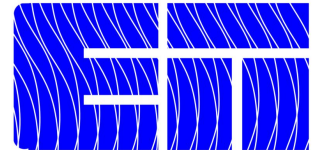


ET Computing Needs

Input from the OSB

Archisman Ghosh

ET Annual Meeting @ Opatija: 2025 Nov 12



EINSTEIN
TELESCOPE

Collection of ET computing needs

- eIB Div 3 (led by Gonzalo Merino) charged to come up with ET computing needs
- Coordinators of OSB Divs 7-8-9-10 met with Gonzalo Merino and others before summer
- Decision was made to collect computing needs bottom-up
- Survey to be sent out to Div 7-8-9-10 (priority for first year; more divisions to be included for subsequent cycles)
 - Input solicited on pipelines and schedulers, containerization technologies, CPU and GPU requirements, memory and storage requirements
- Goal: use this as guidance on resource requirements for future
- Identify software and hardware technologies expected as active R&D efforts
- Subsequent discussion planned at November ET annual meeting

Responses received so far

- 8 reponses only
 - 6 × **Div 10**, Div 9, Div 7

Thanks to all who have responded!

- Discuss and attempt to extrapolate from received data ..

CPU hours

- 500 CPU hours (CWB + FM codes)
- 100 k (dingo)
- 4-6 k (gwsim)
- 10-100 k
- 10 k (FrequencyHough)

GPU usage

- 1000 h “gold standard” GPUs
- 1000 h NVIDIA A40 / L40
- 2000 h A100 GPUs

Memory (RAM) requirements

- 1-2 GB per process × 20 parallel processes
- 2 GB per job
- 10 GB on average
- 25 GB per job/run
- 1 TB (total number for 64 parallel processes)

Storage requirements

- 20 GB
- < 1 TB
- 2-3 TB (permanent), 500 GB temporary
- 4 TB

Schedulers

- Slurm × 2
- HTCondor × 3

Containerization

- No familiarity in the group that has responded

Open comments

- Those of us having our own local computing resources or belonging to different collaborations (like LVK) providing resources and/or clusters are fine. You should provide resources as soon as possible to members of ET not having any resource at all. Otherwise, they don't have the chance to contribute to the collaboration.
- It is fundamental that an ET computing centre will be capable of providing enough computing power to all users. Many people are using GPUs, and many more will do so in the near future, so some planning in terms of GPU core/nodes is needed.

Open comments

- A dedicated GitLab CI runner for code development and testing would be extremely useful.
- Requirements depend mainly on: i) if we will make an MDC with CW signals; ii) how much large parameter space we want to analyze (this can be adjusted depending on the available resources)

Next steps?

<https://forms.gle/KZQrjMLX2fKfBtWS6>



- Scale up by number of active contributors in each division?
- Seek further input via division coordinators.
- Other suggestions?

Identify active areas of development

- AI/ML-based CBC search/inference pipelines ..
- Optimizing heavy CW searches.