

Khelifi, Hechmi; Grégoire, Jean-Charles**ARTP: a buffer-aware rate control protocol for media streaming.** (English) Zbl 1108.68009
Comput. Netw. 51, No. 6, 1601-1615 (2007).

Summary: We present Adaptive Real-time Transport Protocol (ARTP), a media streaming transport protocol that implements a congestion control mechanism. With this mechanism, the sender adapts its sending rate to network conditions and to the buffering capacity of the receiver. This adaptiveness takes into account the real-time constraints of media streaming. It aims at ensuring media playback continuity, and at achieving a low packet loss rate during media streaming sessions. ARTP ensures the continuity of media playback by buffering media packets during congestion-free periods and reduces the loss rate by reducing the transmission rate during congestion periods. This protocol considers the size of the buffer that the receiver dedicates to rate control in order to avoid overflow or underflow of the buffer. This approach allows limited memory devices such as cellular phones and PDAs to take advantage of rate control.

ARTP is based on the feedback that the real-time control protocol reports give with the addition of two new parameters that we define in this paper: the steady state loss event rate and the duration to the next feedback report. It also requires that the real-time streaming protocol provide the server with the size of the buffer that the client dedicates to rate control.

Our NS-2 simulations show that, besides buffer protection, ARTP significantly reduces the loss rate. Compared to additive increase multiplicative decrease rate control techniques, ARTP provides a better media quality by ensuring the continuity of media playback and, compared to equation-based rate control techniques, it achieves a better loss rate and reduces the bandwidth used for feedback.

MSC:[68M10](#) Network design and communication in computer systems[68M12](#) Network protocols**Keywords:**[media](#); [streaming](#); [buffer](#); [RTP](#); [RTCP](#); [adaptive](#)**Software:**[ARTP](#)**Full Text:** [DOI](#)