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

System komponentowy wspomagający wielopoziomową wirtualizację zasobów sieciowych

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28.09.2011

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- General information
- Motivation
- System overview
- Project schedule
- The CM4J system (Core, Gui)
- Tests results
- Summary

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General information

- Meeting JIMS framework and Solaris OS during *network services implementation tools* course at the university
- Solaris Crossbow functionality
- Idea of creating new JIMS module that utilizes the Crossbow

- Supervisor: **prof. dr hab. inż. Krzysztof Zieliński**
- Technical supervisor: **mgr Marcin Jarząb**

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- Lack of applications offering creation of virtualized networks
- Verifying the Crossbow as a tool supporting network virtualization
- Desire to learn the Crossbow library and Solaris OS
- More insight into the QoS mechanisms

There exists a component-based architecture which enables construction of a system that would facilitate working with fully isolated virtualized network resources grouped in projects

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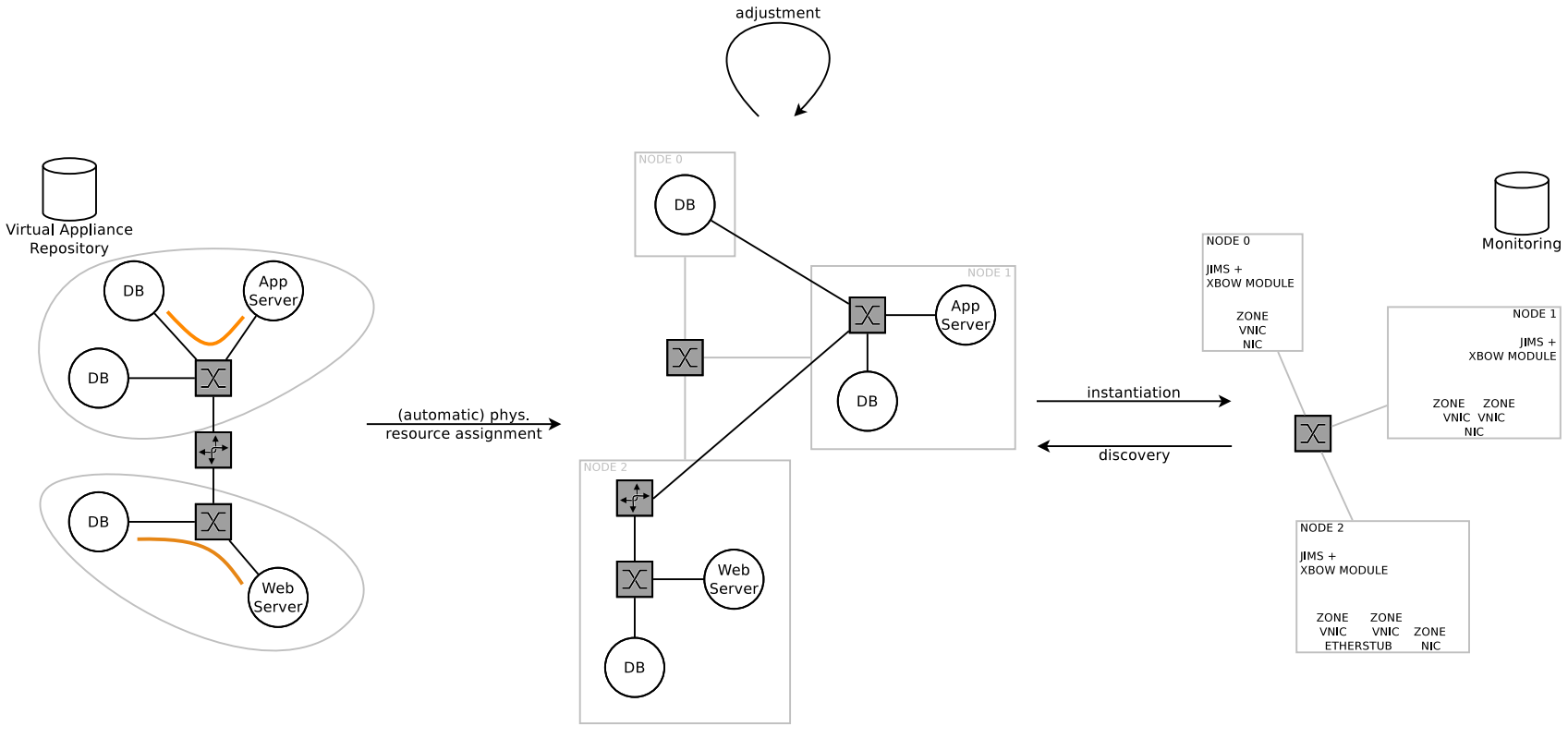
System overview



network topology, addressing, QoS definition

appliances assigned to physical nodes

instantiated infrastucture: flows, vnics, etherstubs

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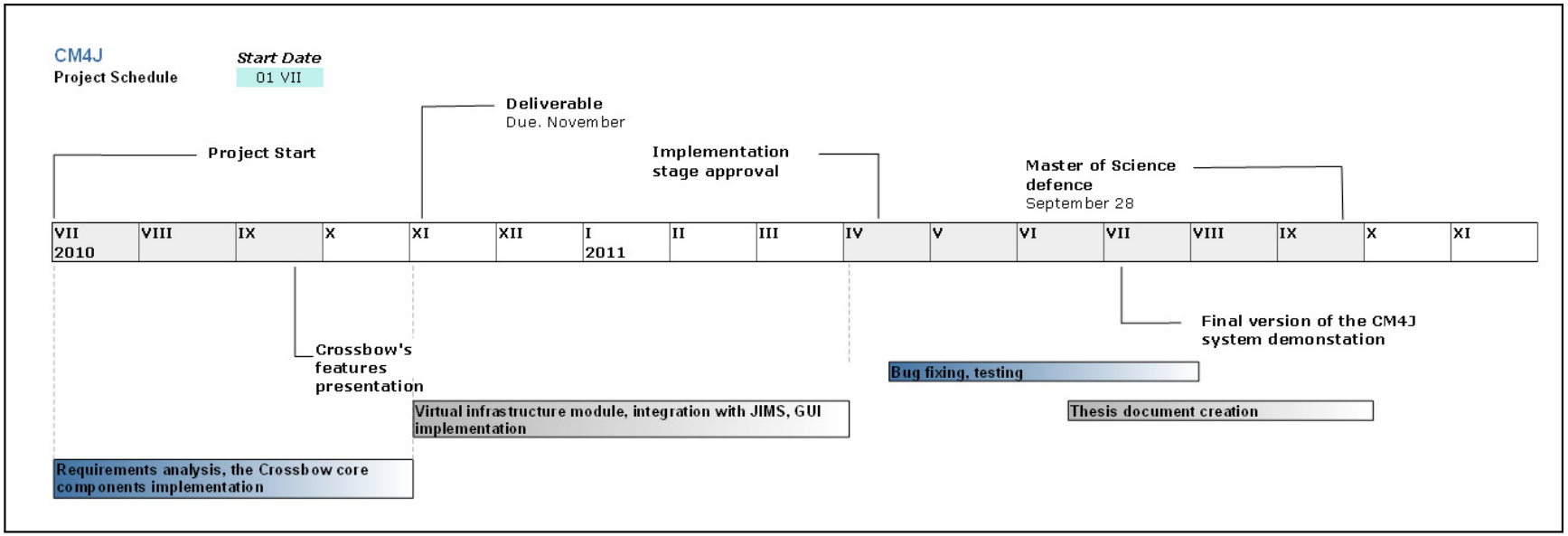
Project schedule



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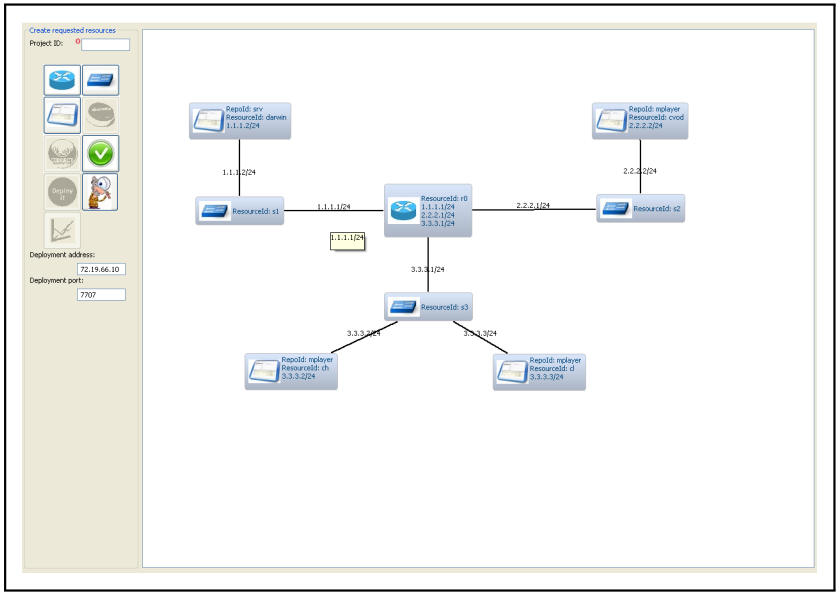
The CM4J system - Core

- Component based system architecture
- JAVA, JMX framework
- Integrated with JIMS system
- Managing from GUI, JConsole or self-developed code

The CM4J system - GUI

- Designing desired network structure with requested virtual appliances,
- Discovering and modifying already created projects,
- Monitoring
- Automatic logging using Secure Shell (SSH)



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Tests results

System tested with respect for:

- Facilitating working with virtualized network resources
- Verifing applied QoS constraints
- Scalability (working on many physical machines)

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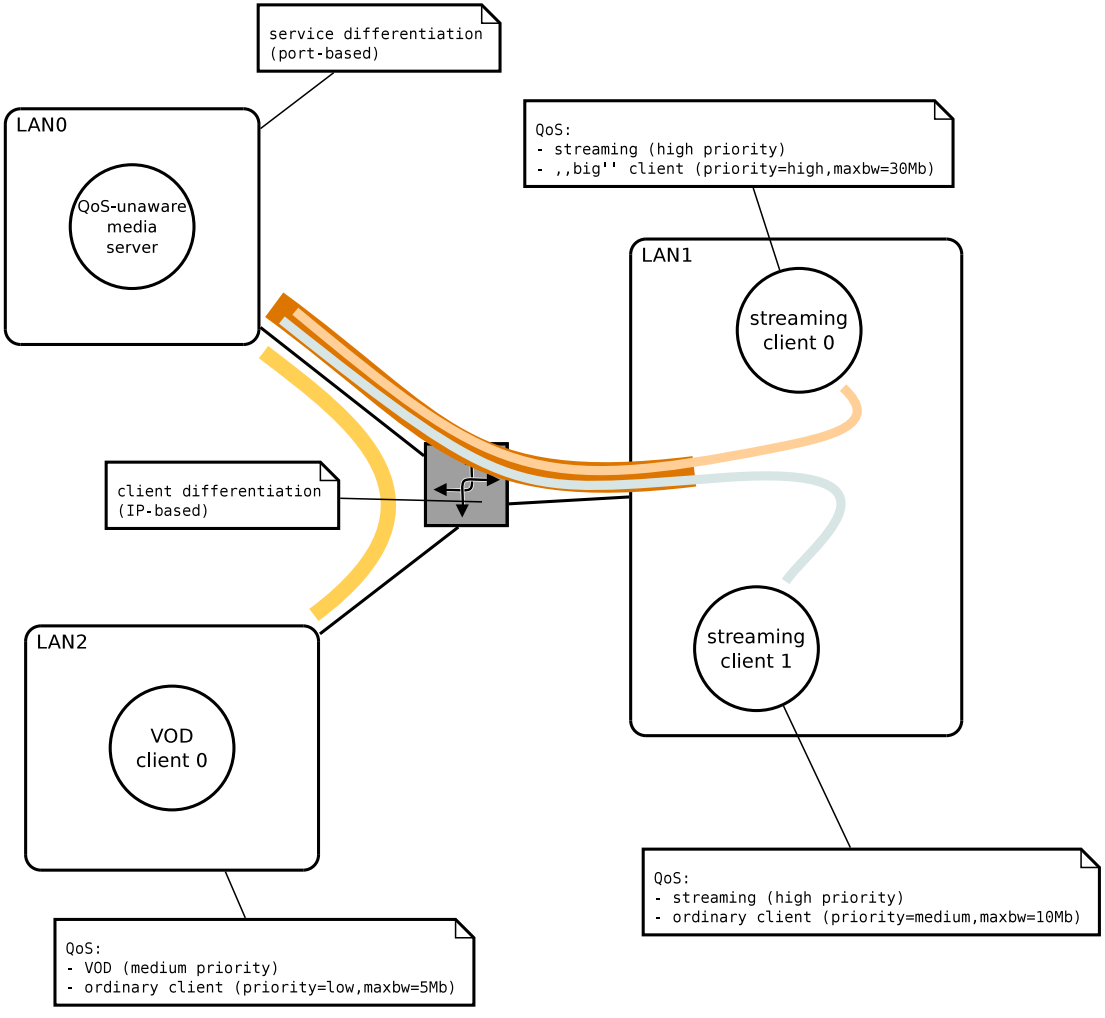

Tests results

Tests evaluation:

- Topology design created with GUI
- Online modifications performed
- Monitoring

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Summary

- Prepared complete software system
- Met every production process step: requirements analysis, feasibility analysis, architecture design, implementation, test
- Master of science thesis creation
- Thesis statement proved by performed tests
- Expectations for future system's improvements and utilization together with JIMS