

PARAM Rudra Supercomputers

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About PARAM Rudra Supercomputer:

- It is designed to tackle **complex computational challenges** across various scientific and engineering domains.
- Three Param Rudra supercomputers have been developed at Rs 130 crores, indigenously under the **National Supercomputing Mission**.
- They have been deployed at three key locations: **Delhi, Pune and Kolkata**.
 - In Pune, the **Giant Metre Radio Telescope (GMRT)** will leverage the supercomputer to explore Fast Radio Bursts (FRBs) and other astronomical phenomena.
 - In Delhi, **Inter University Accelerator Centre (IUAC)** will enhance research in fields like material science and atomic physics.
 - In Kolkata, S N Bose Centre will use supercomputing technology to drive advanced research in areas such as physics, cosmology, and earth sciences.

What is a High-Performance Computing (HPC) system?

- It is tailored for **weather and climate research**.

- It is located at two key sites, the **Indian Institute of Tropical Meteorology** (IITM) in Pune and the **National Center for Medium Range Weather Forecast** (NCMRWF) in Noida, this HPC system has extraordinary computing power.
- The new HPC systems are **named 'Arka' and 'Arunika,'** reflecting their connection to the Sun.
- **Significance:** These high-resolution models will significantly enhance the accuracy and lead time of predictions related to tropical cyclones, heavy precipitation, thunderstorms, hailstorms, heat waves, droughts, and other critical weather phenomena.

Key facts about the National Supercomputing Mission

- It was **launched in 2015** to provide the country with supercomputing infrastructure to meet the increasing computational demands of academia, researchers, MSMEs, and startups.
 - It aims to create a network of advanced computing systems across India.
 - It is a collaboration between the **Ministry of Electronics and Information Technology (MeitY) and the Department of Science and Technology (DST)**.
 - It is implemented by the **Centre for Development of Advanced Computing (C-DAC)**, Pune and the Indian Institute of Science (IISc), Bengaluru.
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Q1: What is the Giant Metrewave Radio Telescope (GMRT)?

It is a low-frequency radio telescope that helps investigate various radio astrophysical problems ranging from nearby solar systems to the edge of the observable universe. It is located at Khodad, 80 km north of Pune, Maharashtra. It is a project of the Department of Atomic Energy (DAE), operating under the Tata Institute of Fundamental Research (TIFR).

Source: Prime Minister Shri Narendra Modi dedicates to nation three PARAM Rudra Supercomputers via video conferencing

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