The Network Markup Language (NML) – A Standardized Network Topology Abstraction for Inter-domain and Cross-layer Network Applications

# Introduction

# Requirements

Before proposing terminology definitions for network elements, designing information structures and identifying the relations between them the OGF NML Working Group had a strict expectations from the final results of the work. They derived from the experience with other topology description languages (e.g. ITU-T G.805 [ITU-T.G.805], the perfSONAR schema [pS]) and emerging needs of new advanced network services. The following requirements are met by the NML specification:

* Network infrastructure abstraction – the NML schema must be independent of certain implementations (vendors of network hardware),
* Able to be encoded in various formats – the UML modeling language is used to design network description structures, which next can be transformed into a format relevant (e.g. XML, OWL, etc.) for an implementation,
* Able to extend – applications may have specific, technology-dependent needs thus extensions must be allowed and seamless with the NML base,
* Simple and compact – the NML abstraction should represent core network definitions (e.g. node, port, link) enough to model the basic network infrastructure; complex structures should be provided as extensions,
* Scalable – NML must deal with heterogeneous, dynamically growing networks,
* Multi-layer and multi-domain – NML must fit into the applications running in the multi-domain networks, aware of multi-layer structure.

NML driven by the listed requirements is a perfect choice for advanced application, like network monitoring tools or network provisioning systems.

# Schema Explanation

# Standardization under OGF

# A use case of NML – Supporting Network Provisioning

# Future Work

# References

[ITU-T.G.805] ITU-T Recommendation G.805: Generic functional architecture of transport networks, Tech. rep., International Telecommunication Union, March 2000, URL http://www.itu.int/rec/T-REC-G.805

[pS] perfSONAR web site, http://www.perfsonar.net/

# Vitae

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