# Component-based system for management of multilevel virtualization of networking resources

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# Introduction

#### Context

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- 2.2 QoS-aware networking
- 2.3 Resource virtualization approaches
- 2.4 Multilevel network virtualization
- 2.4.1 Virtual network resources
- 2.4.2 Fine-grained QoS control
- 2.4.3 Virtual appliances
- 2.4.4 "Network in a box" concept
- 2.5 Applications and benefits of virtual infrastructures
- 2.5.1 Testing and simulations
- 2.5.2 Improving server-side infrastructure scalability
- 2.5.3 Infrastructure as a service
- 2.5.4 The role of resource virtualization in the SOA stack
- 2.6 Summary

#### Requirements analysis

- 3.1 Chapter overview
- 3.2 Functional requirements
- 3.2.1 Instantiation
- 3.2.2 Discovery
- 3.2.3 Accounting
- 3.3 Non-functional requirements
- 3.4 Underlying environment characteristics
- 3.5 General approach and problems it imposes
- 3.5.1 Load balancing / Deployment
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- 3.5.4 Constraints
- 3.6 Summary

# Solaris OS as a resource virtualization environment

- 4.1 Chapter overview
- 4.2 General information
- 4.3 Lightweight OS-level virtualization with Solaris Containers
- 4.4 Crossbow network virtualization technology
- 4.5 Resource access control
- 4.6 Summary

# The system architecture

- 5.1 Chapter overview
- 5.2 High-level design
- 5.3 System components and their responsibilities
- 5.3.1 Assigner
- 5.3.2 Supervisor
- 5.3.3 Worker
- 5.4 Crossbow resources instrumentation
- 5.5 Domain model and data flows
- 5.6 Summary

# Implementation

- 6.1 Chapter overview
- 6.2 Implementation environment
- 6.3 Domain model transformation details
- 6.4 Low-level functions access
- 6.5 Building and running the platform
- 6.6 Summary

# Case Study

- 7.1 Chapter overview
- 7.2 Clustered GlassFish
- 7.2.1 Scenario description
- 7.2.2 GlassFish cluster integration
- 7.3 Multimedia server
- 7.3.1 Scenario description
- 7.3.2 Resource access requirements
- 7.3.3 Providing tunable and scalable virtual infrastructure
- 7.4 Summary

# Summary

- 8.1 Chapter overview
- 8.2 Conclusions
- 8.3 Achieved goals
- 8.4 Further work

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