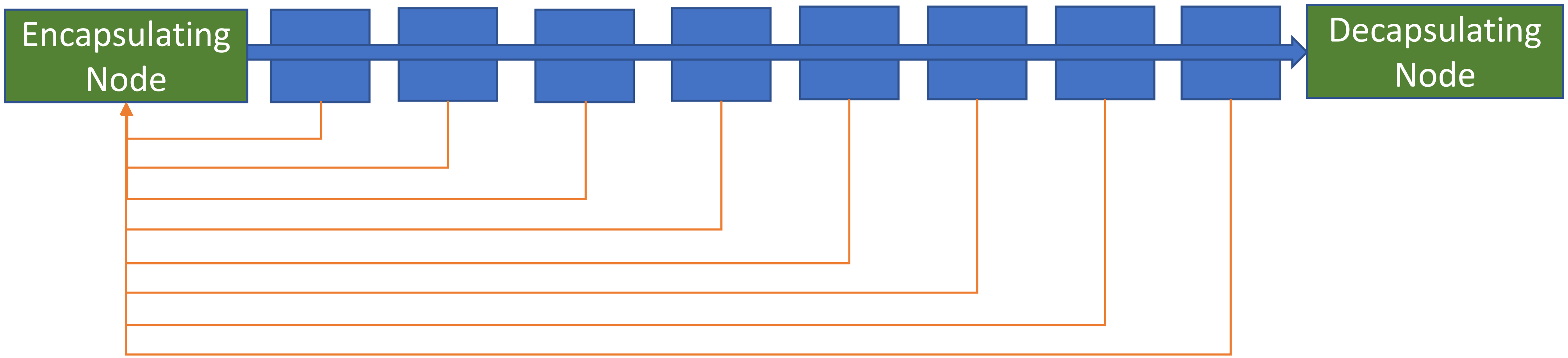
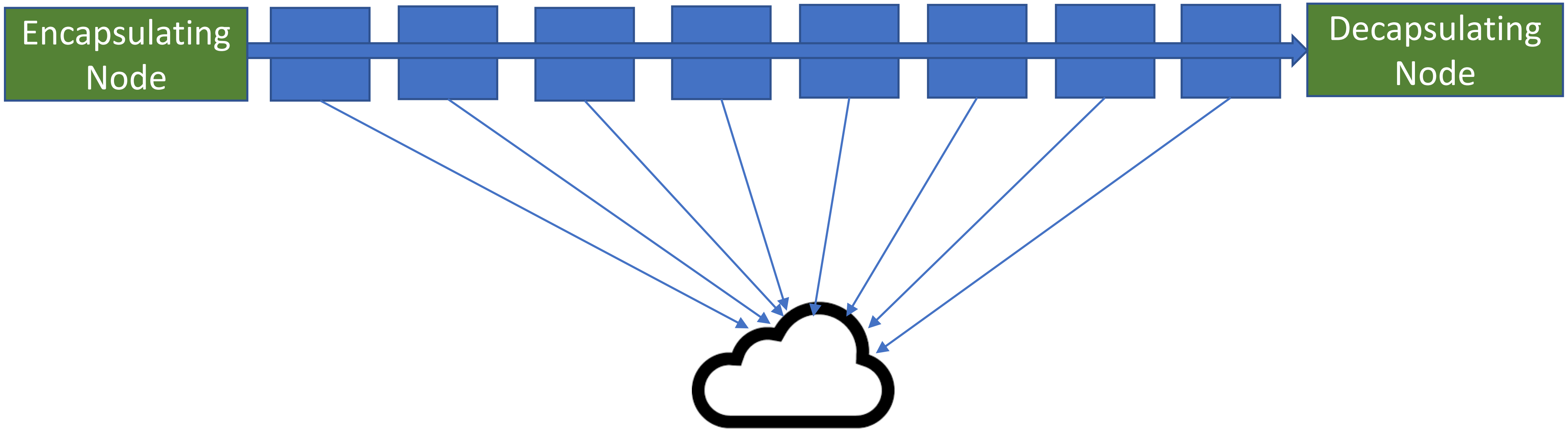
IOAM Loopback & Direct Export (DEX)

Potential Problems

Martin Duke, IETF 110

Loopback & DEX





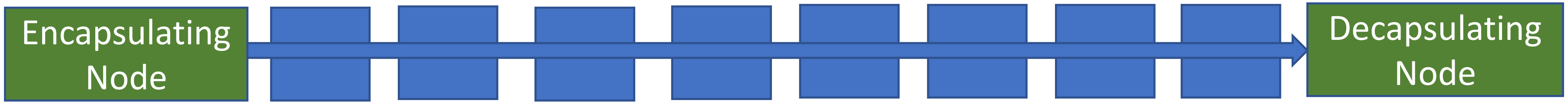
In order to mitigate the attacks described above, it should be possible for IOAM-enabled devices to limit the exported IOAM data to a configurable rate.

In order to mitigate the attacks described above, as described in Section 7 it should be possible for IOAM-enabled devices to selectively apply the mechanisms that use the flags defined in this document to a subset of the traffic, and to limit the performance of synthetically generated packets to a configurable rate; specifically, network devices should be able to limit the rate of: (i) looped-back traffic (at transit nodes), (ii) replicated active packets (at encapsulating nodes), (iii) packets that are exported to a collector (from either encapsulating nodes or transit nodes), and (iv) synthetically generated packets (at encapsulating nodes).

A bad DEX Corner Case

My Domain

N Hops

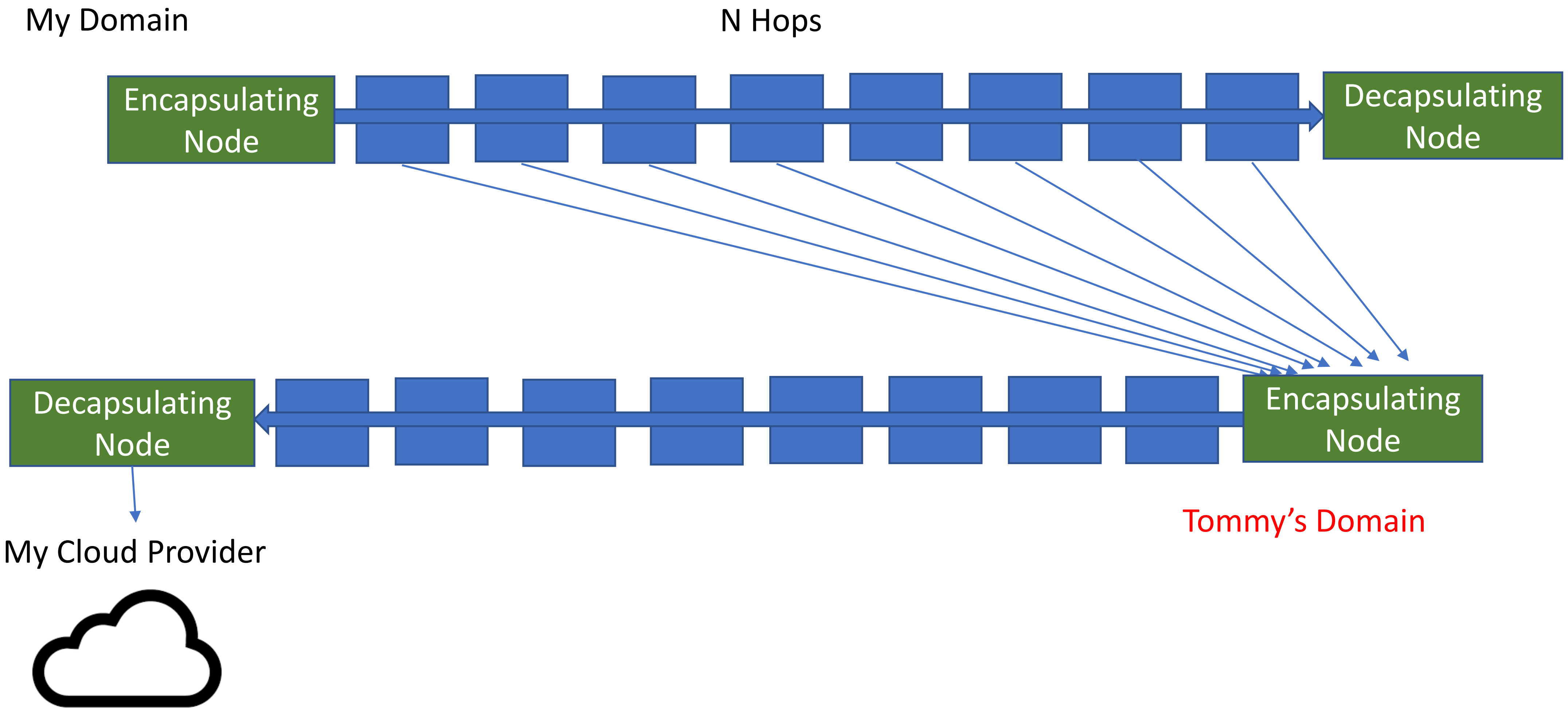


Encapsulating Node

Decapsulating Node

My Cloud Provider

A bad DEX Corner Case



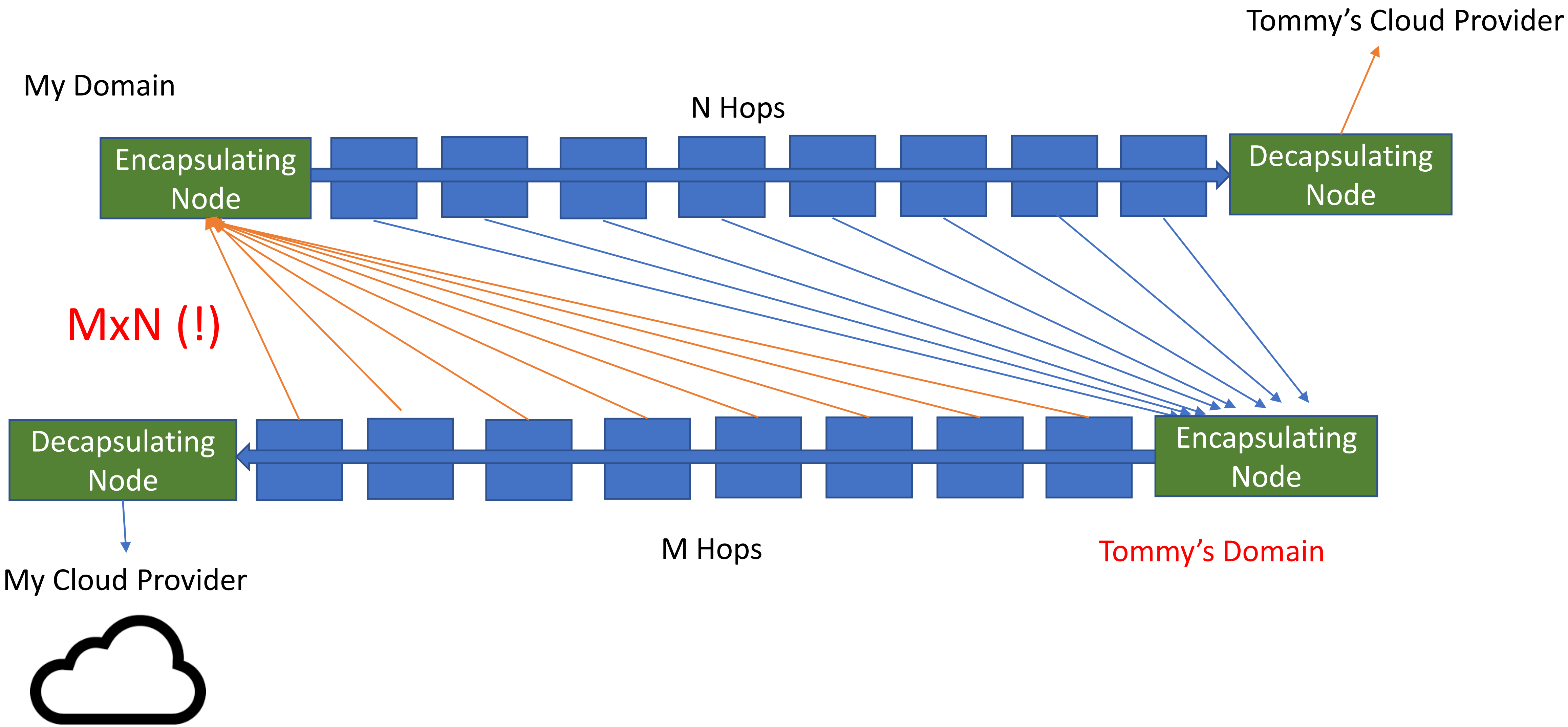
My Domain

N Hops

My Cloud Provider

Tommy’s Domain

A bad DEX Corner Case



Tommy's Cloud Provider

My Domain

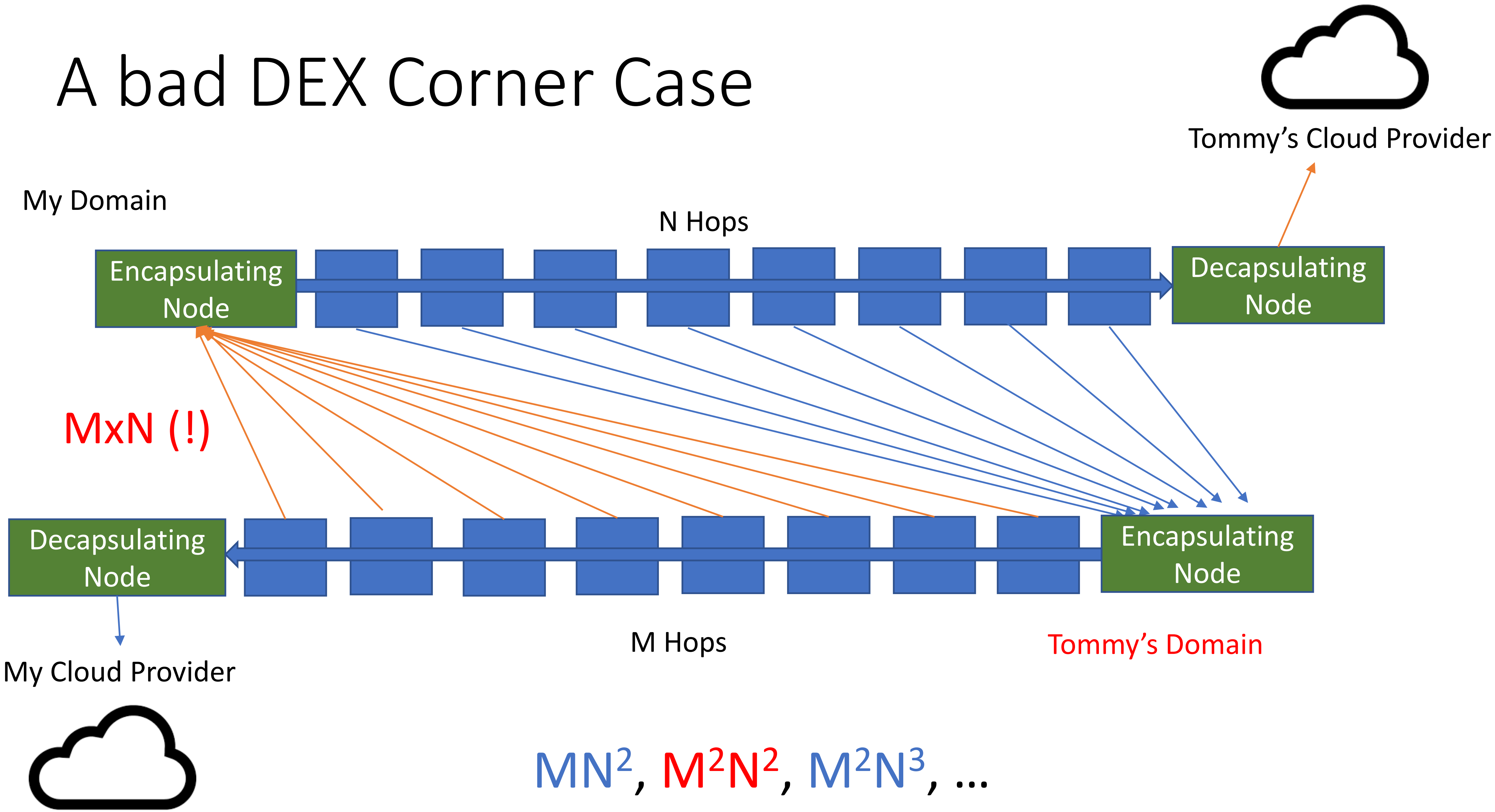
N Hops

M Hops

Tommy's Domain

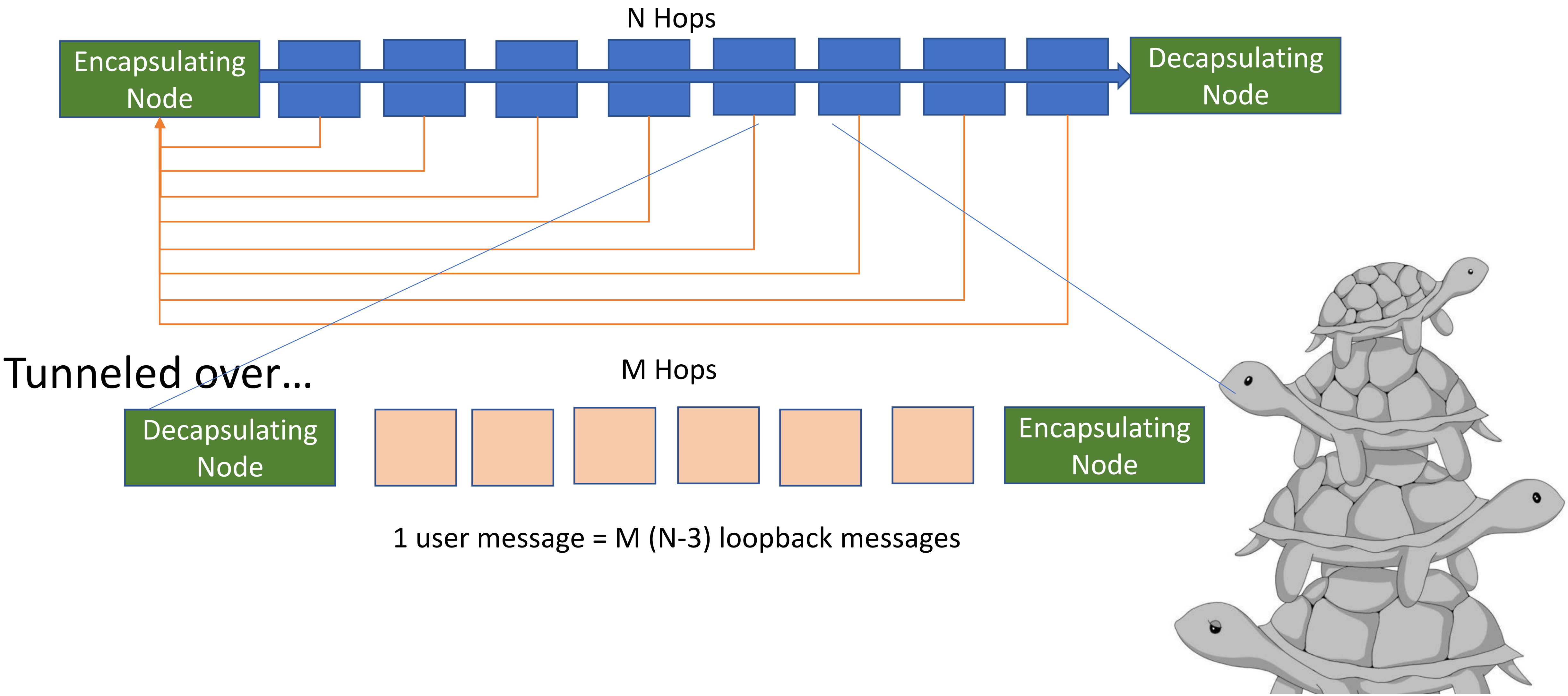
My Cloud Provider

A bad DEX Corner Case



MN^2, M^2N^2, M^2N^3, …

A (less bad) Loopback Corner Case



N Hops

Encapsulating Node

Decapsulating Node

Tunneled over…

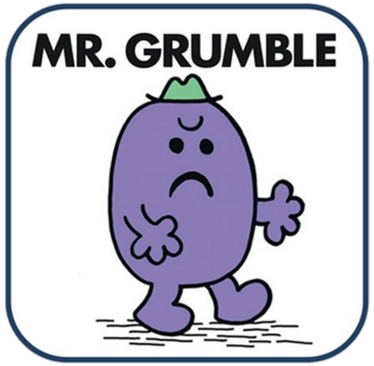
M Hops

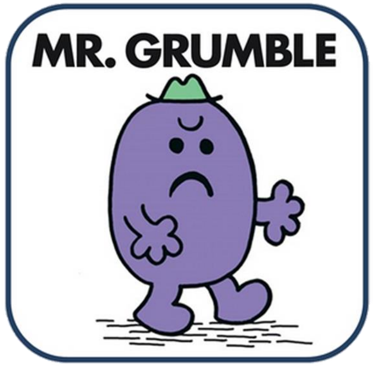
Decapsulating Node

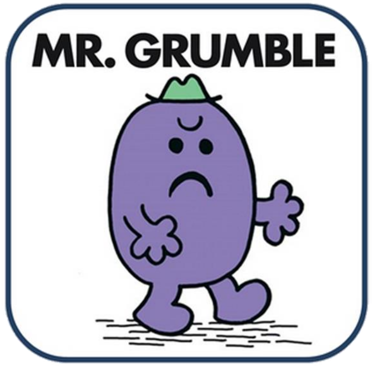
Encapsulating Node

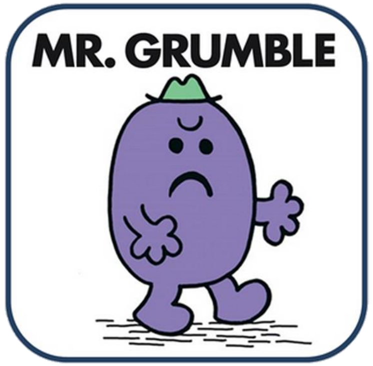
1 user message = M (N-3) loopback messages

What now?

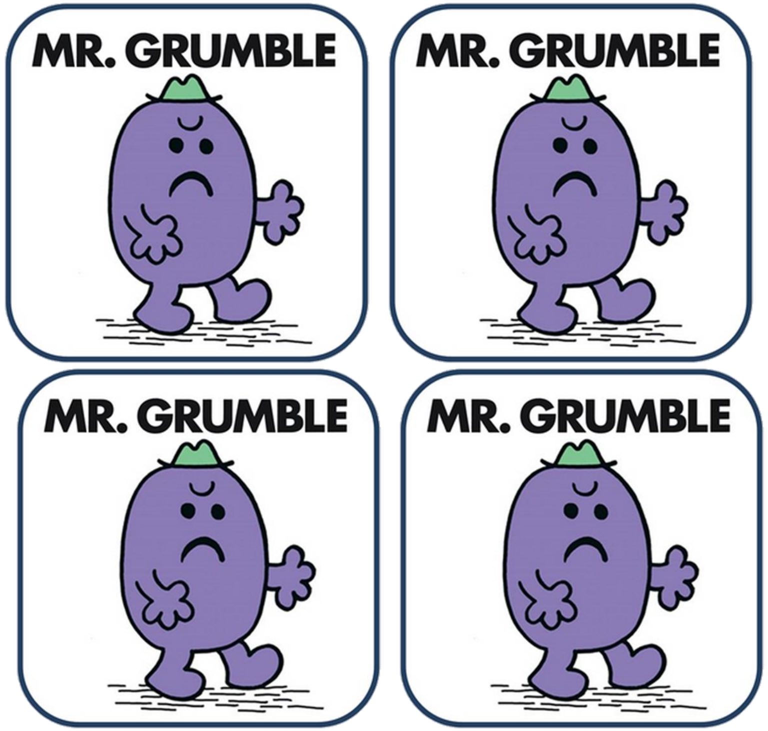








What now?



- More security considerations?
  - Situation not detectable!
  - Rate limiting not a good solution to infinite traffic
  - Tighter probability bounds?
  - Stronger restriction to a domain?

- Or fundamentally rethink what we’re doing here?