E-FDIR System for Complex Network Structures

A Framework for Efficient Fault-Detection, Isolation and Recovery (E-FDIR) in Datacenters

The guarantee of high availability of services is the core of datacenter's business model. It requires mechanisms to address challenges ranging from low-level hardware failures to disruption of high-level software communication in the system. In the world of datacenters, hardware failure is a norm rather than the exception, requires exceptional mechanisms to support long-term service availability. Number of tools and techniques have developed to address the challenges of efficient fault-detection, isolation and system recovery. Such techniques involve creating virtual groups of resources, know as zones; continued monitoring; running fault detection analysis and taking system backups. The growing number of resources in datacenters accumulates massive amount of monitoring data per day. Such large datasets are very useful for holistic resource management and future strategies but are inadequate to enable real-time decisions. Thus, it is required to further explore efficient mechanisms for fault-detection, isolation and real-time recovery of services in datacenters. In this project, I plan to explore state-based models for enhanced support of Service-Level-Agreements (SLA) in complex network structures such as datacenters.