SPACE COMMUNICATIONS AND NAVIGATION SYMPOSIUM (B2)
Near-Earth and Interplanetary Communications (2)

Author: Prof. Wanrong Yu
National University of Defense Technology, China, yuwanrong@gmail.com

Prof. Chunqing Wu
China, wuchunqing@nudt.edu.cn
Prof. Bo Liu
National University of Defense Technology, China, boliu@nudt.edu.cn
Prof. Xiaoping Xu
National University of Defense Technology, China, xiaopingxu@nudt.edu.cn

CAR: CODED AUTO RETRANSMISSION TRANSPORT PROTOCOL FOR DEEP SPACE COMMUNICATION

Abstract

In this paper, we present Coded Auto Retransmission(CAR) Transport Protocol, a novel reliable protocol for deep-space communication. CAR's main advantage is its ability to complete le transfers faster than conventional FRTP, CFDP, LTP, DTTP, Saratoga and DSTP. The Deep space communication links are characterized by long propagation delays, high BERs, intermittent connectivity and bandwidth asymmetries. In the deep space network, the chance for communication is precious for the small connectivity time, so utilizing the limited transmission time as much as possible is a great challenge. Our approach to deal with the challenge is to combine the advantages of auto retransmission and network coding. More precisely, CAR includes the automatic retransmission technique, which sends packet more than one times to overcome the long propagation delays. Known from other solutions, CAR retransmits the line combination of original packets instead of the original packets themselves. Simulation results show that a signicant gain in throughput can be obtained by the CAR protocol compared with the existing works including the DSTP.