



# Master Clock System of Indian Railways

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**Indian Railways** is set to develop a **master clock system** to **synchronise time across its operations**, addressing challenges in safety and accident investigations.

- Currently, timekeeping is manual, leading to discrepancies across zonal railways. This inconsistency complicates investigations into rail accidents, where accurate timelines are essential.
- **Key Features of Master Clock:**
  - These digital clocks will have [GPS](#) synchronisation for precise timekeeping through GPS, uniform design across stations, and suitability for both platforms and office areas.
  - They include **GPS receivers, NTP synchronization, LED illumination, and can send alarms** for monitoring.
    - NTP synchronization involves using the **Network Time Protocol (NTP)** to align clocks across devices over a network with a standard time source, **usually [Coordinated Universal Time \(UTC\)](#)**, ensuring accurate timekeeping.
- **Need for a Master Clock System:**
  - **Safety:** Accurate time records are crucial for analysing accidents and understanding event sequences.
  - **Operational Efficiency:** A unified system will enhance train operations and management.
  - **Technological Advancements:** Modern technology demands reliable timekeeping solutions.
- The system will utilise time data from [Navigation with Indian Constellation \(NAVIC\)](#) or the **National Physical Laboratories (NPL)**.

**Read More:** [Evolution of Timekeeping Devices](#), [Atomic Clock](#).

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