



US 20230231657A1

(19) **United States**

(12) **Patent Application Publication**  
**BALMAKHTAR et al.**

(10) **Pub. No.: US 2023/0231657 A1**

(43) **Pub. Date: Jul. 20, 2023**

(54) **DUPLICATE MESSAGE REMOVAL  
TECHNIQUE FOR IMPROVING  
RETRANSMISSION SUCCESS RATE**

**H04L 5/00** (2006.01)

**H04W 28/06** (2006.01)

(52) **U.S. Cl.**

CPC ..... **H04L 1/1642** (2013.01); **H04L 1/08**  
(2013.01); **H04L 5/0078** (2013.01); **H04W**  
**28/06** (2013.01)

(71) Applicant: **T-Mobile Innovations LLC**, Overland  
Park, KS (US)

(72) Inventors: **Marouane BALMAKHTAR**, Fairfax,  
VA (US); **Brian WATERS**, Angel Fire,  
NM (US)

(21) Appl. No.: **17/579,744**

(22) Filed: **Jan. 20, 2022**

**Publication Classification**

(51) **Int. Cl.**

**H04L 1/16** (2006.01)

**H04L 1/08** (2006.01)

(57)

**ABSTRACT**

Systems and methods are provided for duplicate message detection and removal. A method includes receiving a message tagged with a sequence number during one of a first timing window and a second timing window, wherein the first and second timing windows are consecutive recurring timing windows in a network. The method additionally includes sending a response to the message during one of the timing windows and marking the sequence number with the timing window of the response. The method further includes adding the marked sequence number to an exclusion list and after a next timing window expires, deleting the sequence number from the exclusion list.

