

# The Location of Transcoders in Multiservice Networks

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**Abstract** - In this work researches the location of transcoders in multiservice networks. The analysis of structures of location transcoders allowed to select and compare the main features. The analysis showed that the bottleneck of centralized schemes is the server, and distributed - the performance of terminals.

**Keyword** – Location, Transcoder, Multiservice networks.

## I. INTRODUCTION

Modern stage of development of the computer systems require from a network equipment clear co-operation and possibility to guarantee real-time data communication from one segment of multiservice network in other. Transcoders allow to guarantee delivery of multimedia data between heterogeneous remote sources. A question of the optimum location of transcoders is an intricate enough and important problem.

## II. THE STRUCTURES OF LOCATION OF TRANSCODERS IN MULTISERVICE NETWORKS

The widespread structure of location of transcoders is the centralized server with a star topology. In the centralized structure, a server with the integrated transcoder receive media streams from all participants, transcoded them if needed and redistributes the appropriate media stream back to the participants.

In multicast structure the transmission of multimedia streams is carried out simultaneously the group of terminals. A multicast address is allocated for each media stream, and every participant sends to that address. Route of media streams in this scheme is determined by multicast routing protocols.

In endpoint mixing structure the transcoding and mixing of media stream carries one end terminal. This structure location of transcoder is effective for a small number of participants.

Unicast receive and multicast send. This structure combines the advantages of multicast and centralized structures. Participants send their media stream using unicast to the server with integrated transcoder. The server handles all media streams and sends them to multicast-group by multicast routing protocols.

Hierarchical structure is used in multichannel sessions in which many active participants. Hierarchical architecture provides a grouping of terminals in the hierarchy, the root of this hierarchy is the terminals that generate media packages. The generated media streams sent to the server to the next hierarchical level, where the transcoding and transfer them to the highest hierarchical level.

Besides these, one can imagine a replication structure, where the server sends a copy of each incoming media stream to all the participants using unicast.

The analysis of structures of location transcoders is conducted allows to select and compare them basic descriptions (table. 1). It is included: topology, architecture, amount of processes on a

TABLE 1

DESCRIPTIONS STRUCTURES OF LOCATION OF TRANSCODERS

Structure	Topology	Amount of processes		Scalable	GT	Throughput		AC	GA	RMS
		server	terminal			server	terminal			
Centralized	star	M+N	1	middle	yes	M+N	no	N	no	no
Unicast receive and multicast send	Star, Multicast-tree	M+N	1	large	no	M*	yes	N	yes	yes
Hierarchical	Hierarchical, multicast-tree	variable	1	large	no	variable	yes	variable	yes	no
Full mesh	Full mesh	-	M	middle	yes	-	no	$N(N-1)/2$	no	no
Multicast	multicast-tree	-	M	large	no	-	yes	N-1	yes	no
endpoint mixing	specialized	-	variable	middle	partly	-	no	N-1	no	no
replication	multicast-tree	Me	variable	large	no	M	no	N	no	no

Notes. 1: M - amount of active users, N - general amount of users, \* - for a topology multicast-tree

In a full mesh structure transcoders integrated to terminals. Each active terminals sends a copy of its media stream to all participants via unicast address. End terminals transcoding the incoming media streams; since most of the time, only one speaker will be active.

server, amount of processes on a terminal, throughput of server and terminals, ability to scalable, support of heterogeneous terminals (GT), returning of own media stream (RMS), amount of connections (AC), possibility of the group addressing (GA).

## III. CONCLUSION

In work placement the scheme of location transcoders in multiservice networks. The analysis showed that the bottleneck of centralized schemes is the server, and distributed - the performance of terminals. The results can be used in choosing the optimal structure of location transcoders for specific implementations multichannel media communications.

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