

# Snail Mail/ E-mail Security

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## How does Snail Mail work?

A slang term for the United States Postal service is "Snail Mail". Referring to (mostly) harmless mollusks doesn't imply that your letters will get slimy or be delivered to you in tiny shells. Snails are perceived as slow-moving creatures; the US mail is slow-moving compared to electronic mail. The term is not intended to be complementary.

Drop a letter in a mailbox. It magically appears at the recipient's mailbox a day or two later, hopefully. Betwixt and between, who knows? Knowing who handled it or where it traveled is problematic. The stamp cancellation may give some clue, but any other intermediate stops cannot be determined. Careful examination of the envelope usually tells us that the package wasn't tampered with, but we can never be completely sure. Perhaps a bored clerk in Poughkeepsie steamed it open for lunch hour entertainment. Perhaps it passed through numerous automated sorting machines, never to be touched by human hands until a trusted mail carrier dropped it in your mail slot. We simply don't know.

## How does electronic mail work?

Electronic cannot be steamed open by unscrupulous intermediaries, but technology presents another set of opportunities. Compose an email, click send, and a few seconds later your message arrives on the other side of the world. How'd it get there?

Your message moves across the world in the form of electrons. Electrons move at the speed of light. For example, the sun is 92 million miles away; its light reaches us in 9 minutes. Theoretically your email could travel around the world (25,000 miles) and back to you in *.15 seconds*. As fast as email appears to be, our experience tells us that transmitting a message usually take at least a few seconds. What are those electrons doing with their 'down time'?

## Your email hops around

You compose a birthday greeting for dear old Aunt Mabel and click send: your email electrons move through multiple computers on their way to Aunt Mabel's inbox. Each computer is referred to as a *hop*. The process of determining a reasonable sequence of hops is called *routing*. Routing is not trivial; every hop wastes time and consumes space in the Internet pipeline. Ideally, a direct route from your hard drive to Aunt Mabel's hard drive would be available, but that hasn't yet been invented. Instead, you depend on the kindness of numerous intermediate servers to relay your kind words across the Internet. Even if Aunt Mabel is living in your spare bedroom, sending her an email requires multiple hops through remote Internet servers. You could always buy her a Hallmark card and deliver it personally.

# MIS Documentation

## Training

### What happens at each hop?

Each hop makes a copy of your message. The copy may persist for a few microseconds or it may live on for eternity. You have no control. It may be backed up onto a tape drive. Rest assured that most email servers have no interest whatsoever in Aunt Mabel's birthday card. Generally, a computer acting as a relay will save your message long enough to be sure that it arrived safely at the next relay point, then delete it.

On the other hand, a relaying computer may be scanning every email that passes through. Innocent best wishes to Aunt Mabel could be scanned for words, phrases, recipients, or attachments. You have no guarantee of privacy whatsoever.

### Conclusion:

**Electronic mail as employed by most users is not at all secure.** Messages pass through different servers before arriving at final destinations. Text and attachments can be read or scanned without the consent of either party.