



Attività in corso

Streaming multimediale

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Scenario applicativo

- *Smarter spaces for smart students ...*

an experimental investigation of the impact of wireless (802.11x), portable, and multimedia technologies in the learning process of students on Campus

... accessing E-learning services and multimedia streaming servers



Needed services and protocols

Users must be able to:

- Authenticate just once
 - have access to the whole set of VO resources
 - delegate program to run on his/her behalf
 - integrate with various local security solutions
- Search/Browse the available resources
- Negotiate access to shared resources

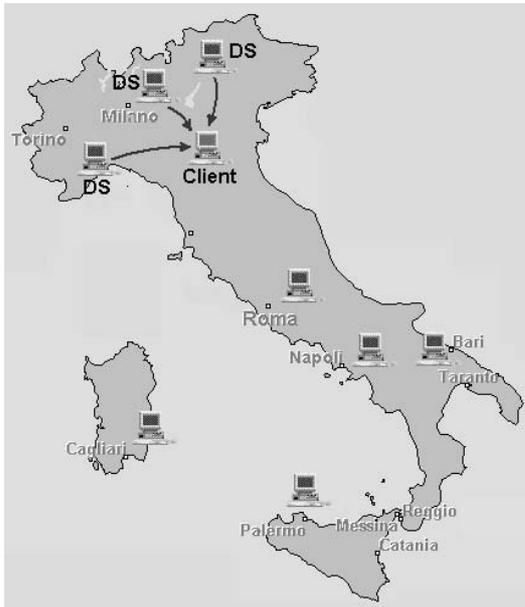
- Request the allocation of resources and schedule of a job
- Discover the existence and/or properties of resources
- Manage of data replica to maximize data access performance (response time, reliability, cost)
- Advance reservation of network bandwidth



Numerosi problemi e tecniche allo studio

- *Continuous server-side selection for multimedia streaming*
- *Multimedia Caching Proxies*
- *CC/PP-based multimedia content adaptation*
- *DiffServ QoS / Bandwidth Broker*
- *P2P content distribution and streaming*

Server multimediali replicati

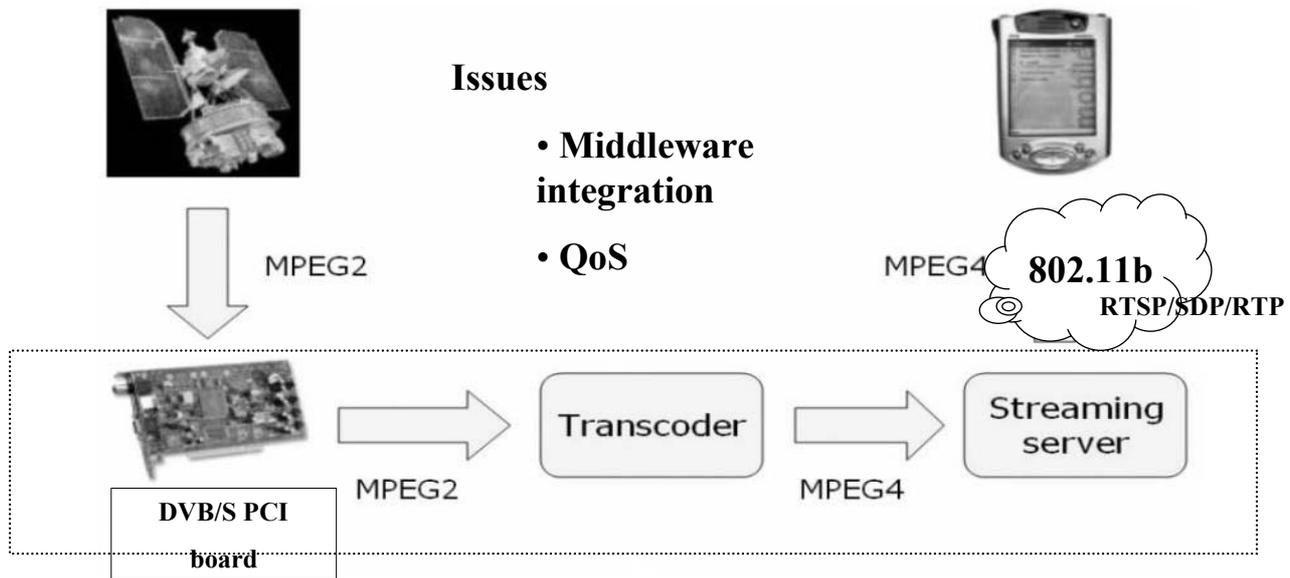


- Estensione delle funzionalità del server DAVID da LAN a WAN
- Miglioramento della QoS tramite distribuzione dei Disk Server sul territorio
- Durante la riproduzione del filmato può variare il Disk Server che fornisce lo *stream*
- Problema: determinare per ogni client, in ogni istante, il Disk Server più adatto:
Continuous server-side selection

Distribuzione geografica

- La replicazione geografica dei filmati e il monitoring delle condizioni di rete permettono di individuare il disk server ottimale per ciascun client
- I parametri attualmente considerati dal sistema sono:
 - **round trip time** disco-client per ogni disco e per ogni client del sistema
 - **numero di richieste attualmente servite** da ogni disco

Live streaming from satellite to wireless PDAs



Capabilities-/Profiles-based content adaptation

One of the key issues is adapting contents to user capabilities and preferences

Emerging standards for client resource description:

CC/PP (W3C), UAProf

We are experimenting with an extension for the popular *Apache* web server able to adapt images and video streams according to the CC/PP information sent by the user



Design of a video streaming service

Key functions

- User management
- Content management
- Streaming server (e.g. Darwin Streaming Server)

Goals

- Interoperability with heterogeneous user terminals
- Provision for QoS (server and network)

⇒ Integration of open source components into a Grid service