Errata Slip #1

Proceedings of the 21st USENIX Symposium on Networked Systems Design and Implementation

In the paper "Hairpin: Rethinking Packet Loss Recovery in Edge-based Interactive Video Streaming" by Zili Meng, *Tsinghua University, Hong Kong University of Science and Technology, and Tencent;* Xiao Kong and Jing Chen, *Tsinghua University and Tencent;* Bo Wang and Mingwei Xu, *Tsinghua University;* Rui Han and Honghao Liu, *Tencent;* Venkat Arun, *UT Austin;* Hongxin Hu, *University at Buffalo, SUNY;* Xue Wei, *Tencent* (Wednesday session, "Wide-Area and Edge," pp. 907–926 of the Proceedings), the authors have provided the following corrections:

On page 907, in the last sentence of the abstract:

Original text:
Experiments with production deployments demonstrate that Hairpin can simultaneously reduce the bandwidth cost by 40% and the deadline miss rate by 32% on average in the wild against state-of-the-art solutions.

Revised text:
Experiments with in-the-wild crowdsourcing experiments demonstrate that Hairpin can simultaneously reduce the bandwidth cost by 40% and the deadline miss rate by 32% on average in the wild against state-of-the-art solutions.

On page 908, bottom of the left column:

Original text:
Preliminarily testing Hairpin in Tencent START cloud gaming in production also shows significant and consistent performance improvements in different types of networks (§4.7).

Revised text:
Preliminarily testing Hairpin in Tencent START cloud gaming in the wild also shows significant and consistent performance improvements in different types of networks (§4.7).

On page 915, left column, section 4.2, **Traces** paragraph:

Original text:
The network conditions are recorded on the server of our cloud gaming service, including the average RTT, average bit rate, and loss rate at the frame level (approximately every 16 ms).

Revised text:
The network conditions are recorded on the server of our cloud gaming service, including the RTT, bit rate, and loss rate at the frame level (approximately every 16 ms). Since the simulator takes the network propagation delay as the input, we calculate the minimum RTT of several neighbor frames to approximate the propagation delay in the network. We also filter out those sessions where the network propagation delay is already larger than 80 ms, in which case any single-path transport layer design will fail to meet the deadline.

On page 917, right column, section 4.7, **Real-World Experiments** paragraph:

Original text:
We conduct an A/B test in production of Hairpin against the $\texttt{WebRTC}_{NOW}$ baseline.

Revised text:
We conduct an A/B test of Hairpin against the $\texttt{WebRTC}_{NOW}$ baseline using a crowdsourcing platform Bonree.