GOVERNMENT OF INDIA
MINISTRY OF ELECTRONICS AND INFORMATION TECHNOLOGY
LOK SABHA
UNSTARRED QUESTION NO. 4502
TO BE ANSWERED ON: 20.08.2025

NATIONAL SUPERCOMPUTING MISSION

4502. SHRI BALABHADRA MAJHI:
SHRI LUMBARAM CHOUDHARY:
SHRI VIJAY BAGHEL:
DR. LATA WANKHEDE:

Will the Minister of ELECTRONICS AND INFORMATION TECHNOLOGY be pleased to state:

(a) the manner in which the National Supercomputing Mission has enhanced India's self reliance in the field of high-performance computing;
(b) the manner in which the Trinetra, indigenous high-speed communication network is enhancing the data transfer and computational efficiency in the supercomputing ecosystem;
(c) the initiatives being taken under the National Supercomputing Mission to develop a skilled workforce in high-performance computing and artificial intelligence; and
(d) the impact of the National Supercomputing Mission on research and innovation in key areas?

ANSWER

MINISTER OF STATE FOR ELECTRONICS AND INFORMATION TECHNOLOGY
(SHRI JITIN PRASADA)

(a) to (d): The National Supercomputing Mission (NSM) was initiated in April 2015 by the Government of India with a budget outlay of Rs.4,500 crore. Its vision is to achieve self-reliance and global leadership in supercomputing by giving access of state-of-the-art supercomputing facilities to researchers, addressing grand challenges, optimizing investments, and enhancing global competitiveness in key areas of supercomputing technologies.

The NSM is being jointly implemented by the Ministry of Electronics and Information Technology (MeitY) and the Department of Science and Technology (DST) through Centre for Development of Advanced Computing(C-DAC), Pune and Indian Institute of Science (IISc), Bengaluru. The mission is currently extended till 31st December, 2025.

Deployment and Utilization of Supercomputers
As of 12th August 2025, 37 supercomputers with a total computing power of 40 Petaflops have been installed under the NSM. These systems are set up in leading institutions like IISc, IITs, C-DAC, R&D Labs and also in several academic institutions and research organisation in the Tier-II and Tier-III cities across the country. The systems are being used efficiently, with most running at over 85% capacity and many exceeding 95%. These supercomputers have supported over 10,000 researchers, including more than 1,700 PhD scholars from over 200 academic and research

institutions. They have played a key role in advancing research in areas such as drug discovery, disaster management, energy security, climate modelling, astronomy, computational chemistry, fluid dynamics, and materials research. More than one (01) crore compute jobs have been completed, and as a result over 1,500 research papers have been published in reputed journals. Startups and MSMEs are also using these systems to boost their HPC-based projects.

Indigenous Development and Technological Achievements
Under the NSM, an ecosystem has been established with the focused goal of achieving self-reliance in supercomputing, encompassing the design, development, and manufacturing of supercomputing server boards, as well as the creation of a complete system software stack and associated applications.

India has now the capability of designing, developing and manufacturing supercomputing technologies indigenously. This approach is in line with the Hon'ble Prime Minister's vision of Atmanirbhar Bharat.

Hon'ble Prime Minister Shri Narendra Modi on 26th September, 2024 dedicated three PARAM Rudra supercomputers to the nation. These supercomputers are available to the young researchers, scientists and engineers of nation facilitating advanced studies in physics, earth sciences, and cosmology. These supercomputers have been deployed at Giant Metrewave Radio Telescope (GMRT) - National Centre for Radio Astrophysics (NCRA) Pune, Inter-University Accelerator Centre (IUAC) Delhi and S.N. Bose National Centre for Basic Sciences Kolkata to facilitate pioneering scientific research. These systems have been designed, developed and manufactured within the country.

PARAM Rudra supercomputers are built using indigenously designed and manufactured High-Performance Computing servers, known as "Rudra", along with an indigenously developed system software stack. "Rudra" Server is the first of its kind in India which is at par with globally available other HPC class Servers. These servers are being manufactured in India by local manufacturers, boosting local electronics industries.

In parallel, under the NSM, the "Trinetra" high-speed inter communication network between computer nodes has been developed and tested with speeds of 40 Gbps and 100 Gbps to enhance data transfer and communication between computing nodes, strengthening India's supercomputing capabilities.

Human Resource Development and Capacity Building
NSM has opened up opportunities for researchers from smaller cities by giving them access to world-class computing infrastructure. Over 26,000 people have been trained in High Performance Computing (HPC) and Artificial Intelligence (AI) through programs like faculty development programs, domain workshops, bootcamps, hackathons, and user training sessions. In addition,

1500 students have completed online HPC courses through the NPTEL platform. To provide deeper training, Nodal Centres have been set up at IIT Kharagpur, IIT Madras, IIT Goa, Delhi Technical University (DTU), Walchand College of Engineering, Sangli and IIT Palakkad. These centres offer structured programs, including summer and winter internships.

C-DAC's Advanced Computing Training School (ACTS) also offers a free 6-month PG Diploma course in HPC system administration and application development, specially designed for SC/ST/Women candidates. To further expand HPC and AI education, C-DAC has partnered with All India Council for Technical Education (AICTE). Together, they are conducting training programs for faculty members across AICTE-affiliated colleges, aiming to build strong HPC and AI teaching capabilities across the country. Apart from that, C-DAC has developed PARAM Shavak a compact, energy-efficient desktop supercomputer to provide high-performance computing capabilities to educational and research institutions.

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