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THE STUDY OF PNP MANAGEMENT TECHNOLOGY BASED ON SPACEFIBRE TECHNOLOGY

Abstract

With the increased complexity and diversities of on-board networks and space missions, the on-board space network operation must be flexible and adapt easily to the changes of complex network topology, the adding and dropping of a large number of on-board devices. This puts a high demand for plug and play (PnP) technology. In this paper, the PnP management technology based on Space Fibre network is outlined. The PnP technology is studied for the dynamic discovery of space on-board network topology and the dynamic configuration of on-board devices, providing the efficient management services and the fast response in on-board Space Fibre Communication Network. The paper presents the current work of Beihang University on the field of SpaceFibre Network Management and PnP technology. The paper first outlines the SpaceFibre-PnP network management mechanism from three aspects: the network architecture, protocols, and functions. Then the key SpaceFibre network management technologies including network discovery algorithms are discussed. Based on the SpaceFibre network functions and technical requirements, the modular PnP technology is studied. The architecture of a SpaceFibre-PnP network management system is designed, built, and tested. The system test results show the feasibility and effectiveness of the technology presented in the paper.