

Abstract

One of the main goals of distributed management is for the network management systems to scale up efficiently. This thesis tries to build up a distributed architecture for managing large multiple-domain networks using a hierarchical scheme. The proposed network management system architecture integrates conventional network management approach with Web technology. The management functions are distributed onto a set of domain managers and integrated managers. Domain managers are at a lower level getting management information from the managed elements supported by specific network management protocols like the Simple Network Management Protocol (SNMP). A domain manager provides information for a particular management domain. Integrated managers are on top of domain managers. They obtain management services directly provided by domain managers and provide information critical to the whole network system. Each manager uses a Web interface offering a set of management services to management applications and other managers. The HyperText Transfer Protocol (HTTP) is addressed as a communication protocol for the manager-to-manager and manage-to-application communications. The SNMP manager Management Information Base (MIB) is designed for the management services provided by the managers. Critical management entities responsible for some key management services are defined in the MIB. The manager MIB also contains the definitions of history statistics information about the services and the system management services which limit the applications running over a certain domain. Based on the proposed architecture, a campus network system is analyzed as a case study.