Supercomputer Param Siddhi

Why in News

India's **Artificial Intelligence** (AI) supercomputer **Param Siddhi** ranked **63rd among top 500** most powerful **non-distributed computer systems** in the world.

- **Distributed computing** is a field of computer science that studies distributed systems. A distributed system is a system whose **components are located on different networked computers,** which **communicate and coordinate** their actions by passing messages to one another. The components interact with one another in order to achieve a common goal.
- In a **non-distributed** (or co-located) system, **all the parts of the system** are in the **same physical location.** In a distributed system, parts of the system exist in separate locations.

Key Points

- **Param Siddhi** is a High Performance Computing-Artificial Intelligence (HPC-AI) supercomputer developed by **Department of Science and Technology (DST), Ministry of Electronics and Information Technology (MeitY)** under **National Supercomputing Mission (NSM)** at **Centre for Development of Advanced Computing.**
- The supercomputer has **Rpeak** of **5.267 Petaflops and 4.6 Petaflops Rmax.**
    - In high-performance computing, **Rmax and Rpeak** are scores used to rank supercomputers based on their performance using the **LINPACK Benchmark.**
        - The **LINPACK Benchmarks** are a measure of a system's floating point computing power.
    - A system's Rmax score describes its **maximal achieved performance,** the Rpeak score describes its **theoretical peak performance.** Values for both scores are usually represented in teraFLOPS or petaFLOPS.
    - A **petaflop** is the ability of a computer to do **one quadrillion floating point operations per second (FLOPS).** Additionally, a petaflop can be measured as one thousand teraflops.

National Supercomputing Mission

- The Mission envisages empowering our national academic and Research and Development (R&D) institutions spread over the country by installing a **vast supercomputing grid** comprising more than **70 high-performance computing facilities.**
- Launched in 2015, this seven-year mission was allocated Rs 4,500-crore.
- These supercomputers will also be networked on the National Supercomputing grid over the **National Knowledge Network** (NKN).
    - The NKN is another programme of the government which connects academic institutions and R&D labs over a **high speed network.**
    - Academic and R&D institutions as well as key user departments/ministries would participate by using these facilities and develop applications of national relevance.
    - The Mission also includes development of highly professional **High Performance Computing** (HPC) aware human resource for meeting challenges of development of these

applications.

- The Mission is implemented and steered jointly by the **Department of Science and Technology (DST)** and **Department of Electronics and Information Technology (DeitY).**
- The (C-DAC) has recently launched the **second phase** of this project wherein more institutions will be supported by supercomputing facilities.
- **Objective of NSM**
    - To make India one of the world leaders in Supercomputing and to enhance India's capability in solving grand challenge problems of national and global relevance
    - To empower our scientists and researchers with state-of-the-art supercomputing facilities and enable them to carry out cutting-edge research in their respective domains

Source:PIB