XMovie: Application Services for Distributed Multimedia Systems

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Overview

1. State of the Art

2. Application Services

3. Entering the Web

4. Performance Measurements

5. Experience and Outlook

1 State of the Art

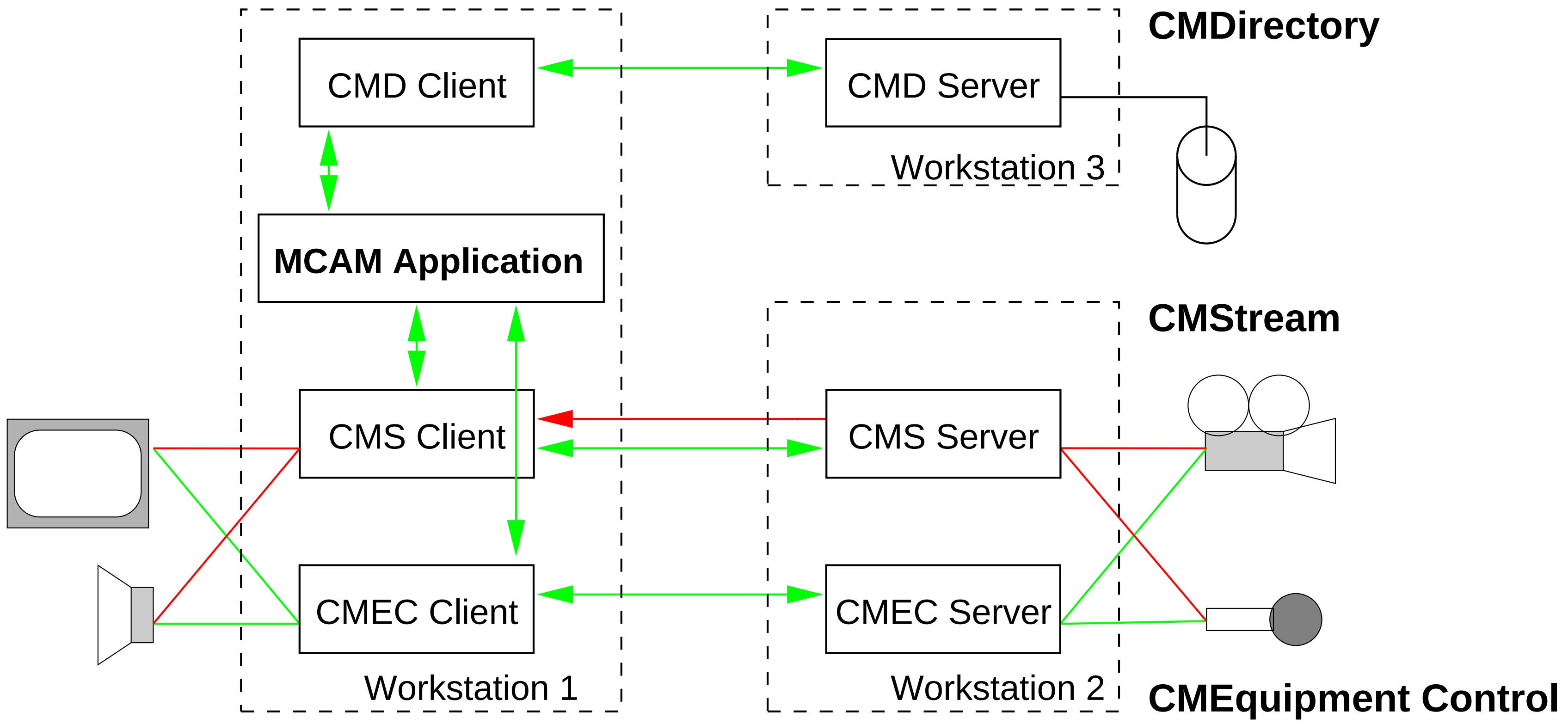
- Many compression techniques for Audio and Video
- Transmission and reservation protocols are under development
- Only presentation of single images
- Insufficient real-time support
- Stand-alone support services

2 Application Layer Services

MCAM (Movie Control, Access and Management) provides support services for distributed multimedia applications:

- CMDirectory
- CMEquipment Control
- CMStream

Example



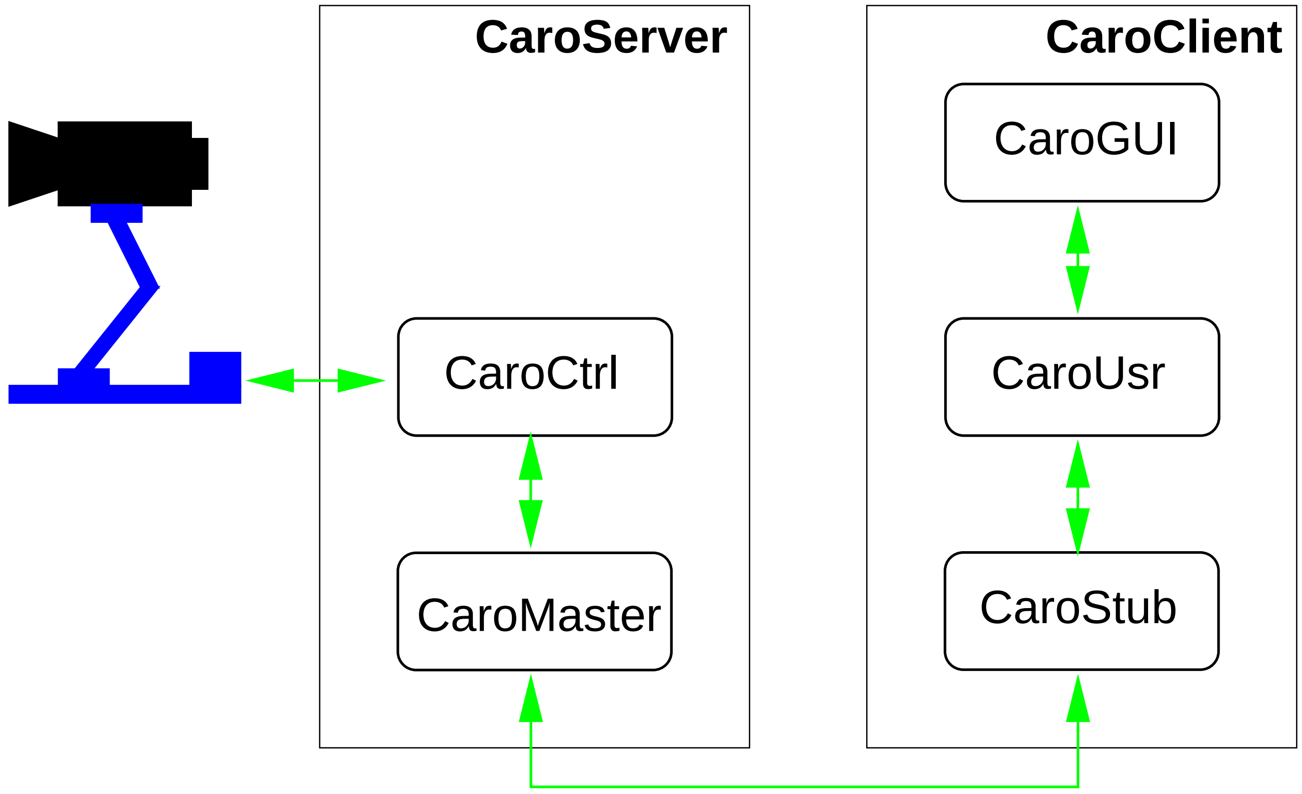
CMD Client
CMD Server
Workstation 3
CMDirectory
MCAM Application
CMStream
CMS Client
CMS Server
CMEC Client
CMEC Server
Workstation 1
Workstation 2
CMEquipment Control

CMEquipment Control

Control of CM equipment attached to computer systems:

- Camera Robot (CaRo)
- VCR and laser disk player
- Audio devices

Example: Camera Robot

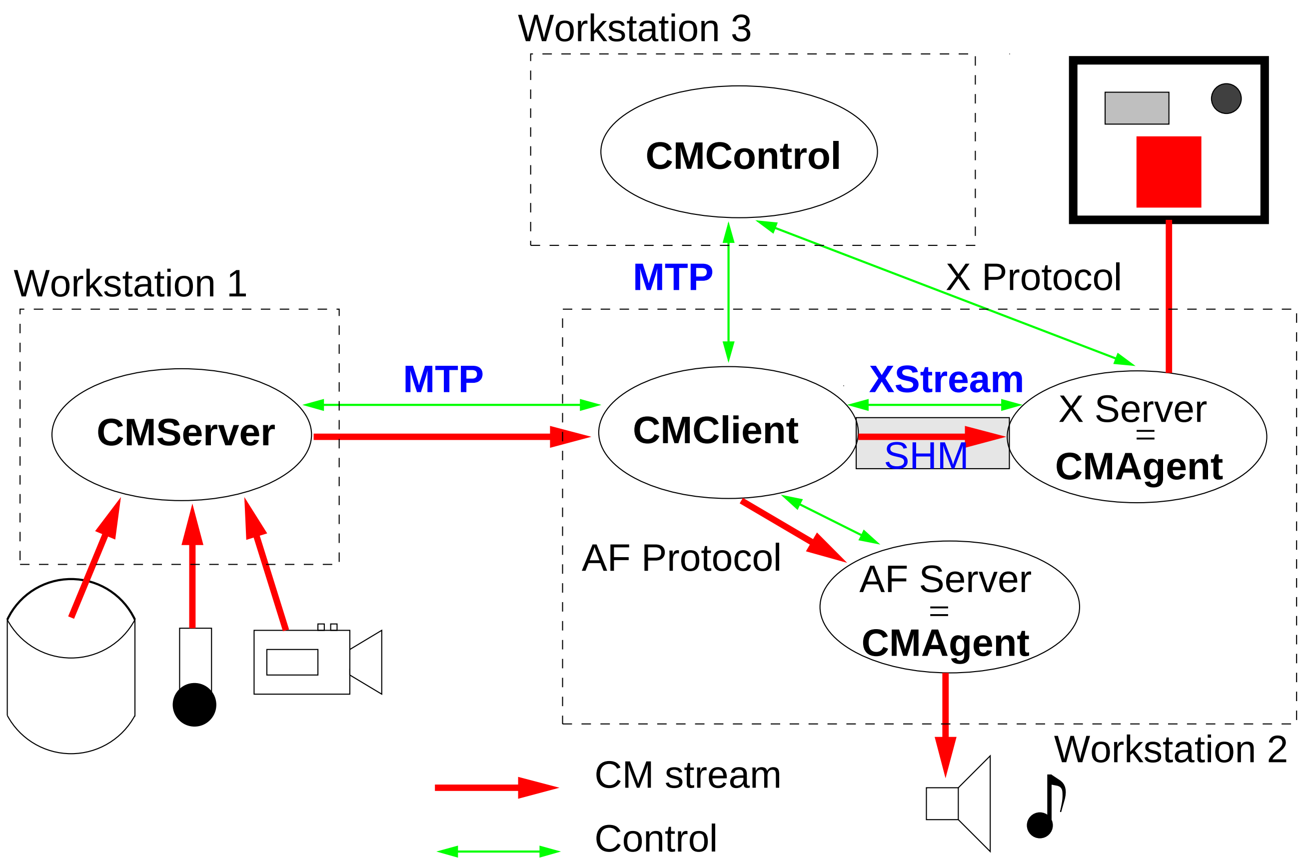


CMStream

Storage, transmission and presentation of CM streams

- Multi–standard system
- Integrated movie transmission protocol
- Adaptable forward error correction
- New X extension for the display of digital video

Architecture of CMStream



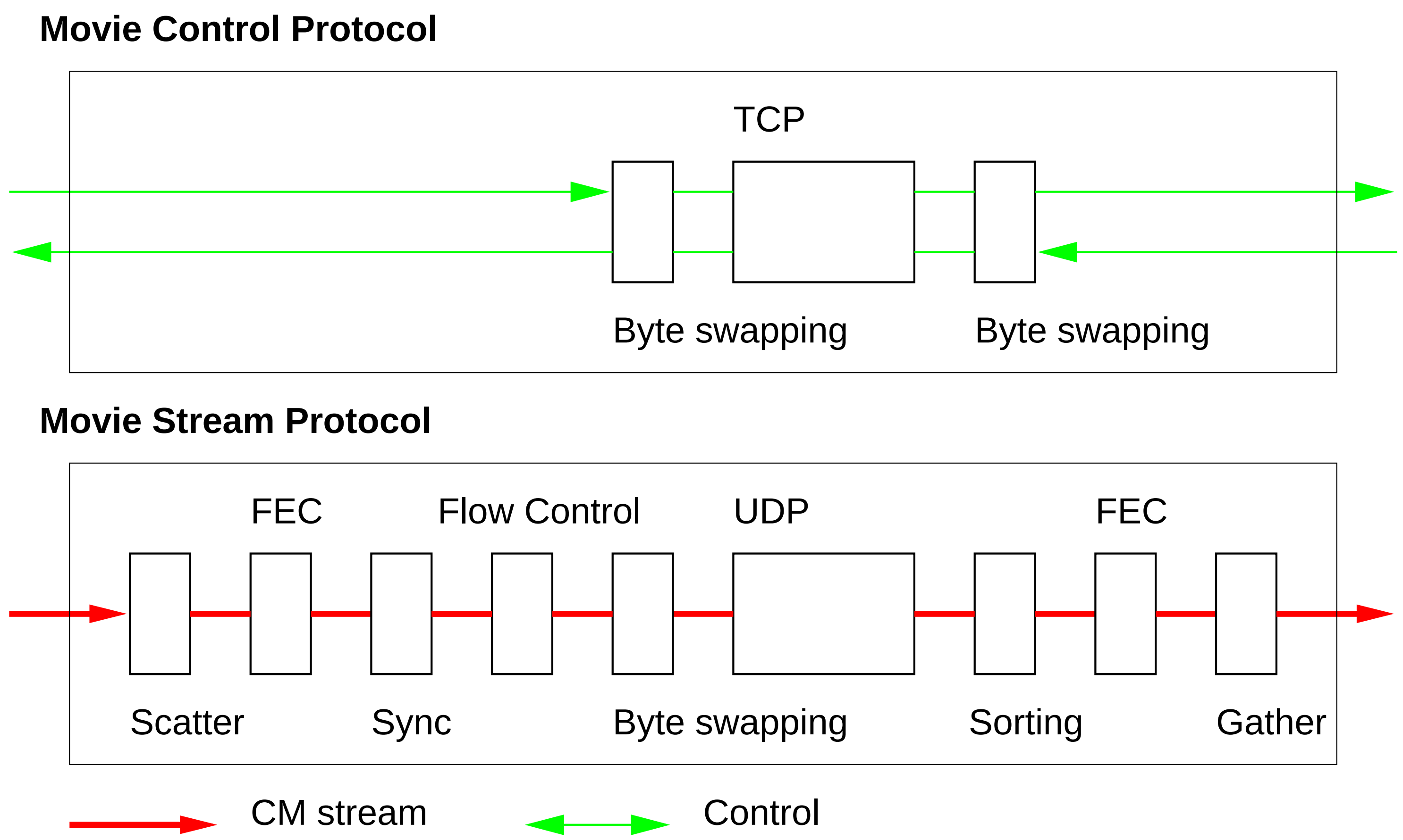
Movie Transmission Protocol

Transmission and control protocol for CM streams with

- Rate–based flow control
- Forward error correction

Built upon the Internet protocols TCP and UDP, but other mappings are possible

Functional Units of MTP



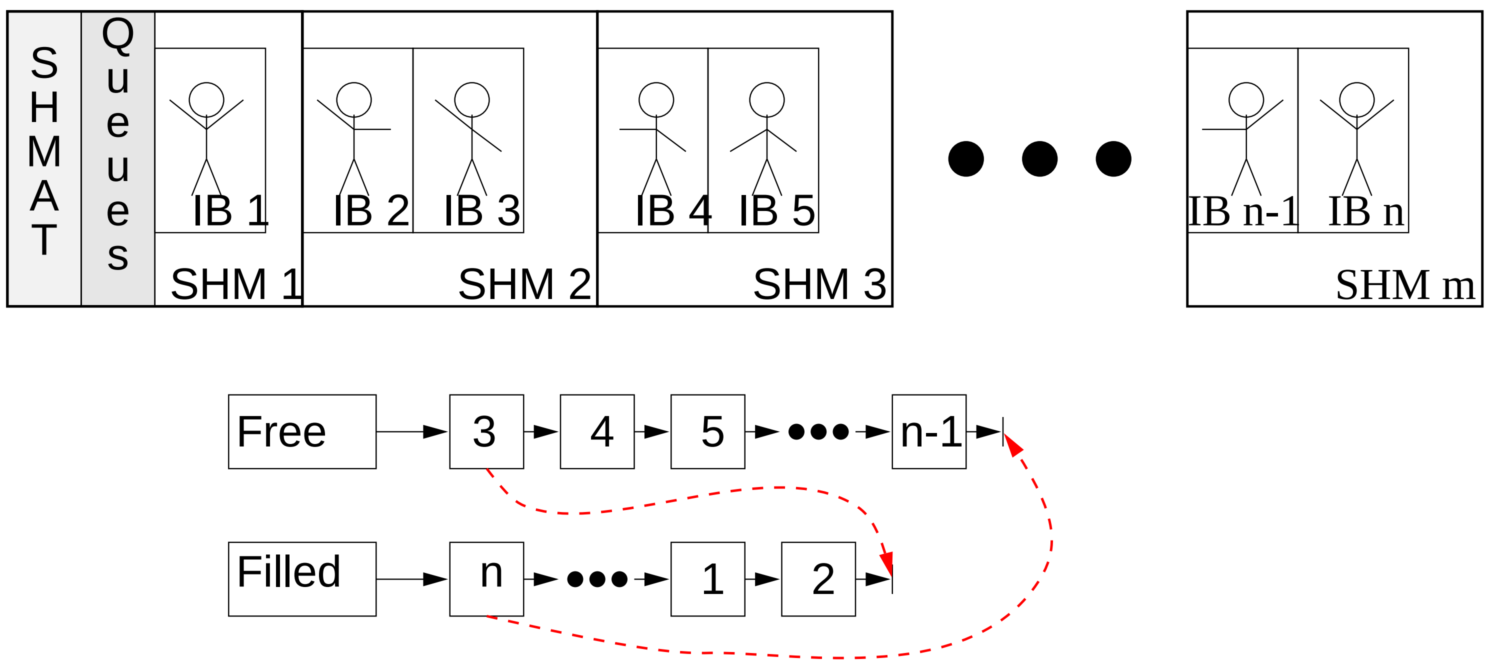
AdFEC

Adaptable Forward Error Correction

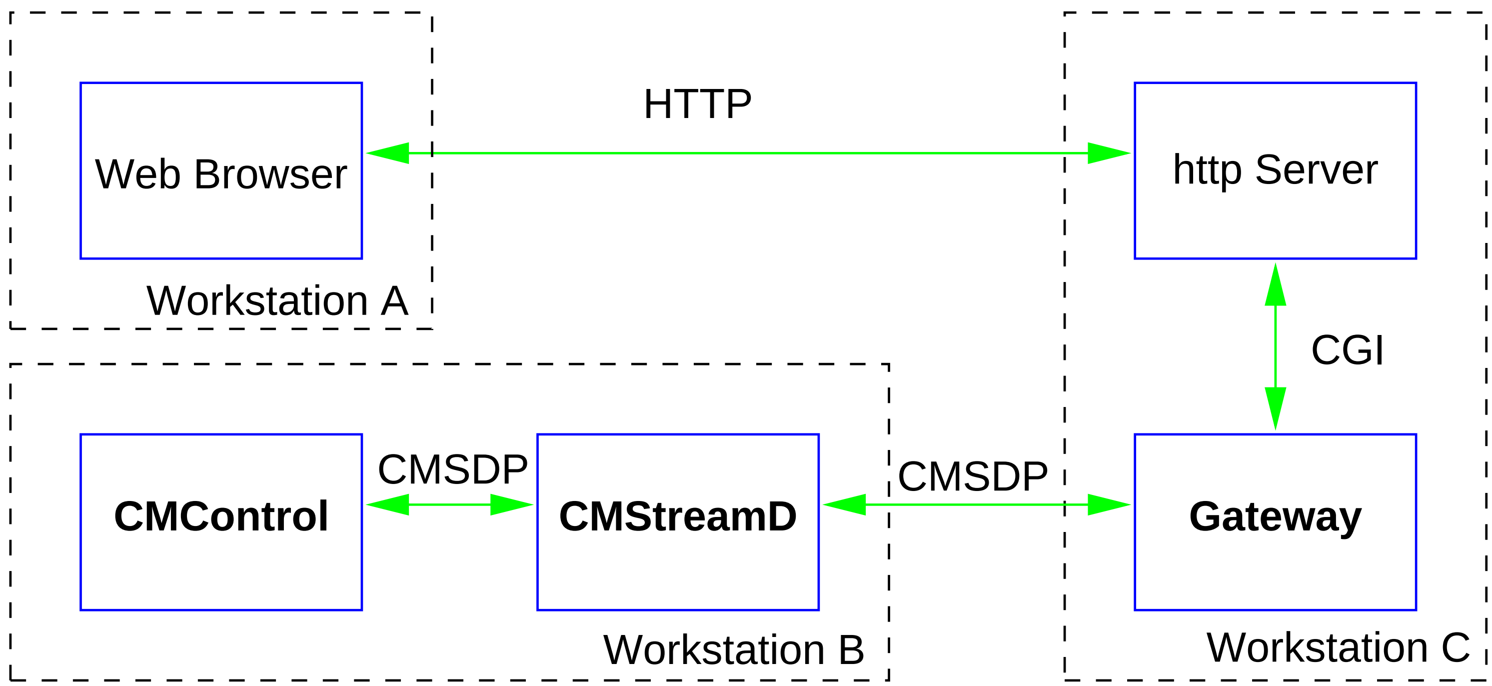
- Based on binary polynomial algebra
- Different priorities to different parts of a data stream
- Semantic knowledge can be used
- Very high efficiency

XStream

Provides native movie window



3 Entering the Web



4 Performance Measurements

+ Reading from disk fast enough for test streams

+ MTP and AdFEC implemented efficiently

+ XStream is faster than conventional X calls

– Decoding in software is still a bottleneck

+/– Audio and Video streams

5 Experience

+ CMStream with innovative features

+ C++ and object–oriented technology

+ Source code distribution successful

– Lack of specification and documentation in English

– Monolithic CMClient and CMServer

Outlook

- MPEG system stream support
- Multicast extension
- More support services
- Real-time support and QoS
- X Multimedia Services and Infrastructure