

Design and Implementation of an Intelligent Network Management Platform Based on NetDisco

The Institute of High Energy Physics (IHEP) currently has over 2,000 network devices. Traditional network management methods are time-consuming, labor-intensive, and unable to quickly locate problems in network operations and maintenance. This report introduces an intelligent and visualized network management platform for IHEP based on the open-source network management tool Netdisco. Netdisco uses protocols such as SNMP and LLDP to achieve automatic network device discovery, topology generation, asset statistics, and device inventory. Building upon this, several functional enhancements and extensions have been designed and implemented based on data acquisition, integration, storage, and analysis technologies. These include automated discovery of large-scale subnets and unified visualization of multi-device network topology and link traffic. Furthermore, the platform plans to introduce Large Language Model (LLM) and toolcall technologies, allowing users to query device information, port status, and network topology using natural language, and providing statistical analysis capabilities. In the future, this system will be applied to the daily network operations and maintenance of IHEP, assisting frontline staff in troubleshooting and reporting problems.

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Track Classification: Track 7: Network, Security, Infrastructure & Operations