



C-DAC's MoUs on Supercomputing

Why in News

Recently, the [Centre for Development of Advanced Computing](#) (C-DAC) under the **Ministry of Electronics and Information Technology** (Meity) has signed 13 MoUs with the **premier academic and research and development** (R&D) institutions of India.

Key Points

▪ Aims behind the Move:

- To **establish supercomputing infrastructure** with assembly and manufacturing in India and **critical components** of the [National Supercomputing Mission](#).
 - **Supercomputing** has [applications](#) in so many areas like computational biology and chemistry, molecular dynamics, national security, [big data](#) analytics, government information systems, and so on.
 - It becomes a powerful tool, paired with [artificial intelligence \(AI\) and machine learning \(ML\)](#), enabling it to empower people and make India ready to tackle future challenges.
- To develop **India's indigenous hardware** encompassing **exascale** chip design, design and manufacture of exascale server boards, exascale interconnects and storage including **silicon-photonics** at C-DAC to **achieve complete self-reliance** envisioned under the [Aatmanirbhar Bharat](#) Initiative.
 - **Exascale computing** refers to computing systems capable of calculating at least 10^{18} floating-point operations per second.
 - **Silicon photonics** is an evolving technology in which data is transferred among computer chips by optical rays. Optical rays can carry far more data in less time than electrical conductors.

▪ National Supercomputing Mission:

- It was **announced in 2015**, with an aim to connect national academic and R&D institutions with a grid of more than 70 high-performance computing facilities at an estimated cost of **Rs. 4,500 crores** over a **period of seven years**.
- It supports the government's vision of '[Digital India](#)' and '[Make in India](#)' initiatives.
- It is being implemented by the [Department of Science and Technology](#) (DST) and **Department of Electronics and Information Technology** (DeitY) through **C-DAC and Indian Institute of Science** (IISc), Bangalore.
- **The Mission envisages:**
 - To improve the number of [supercomputers](#) owned by India.
 - To **build a strong base of 20,000 skilled persons** over a period of five years who will be equipped to handle the complexities of supercomputers.
 - To empower Indian national academic and R&D institutions to spread over the country by **installing a vast supercomputing grid** comprising more than 70 **high-performance computing** (HPC) facilities.

India's Top Five Supercomputers

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| Indian Institute of Tropical Meteorology India | Pratyush - Cray XC40, Xeon E5-2695v4 18C 2.1GHz, Aries interconnect Cray Inc. | 4,006.2 TFlop/s |
| National Centre for Medium Range Weather Forecasting India | Mihir - Cray XC40, Xeon E5-2695v4 18C 2.1GHz, Aries interconnect Cray Inc. | 2,808.7 TFlop/s |
| Software Company (M) India | InC1 - Lenovo C1040, Xeon E5-2673v4 20C 2.3GHz, 40G Ethernet Lenovo | 1,413.1 TFlop/s |
| Supercomputer Education and Research Centre (SERC), Indian Institute of Science India | SERC - Cray XC40, Xeon E5-2680v3 12C 2.5GHz, Aries interconnect Cray Inc. | 1,244.2 TFlop/s |
| Indian Institute of Tropical Meteorology India | iDataPlex DX360M4, Xeon E5-2670 8C 2.600GHz, Infiniband FDR IBM | 790.7 TFlop/s |

- **PARAM 8000**, considered to be **India's first supercomputer** was indigenously built in **1991** by C-DAC.
- **SUMMIT** (USA) is the **fastest supercomputer in the world** which can deliver upto 187,659.3 TFlop/s.

Source: PIB

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