

Research article:

Autonomous Monitoring and Optimization of Content Distribution Networks

By Julien Borgel (Thales), Maurice Israel(Thales), Volker Herren (Alcatel-Lucent), Dieter Stoll (Alcatel-Lucent).

In: IEEE/IFIP Network Operations and Management Symposium - NOMS 2008

Abstract:

Nowadays content like broadcast IPTV providers offer hundreds of TV channels, free or pay TV, low resolution or HDTV. The content service providers are facing the challenge of offering a huge number of different contents to their subscribers in order to generate an appealing service.

Moreover not a single but multiple different services are to be managed. The differences in these services is reflected on all networking levels starting from differences like QoS, bandwidth etc. i.e. low-level transmission topics in the distribution network up to operational aspects for billing, trouble shooting etc. on service management level. In order to handle this range of challenges, semantically enriched decision engines (ontologies) are equally needed as intelligent network nodes which autonomously act on service monitors. This is explored using the example of a broadcast IPTV distribution network. A prototype has been developed, which demonstrates intelligent network nodes the task of which is to optimize the channel allocation over time under bandwidth constraints. On the service management side ontologies are prototyped which permit a decision process on behalf of state information of the network and control engines embedded into network nodes. The interaction of all parts is achieved with web services technologies in order to offer a standardized means of communication between service management and transport network nodes (or their respective node management system).