



Contentbasiertes, interaktives QoS Management in Netzwerken

Lehrstuhl für Netzwerktechnologien und multimediale Teledienste

Quality of Service Management auch auf Application Layer wie ...


Eine Idee aus dem letzten Jahrhundert von Dr.-Ing. Gerrit Kalkbrenner und ein bisschen auch von Prof. Dr. Klaus Rebenburg

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1. Introduction, Distributed Hypermedia Systems


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Access and Presentation System



Broadband Network
e.g. ATM

Document and Multimedia Store




Problems:

- different qualities of media objects (resolution)
- different network bandwidth
- different presentation facilities (hardware, software)

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2. The Items of QoS

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Customer

Agreement about Service and financial negotiation

Provider

Quality of Service (QoS)

Service

Network Performance (NP)
Provider Performance (PP)

- "QOS is a **set of user-perceived attributes** of that which makes a service what it is.
- It is expressed in user understandable language and manifests itself as a number of parameters, all of which have either subjective or objective values".

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3. QoS, State of the Art



We take a look at the communication models
OSI and CCITT

In the conclusion we have to state that:

- there are **no terms of QoS provided at the OSI application layer**
- QoS parameters are just handed down to the transport layer
- technical parameters e.g. peak rate, middle rate, peak duration

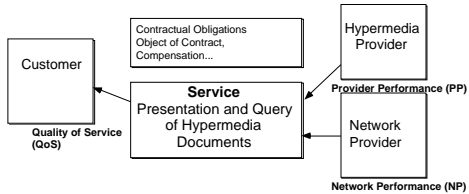
3. QoS, Suggestions



We propose a new terminology that allows:

- user can express his QoS requirements in common terms
- can be mapped to terms of network parameters
- the underlying layers may accept or reject the requirements

4. A QoS Model for Distributed Hypermedia Systems



4.1. Terms of User Requirements



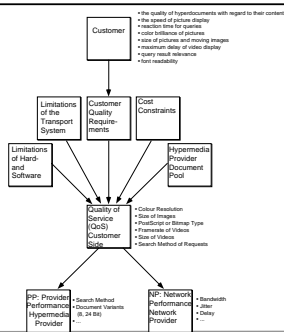
- the quality of hyper documents with regard to their content,
- the speed of picture display
- reaction time for queries
- color brilliance of pictures
- size of pictures and moving images
- maximum delay of video display
- query result relevance
- font readability

4.2. QoS Constraints



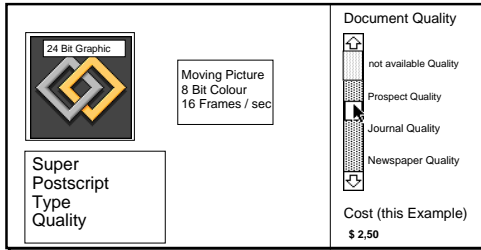
- customer quality requirements
- limitations of the transport system
- limitations of hard- and software
- cost constraints
- the assortment of hyper documents offered by the hypermedia provider

4.3. QoS Mapping



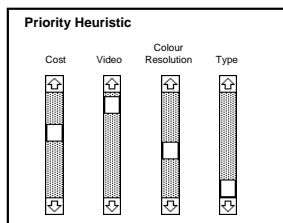
4.4. Interactive Query of Customer Quality Requirements

- (Quality Query by Example)



4.5. Heuristics for particular Qualities

- "Best-Result" Heuristic
- "Best-Fit" Heuristic



4.6. Exception Handling

- the negotiated QoS profile can not longer be guaranteed
- the server can indicate that a medium isn't available any more
- the transport system can indicate the reduction of available network performance

-> must be handled softly according to the user
-> grateful degradation
-> renegotiation

5. Summary



- the application and presentation layer of OSI gives no sophisticated model for quality of service
- it is possible to see a distributed hypermedia system as a service
- it is possible to express the quality criteria in user terms using an example
- the "Quality Query by Example" dialog
- the user can configure a quality profile
- it takes into consideration the potentials and limitations of the software, hardware, transport system and media server

Also die Idee



So etwas wie gefühlte Multimedia-Qualität – was immer sich über Netze transportieren lässt

- Qualität on-demand
- Quality by Example
- Quality look and feel
- Affordable Quality / by financial feedback
- Quality by Content
- Quality by emotional feedback

Es gibt noch viel zu tun! Packt es an!
