H.323 Protocol Specification

Senior Year BE Project Kick-Off Presentation

(On the Design of a Call Connection Interface for VOIP Signaling between Two H.323 Terminals)

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1. H.323 Components

Terminals

Gateways

Gatekeepers

Multi-point Control Units (MCUs)

1.1. H.323 Terminals

Runs an H.323 Stack and multi-media applications.

Audio Communications a must (hence a key role in IP telephony), Video/Data Communications is optional.

May be used in multi-point conferences.

Interworking with H.310 terminals on B-ISDN, H.320 terminals on ISDN, H.321 terminals on B-ISDN, H.322 terminals on QoS guaranteed LANs & H.324 terminals on SCN and Wireless Networks

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Networks

1.3. H.323 Gatekeepers

Brain of the H.323 Network.

Provide services like addressing, authorization and authentication of terminals and gateways.

Bandwidth management, accounting, billing and charging.

May also provide call routing services.

! *A gatekeeper is not ALWAYS required in an H.323 Network.*

1.4. H.323 Multi-point Control Units

Support for conference of three or more H.323 Terminals.

Manages conference resources, negotiates between terminals for audio/video codec selection and *may* handle media streams.

3. Protocols Specified by H.323

Audio Codecs.

Video Codecs

H.225 Registration Admission and Status (RAS)

H.225 Call Signaling

H.245 Control Signaling

Real Time Transport Protocol (RTP)

Real Time Transport Control Protocol (RTCP)

3.2. H.225 Registration Admission and Status

Protocol between endpoints (terminal & gateways) and gatekeeper.

Performs registration, admission control, bandwidth changes, status, and disengage procedures between endpoints and gatekeepers.

A signaling RAS channel is opened between an endpoint and a gatekeeper prior to the establishment of any other channels

3.3. H.225 Call Signaling

Used to establish a connection between two H.323 endpoints.

Achieved by exchanging H.225 protocol messages on the call signaling channel.

The call signaling channel is opened between two H.323 endpoints or between an endpoint and a gatekeeper.

3.4. H.245 Control Signaling

Used to exchange end-to-end control messages governing the operation of the H.323 endpoint.

Capabilities Exchange

Opening and Closing of logical channels used to carry media streams.

Flow control messages

General Commands and Indication.

3.5. Real Time Transport Protocol

End-to-end delivery services of real time audio and video.

RTP is typically used to transfer data via UDP; RTP together with UDP provides transport protocol functionality.

RTP provides Payload type identification

RTP provides Sequence Numbering

RTP provides Timestamping

RTP provides Delivery Monitoring

UDP provides multiplexing and checksum services.

!   *RTP can be used with other transport protocols as well.*

3.6. Real Time Transport Control Protocol

Provides feedback on the quality of RTP data distribution.

Carries a transport-level identifier for an RTP source, called a canonical name, which is used by receivers to synchronize audio and video.

4. Terminal Characteristics

H.245 for exchanging terminal capabilities and creation of media channels

H.225 for call signaling and call setup.

RAS for registration and other admission control with a gatekeeper

RTP/RTCP for sequencing audio and video packets.

G.711 audio codec

! *Optional components include video codecs, T.120 data-conferencing protocols and MCU capabilities.*

5. Gatekeeper Characteristics

Mandatory

Address Translation

Admission Control

Bandwidth Control

Zone Management

Optional

Call Control Signaling

Call Authorization

Call Management