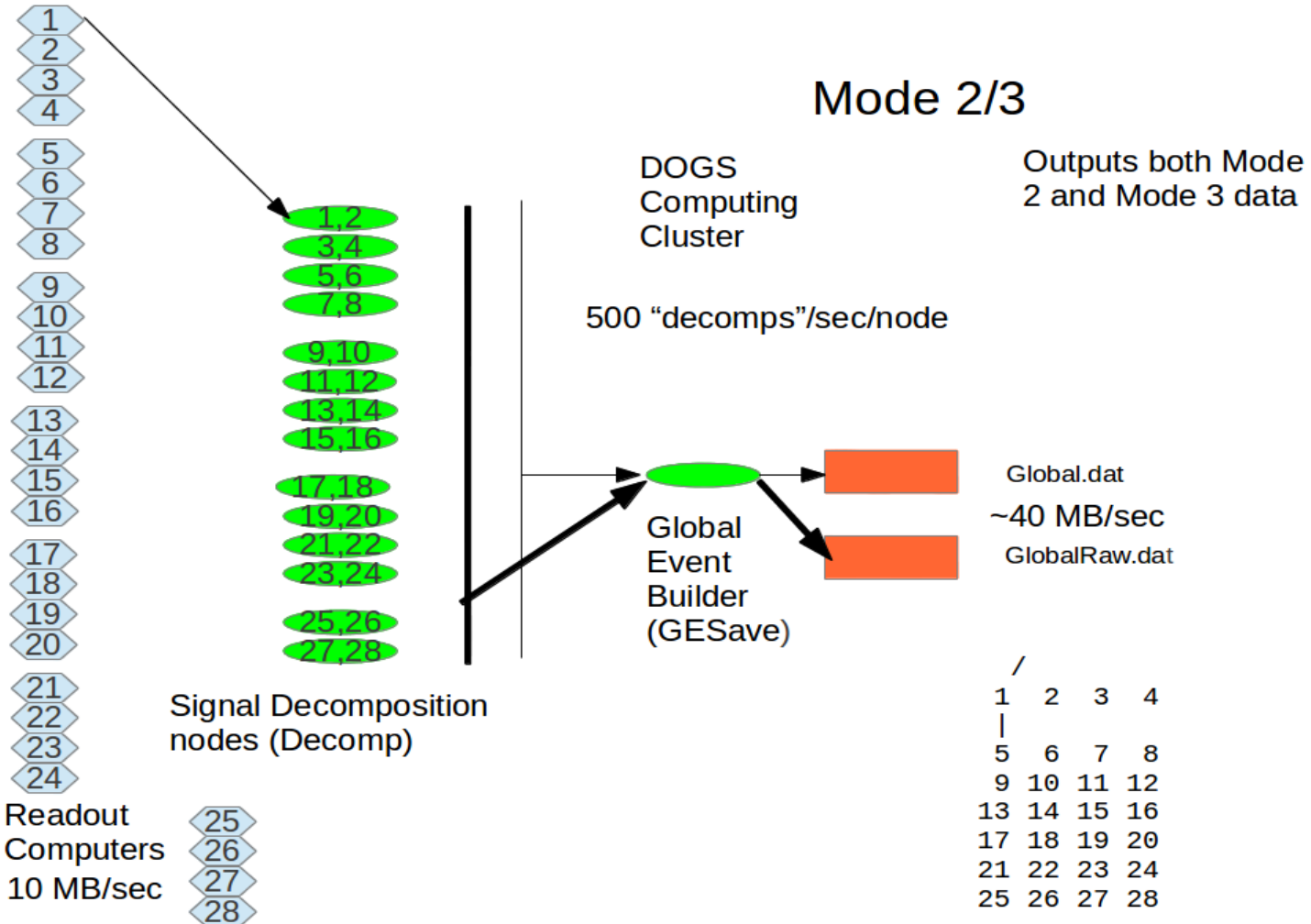






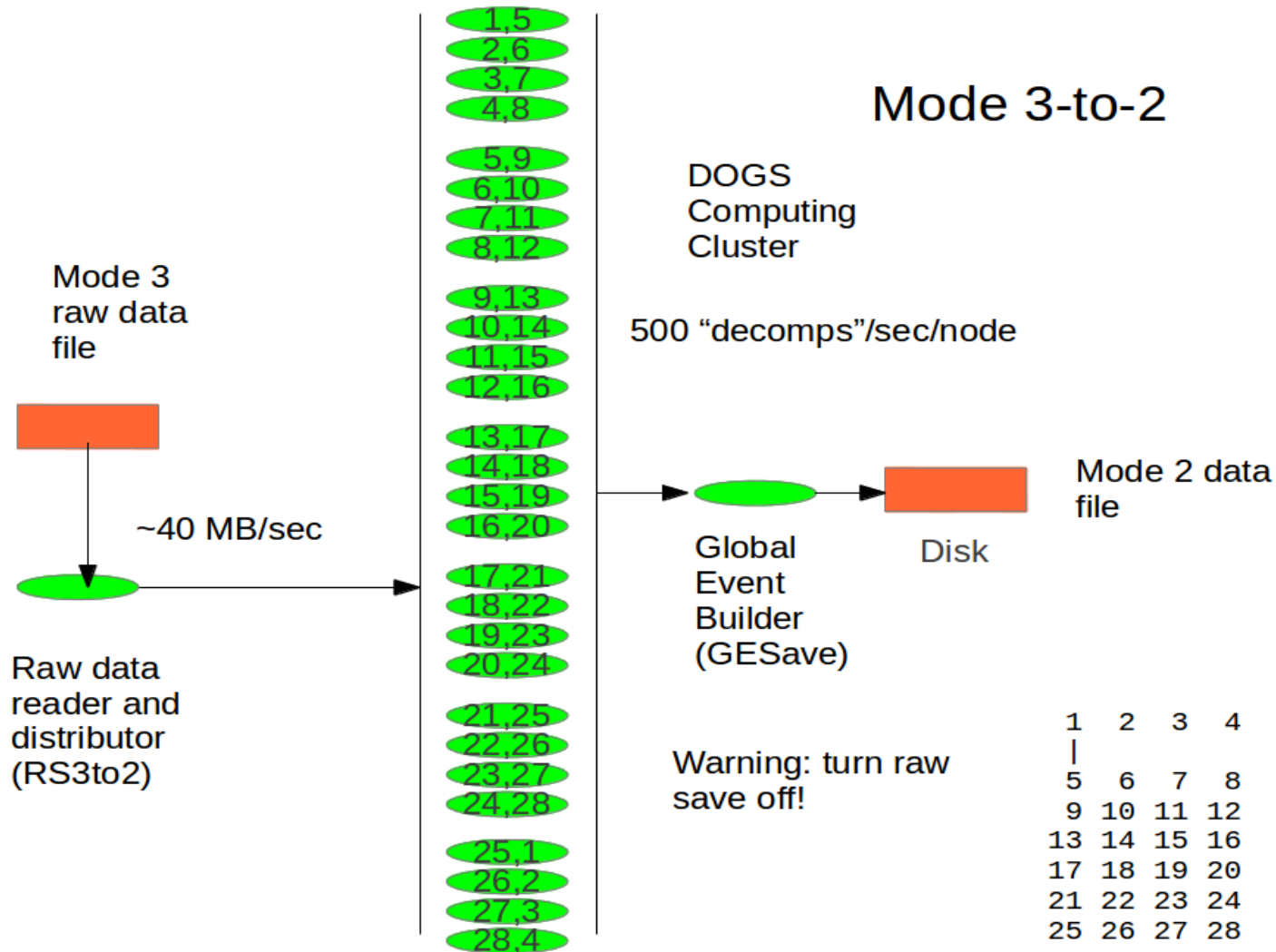








3 to 2



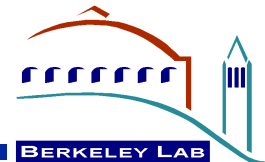


- It is possible to run several copies of an EPICS installation on the same network without the identically-named Pvs in each copy talking to each other.
- This is done by setting two environment variables that control IP ports EPICS uses.
- In GRETINA, this allows running half the cluster with a DAQ acquiring data, and the other half with a DAQ running 3to2.



- Code units are structured as EPICS applications directories
- EPICS applications support multiple-architecture builds and straightforward linkage between multiple “apps”
- Build system

```
<appname>/  
  configure  
  <appname>App/  
    Db/  
    src/  
  iocBoot/  
    st.cmd  
  include/  
  bin/  
    <arch1>  
    <arch2>  
  lib/
```

- CVS is used for version control
- Releases are independent of version control tags, and include several Apps
- Separate releases may be used for IOC boots and for cluster; currently the former is in release 10-5 and the latter 11-1.
- Essential Apps in a release: gretClust, Track, Decomp, gretVME, tcDig, tcDet
- Releases are directories in the /global/devel/gretTop directory