US 20230231641A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2023/0231641 A1**

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

(54) **LINK PROFILING FOR ASYMMETRIC DELAY COMPENSATION**

(71) Applicant: **Net Insight AB**, Solna (SE)

(72) Inventors: **Michael ANDERSSON**, Osterskar (SE); **Magnus DANIELSSON**, Stocksund (SE)

(73) Assignee: **Net Insight AB**, Solna (SE)

(21) Appl. No.: **18/001,979**

(22) PCT Filed: **Jun. 18, 2021**

(86) PCT No.: **PCT/EP2021/066632**

§ 371 (c)(1),
(2) Date: **Dec. 15, 2022**

(30) **Foreign Application Priority Data**

Jun. 18, 2020 (SE) 2050736-4

Publication Classification

(51) **Int. Cl.**
H04J 3/06 (2006.01)

(52) **U.S. Cl.**
CPC ***H04J 3/0658*** (2013.01)

(57) **ABSTRACT**

There is provided a GNSS independent method for asymmetry delay error compensation to minimize a time difference bias when using two-way time transfer in a communication network. The method includes establishing a bidirectional virtual path comprising at least one link path, LP**1**-LP**4**, over the network for communication between a first node A and a second node B by sending a bidirectional data stream over the virtual path and utilizing previously stored link profiles associated with a delay correction factor or a calibrated virtual path or a stable local clock in holdover mode to provide new delay correction factor to minimize a time difference bias in the local time in the second node.