Cisco Call Management Records K-Factor Data

This chapter provides information about the K-factor data that is present in the Cisco call management records (CMRs).

K-Factor Data

K-factor represents an endpoint mean opinion score (MOS) estimation algorithm that is defined in ITU standard P.VTQ. It represents a general estimator that is used to estimate the mean value of a perceptual evaluation of speech quality (PESQ) population for a specific impairment pattern.

MOS relates to the output of a well designed listening experiment. All MOS experiments use a five-point PESQ scale as defined in ITU standard P.862.1, which describes the PESQ as an objective method for end-to-end speech quality assessment of narrow-band telephone networks and speech codecs.

The MOS estimate provides a number that is inversely proportional to frame loss density. Clarity decreases as more frames are lost or discarded at the receiving end. Consider the loss or discarding of these frames as concealment. Concealment statistics measure packet (frame) loss and its effect on voice quality in an impaired network.

K-factor represents a weighted estimate of average user annoyance due to distortions that are caused by effective packet loss such as dropouts and warbles. It does not estimate the impact of delay-related impairments such as echo. It provides an estimate of listening quality (MOS-LQO) rather than conversational quality (MOS-CQO), and measurements of average user annoyance range from 1 (poor voice quality) to 5 (very good voice quality).

K-factor gets trained or conditioned by speech samples from numerous speech databases, where each training sentence or network condition that is associated with a P.862.1 value has a duration of 8 seconds. For more accurate scores, the system generates k-factor estimates for every 8 seconds of active speech.

Consider K-factor and other MOS estimators to be secondary or derived statistics because they warn a network operator of frame loss only after the problem becomes significant. Packet counts, concealment ratios, and concealment second counters represent primary statistics because they alert the network operator before network impairment has an audible impact or is visible through MOS.

The following table displays the K-factor date that is stored in the Unified Communications Manager CMRs.

Table 1: K-Factor Data Stored in Unified Communications Manager CMRs

Field Name	Phone Display Name	D&I User Interface Text and Description
CCR	Cum Conceal Ratio	Cumulative Conceal Ratio represents the cumulative ratio of concealment time over speech time that is observed after starting a call.
ICR	Interval Conceal Ratio	Interval Conceal Ratio represents an interval-based average concealment rate that is the ratio of concealment time over speech time for the last 3 seconds of active speech.
ICRmx	Max Conceal Ratio	Interval Conceal Ratio Max represents the maximum concealment ratio that is observed during the call.
CS	Conceal Secs	Conceal Secs represents the time during which some concealment is observed during a call.
SCS	Severely Conceal Secs	Severely Conceal Secs represents the time during which a significant amount of concealment is observed. If the concealment that is observed is usually greater than 50 milliseconds or approximately 5 percent, the speech probably does not seem very audible.
MLQK	MOS LQK	MOS Listening Quality K-factor provides an estimate of the MOS score of the last 8 seconds of speech on the reception signal path.
MLQKmn	Min MOS LQK	MOS Listening Quality K-factor Min represents the minimum score that is observed since the beginning of a call and represents the worst sounding 8-second interval.
MLQKmx	Max MOS LQK	MOS Listening Quality K-factor Max represents the maximum score that is observed since the beginning of a call and represents the best sounding 8-second interval.

Field Name	Phone Display Name	D&I User Interface Text and Description
MLQKav	Avg MOS LQK	MOS Listening Quality K-factor Avg8 represents the running average of scores that are observed since the beginning of a call.

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