Design of

A Multicast-based Real-time Protocol Suite

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Outline

Background

Design consideration

Extensions to previous Tenet scheme

Modifications for multiparty applications

Flexibility

Summary

Motivation

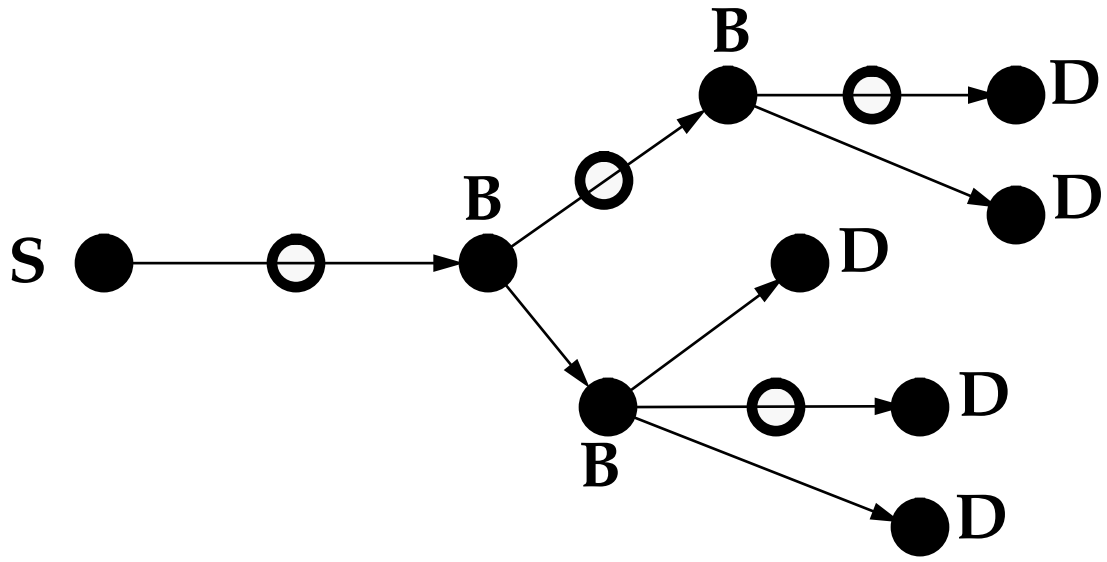
Scheme 1

- Unicast realtime communication
- Restricted client-service interactions

Additional support for

- Multi-party communication
- Flexibility

Multicasting



Branch points

Replicate packets on outgoing links

Design considerations (1 of 2)

Complete system design

Distributed

Efficient

Scalable

Robust

Design considerations (2 of 2)

Flexible and modifiable

Implementable and usable

Simple

Multi-party communication

Capture the conference scenario

- Roles and participants
- Organizers and managers

Extend Scheme 1

- Multiple senders and receivers
- Dynamic membership

Basic abstraction

Multicast channel

Simplex, realtime, multicast channels

Single sender multiple destinations

Channel (Source-Id, Traffic Spec, Target-Id)

Target sets

Abstraction for scalable conferences

Realtime equivalent of IP HostGroup

Decouples senders from receivers

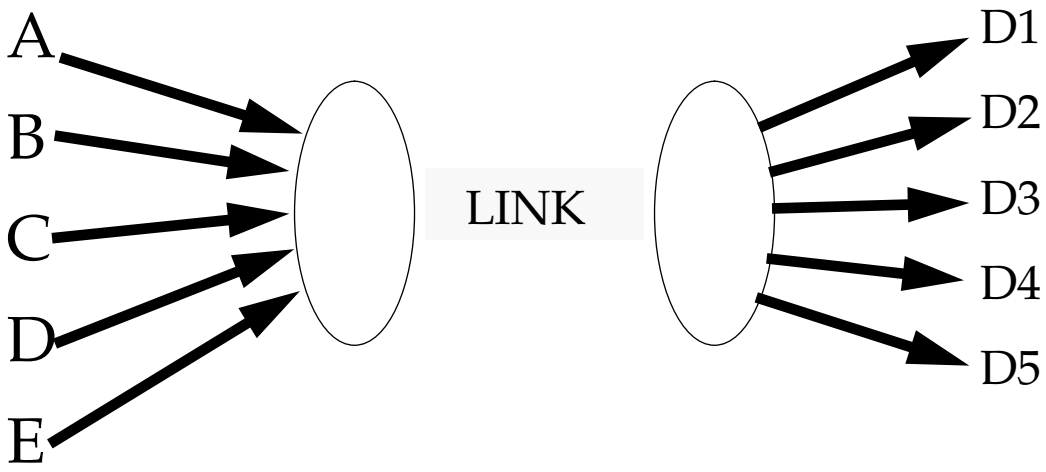
New sender

- Establish (Channel-Id)

New receiver

- Join (Target-Id, Dest-Id, QoS)

Resource sharing



Well-behaved panel discussion

Channel A: 1 audio; same for Channel B,C,D &E

Channels combined: Require 2 audio

Advance reservations

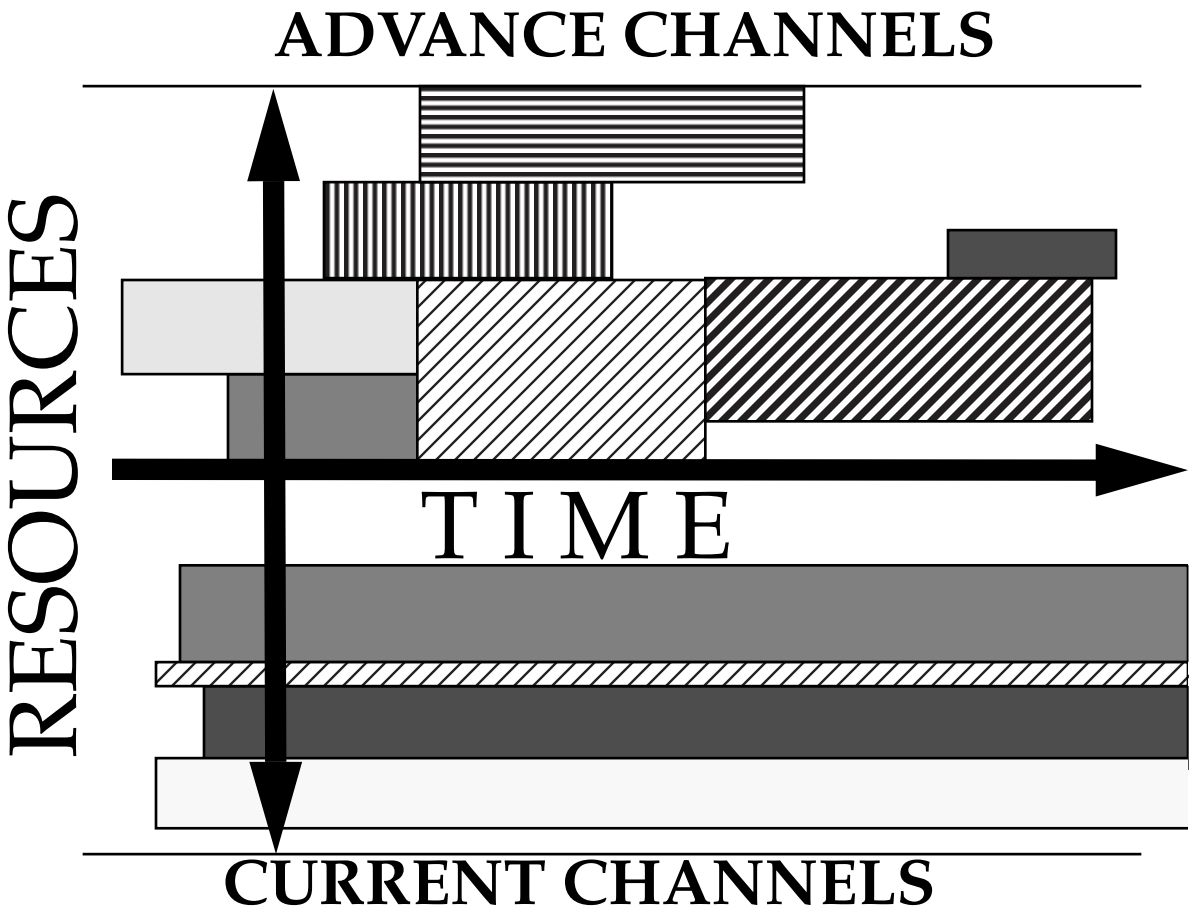
Multi-party communication sessions

- well-planned (not spontaneous)
- a priori assurances important (availability of resources)

Advance reserved channels

- Time duration limited
- Based on resource partitioning

Advance reservations



Resource partitioning

Multiple virtual subnetworks

Resources

- Buffers
- Server capacity

Partitions: modify admission control tests

Packet scheduler not affected

Flexibility

Client-service interface

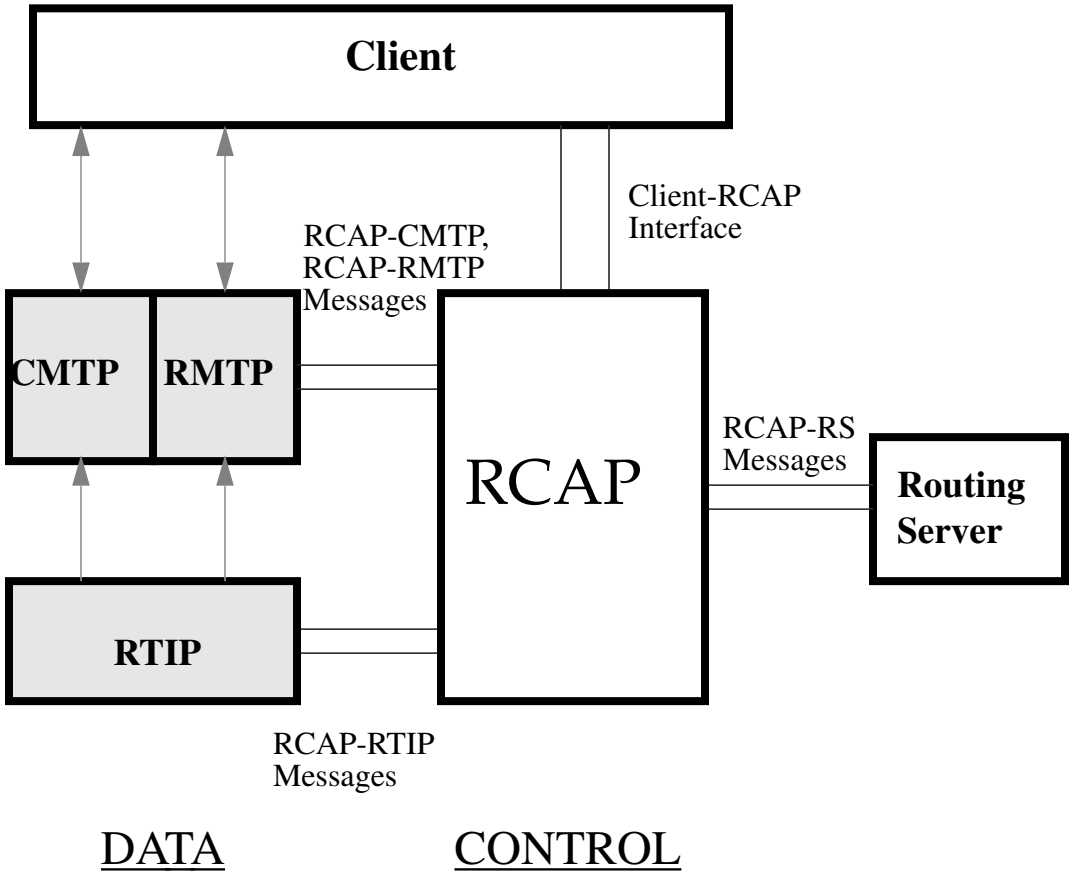
- QoS ranges

Multiple traffic specification models

Multiple scheduling disciplines

Dynamic traffic management (DTM)

Suite 2 - Block diagram



Summary

Scheme 2 builds up on Scheme 1

Adds flexibility and support for multiparty applications

Resource sharing, advance reservations and resource partitioning

Dynamic traffic management and fault recovery

Design => Simple, scalable implementation