Performance Management in Application-controlled Software Defined Networks

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Motivation
SDN-based Network Management
- New possibilities enabled by SDN
- Reduce OPEX through automation
- Increased flexibility

Application-controlled NMS (ANMS)
- Applications to specify their requirements directly to the NMS

Requirements for ANMS
Application Interface
- Generic and agnostic of topology, size of network
- Predictable performance and resource consumption
  - In both, control plane and data plane

Related Work
Participatory Networking (PANE [1])
- Policy conflict resolution
- Compiles n policies to O(n²) OF rules

Similar Areas
- Autonomic networking
- SDN control plane performance

References

Acknowledgement

Performance Framework
Approach
- Complementary to PANE
- Based on a component-based Network Operating System (NOS), e.g. Corybantic [4]
- Based on OpenFlow

Goal
- Model, measure, and match resource requirements and available resources
- Enable ANMS to deliver predictable performance

First Results
- Development of Software Defined Multicast (SDM) [2,3]
- High-level API
- Resource awareness is important

Next Steps
- Apply a multicast use case on ANMS with SDM as an example component
- Create a network operator API

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