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HTCondor in Einstein Telescope

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The Einstein Telescope (ET) is currently in the early development phase for its computing infrastructure. At present, the only officially provided service is the distribution of data for Mock Data Challenges (using the Open Science Data Federation + CVMFS-for-data), with GitLab used for code management. While the data distribution infrastructure is expected to be managed by a Data Lake using Rucio, the specifics of the data processing infrastructure and tools remain undefined. This exploratory phase allows for a detailed evaluation of different solutions. Drawing from the experiences of 2nd-generation gravitational wave experiments LIGO and Virgo, which began with modest computational needs and expanded into distributed computing models using HTCondor, ET aims to build upon these foundations. LIGO and Virgo adopted, for their offline data analyses, the LHC grid computing model through a common computing infrastructure called IGWN (International Gravitational-Wave Observatory Network), incorporating systems like glideinWMS, which works on top of HTCondor, to handle high-throughput computing (HTC) tasks. Despite this, challenges such as the reliance on shared file systems have limited the migration to grid-based workflows, with only 20% of jobs currently running on the IGWN grid.

For ET, the plan is to adapt and evolve from the IGWN grid computing model, making sure workflows are grid-compatible. This includes exploring Snakemake, a framework for reproducible data analysis, to complement HTCondor. Snakemake offers the ability to run jobs on diverse computing resources, including grid, Slurm clusters, and cloud-based infrastructures. This approach aims to ensure flexibility, scalability, and reproducibility in ET's data processing workflows, while overcoming past limitations.

Desired slot length

Speaker release

Yes

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