SimpleMessenger with Apache Thrift

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Overview

Data Structures in Thrift

- **UserDefinition**: string uniqueID, string ip_addr, i32 port
- **GroupDefinition**: string groupID, list<string> members
- **Message**: i64 timestamp, string msgString, string toID, string fromID, bool multicast
- **FileDefinition**: binary data, string fileID, i32 size
- **FileChunk**: binary data, i32 size, i32 offset

Services in Thrift

- **ServerService**: RPC methods: *join*, *connectTo*, *sendMessage*, *joinGroup*, *leaveGroup*
- **FileTransferService**: RPC methods: *startUpload*, *uploadChunk*, *endUpload*, *startDownload*, *downloadChunk*
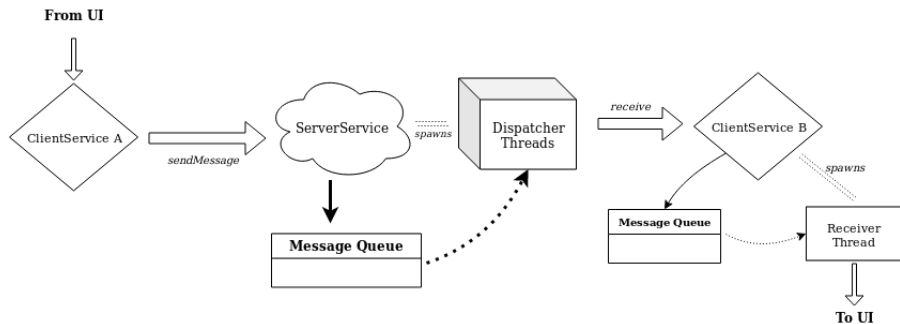- **ClientService**: RPC methods: *receive*

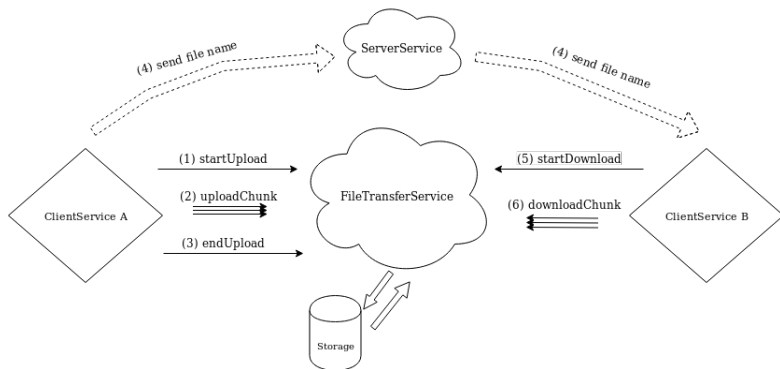Figure: Visual description of messaging workflow

Figure: Visual description of file transfer workflow
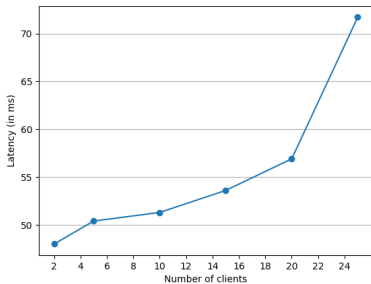
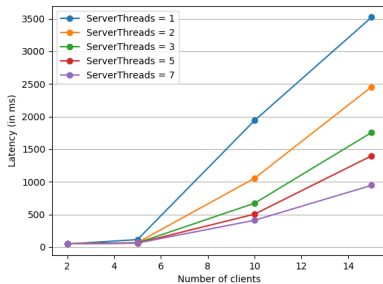# Latency Observations

Figure: P2P Latency

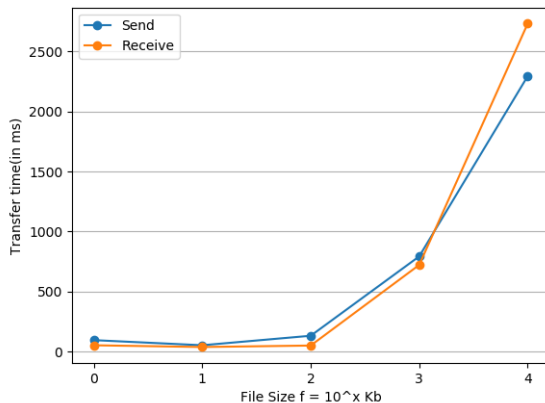Figure: Multicast Latency

File Transfer Time Observations

Figure: File transfer time for different file sizes