

Security and Privacy of Drone-based Last Mile Delivery from Warehouses

Selwyn Piramuthu

Information Systems and Operations Management

University of Florida, Gainesville, FL 32611, USA

Abstract

As the feasibility of drone-based last mile delivery of items from warehouses become reality, it is necessary to move beyond the basic ability to transport items from warehouse to end-user and to consider other aspects. There are several other aspects that are significant and need to be considered such as the physical aspect of the items to be delivered such as size, shape, and weight, privacy of the process in terms of the ability to protect the identity of the destination entity as well as the content of the package, and security of the entire system. While the physical aspects are addressed through physical means such as battery capacity, items that could be carried by the drone, and flying distance of the drone, security and privacy aspects are generally addressed through appropriate processes. Privacy and security aspects are significant since the last mile delivery drones operate outside the warehouse and are not under the complete control of the delivery service operator. This is specifically salient with respect to communications between the drone and other outside entities that are not necessarily authorized for communication by the operator. Even if such outside entities are authorized to communicate with the drone while it is away from the warehouse, there may be restrictions on what types of information it can reveal to any given external entity. One of the common means to address privacy and security of communication between the drone and outside entities is through authentication of the entities before communication begins. Authentication is done through cryptographic protocols that ensure that the outside entities see only the information for which they have the necessary permission.

Keywords: drone, last mile delivery, security and privacy, authentication protocol
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