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A Framework for SDN Integrated Management based on a CIM Model and a Vertical Management Plane

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Abstract

The Software-Defined Networking (SDN) paradigm establishes a typical three-plane architecture (*i.e.*, Data, Control, and Application planes) that facilitates the deployment of network functions and simplifies traditional network management tasks. However, SDN lacks an integrated or standardized framework for managing its architecture. Some investigations have addressed such shortage by proposing different solutions that tackle specific management requirements for particular SDN technology instances. This isolated approach forces network administrators to use multiple frameworks to achieve a complete SDN management that is complex and time-consuming in heterogeneous environments. In this paper, we introduce an Information Model based on the Common Information Model that establishes a technology-agnostic and consistent characterization of the SDN architecture. Such Information Model represents the core towards building a Management Plane aimed to facilitate the integrated SDN management in heterogeneous environments. To test our Information Model, we developed a prototype and conducted a performance evaluation in an SDN configuration scenario that deploys dif-

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