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Dutch Researchers Create RFID Malware

By [Ryan Naraine](#)
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Pranksters and criminals can infect RFID chips with computer viruses, worms and malware to cause major disruption at places where the popular tracking technology is used, according to new research by a group of European scientists.

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In a [proof-of-concept paper](#) presented at the IEEE Conference on Pervasive Computing and Communications March 15, researchers from the Free University in Amsterdam warned that the tainted radio-frequency identification microchips could corrupt RFID databases and cause major chaos at airports and supermarkets.

In the United States, RFID technology has been used to track pets, collect tolls on roadways and serve as a potential replacement for UPC (Universal Product Code) bar codes, but the impact on


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quarters. privacy has triggered protests in some

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But, privacy is just one hiccup, according to the ground-breaking research paper written by the university's Computer Systems Group. "[No] one expects an RFID tag to send a SQL injection attack or a buffer overflow. This paper is meant to serve as a warning that data from RFID tags can be used to exploit back-end software systems," the group said.

"RFID middleware writers must therefore build appropriate checks—bounds checking, special character filtering—to prevent RFID middleware from suffering all of the well-known vulnerabilities experienced by the Internet."

The paper outlines several ways in which an existing middleware vulnerability could be exploited to launch malware code and simple viruses that can infect RFID tags and corrupt the database that connects to the tag reader.



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"No one thought this possible until now," the group said, noting that it went public with the sample viruses to convince the people in charge of RFID systems that the threat is not merely theoretical.

"By making code for RFID 'malware' publicly available, we hope to convince them that the problem is serious and had better be dealt with, and fast. It is a lot better to lock the barn door while the prize race horse is still inside than to deal with the consequences of not doing so afterwards," the researchers said.

 [RFID deployment has slowed and even the players that gave RFID its first are starting to cool. Click here to read more.](#)

In one scenario outlined in the paper, the group said the RFID-augmented labels used to expedite baggage handling can be targeted by a malicious traveler to cause chaos and panic in busy airports.

"Consider a malicious traveler who attaches a tiny RFID tag, pre-initialized with a virus, to a random person's suitcase before he checks it in. When the baggage-handling system's RFID reader scans the suitcase at a Y-junction in the conveyor-belt system to determine where to route it, the tag responds with the RFID virus, which could infect the airport's baggage database," the researchers explained.

"Then, all RFID tags produced as new passengers check in later in the day may also be infected. If any of these infected bags transit a hub, they will be rescanned there, thus infecting a different airport."



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"Within a day, hundreds of airport databases all over the world could be infected," the team said, warning that an RFID virus could also carry a payload that damages the database and, for example, helps drug smugglers or terrorists hide their baggage from airline and government officials.



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