

# Network Mobility Route Optimization Problem Statement

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draft-ietf-nemo-ro-problem-statement-00.txt

# Conclusion of 62<sup>nd</sup> meeting at Minneapolis

- draft-ietf-nemo-ro-problem-statement:
  - Short concise description of the RO problem
  - Use Section 2 of draft-thubert-nemo-ro-taxonomy-04.txt as the base document and merge in other missing contents outlined in the other individual drafts
- draft-ietf-nemo-ro-space-analysis:
  - Describe the general issues and tradeoffs of different RO approaches, analysis of the solution space, and also security/threat analysis.
  - Use the remainder of draft-thubert-04 and merged in contents from other drafts as well

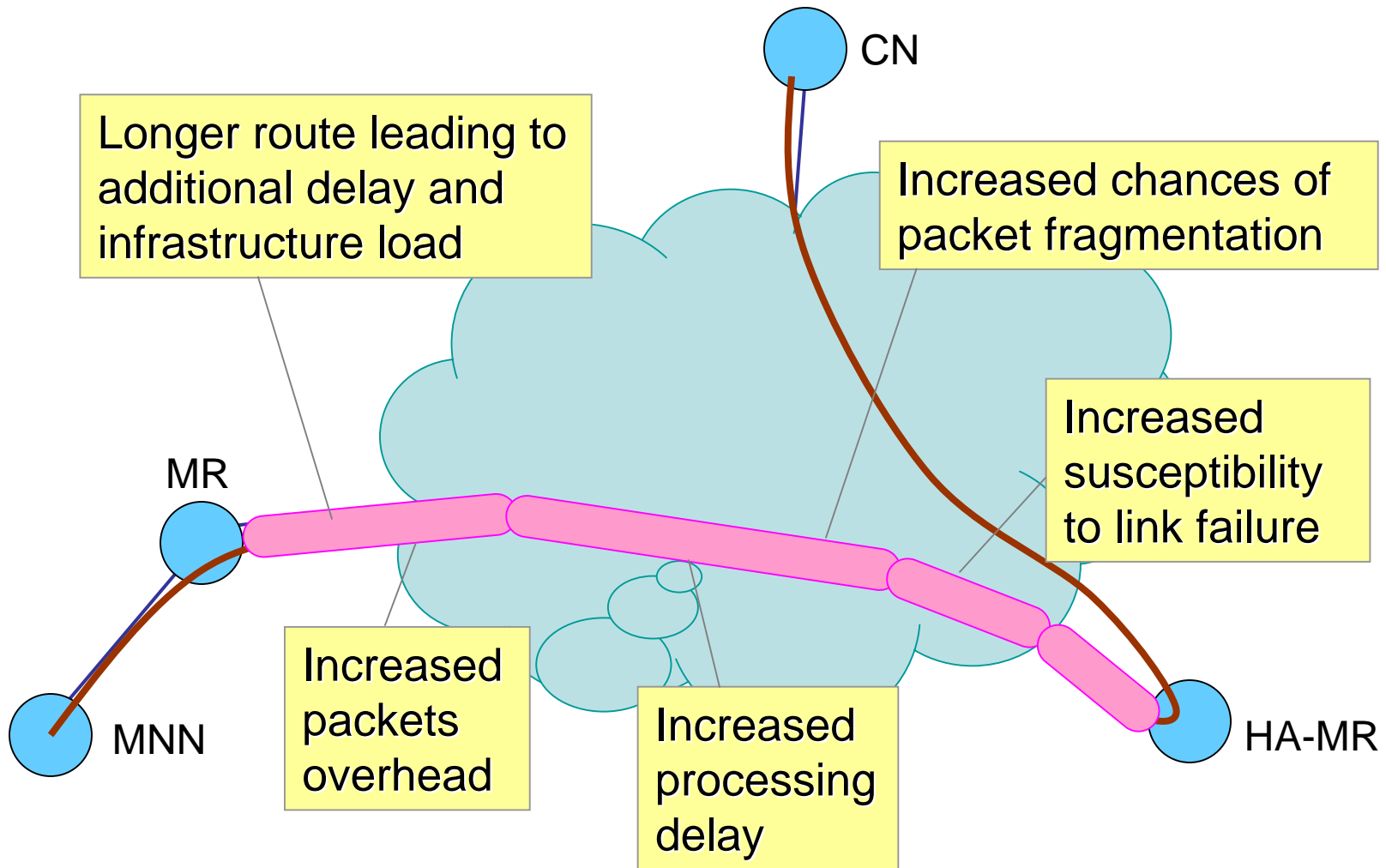
# Change-Log

- Base document adapted from Section 1&2 of draft-thubert-nemo-ro-taxonomy-04.txt
- Added Section 2.2: Bottleneck in the Home Network
- Added Section 2.5: Security policy prohibiting traffic from visiting nodes
- Added Section 2.7: Deadlock with a Home Agent nested in a mobile network
- Extracted draft-watari-nemo-nested-cn-01.txt to Appendix
- Rewritten a lot of the original text

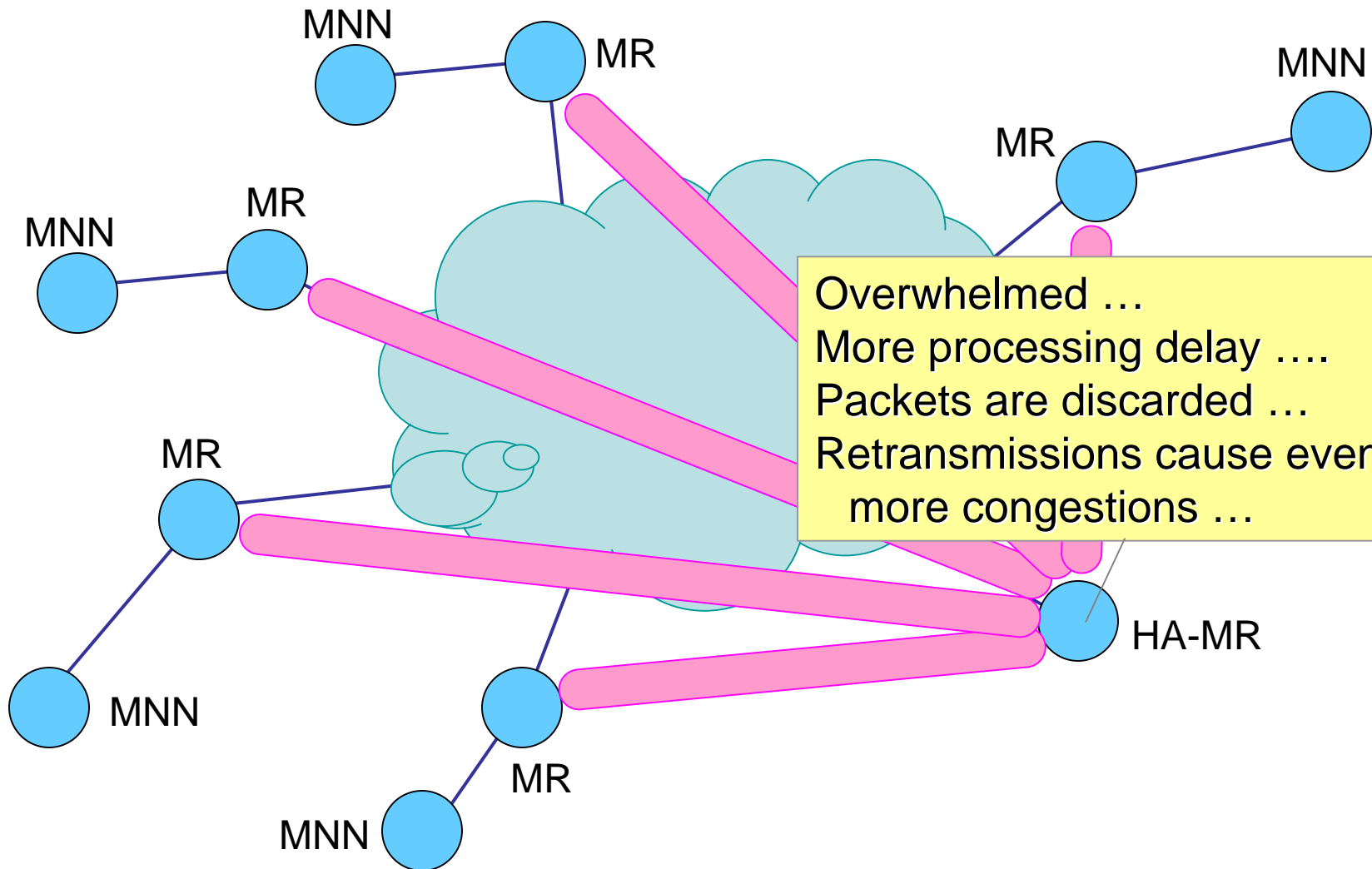
# Problems Identified

- Sub-optimality with NEMO BS
- Bottleneck in Home Network
- Amplified Sub-optimality with nested-NEMO
- Sub-optimality with combined MIPv6 RO
- Security policy prohibiting traffic from visiting nodes
- Instability of communications within a Nested Mobile Network
- Deadlock with a HA nested in a mobile network

## 2.1 Sub-Optimality with NEMO BS

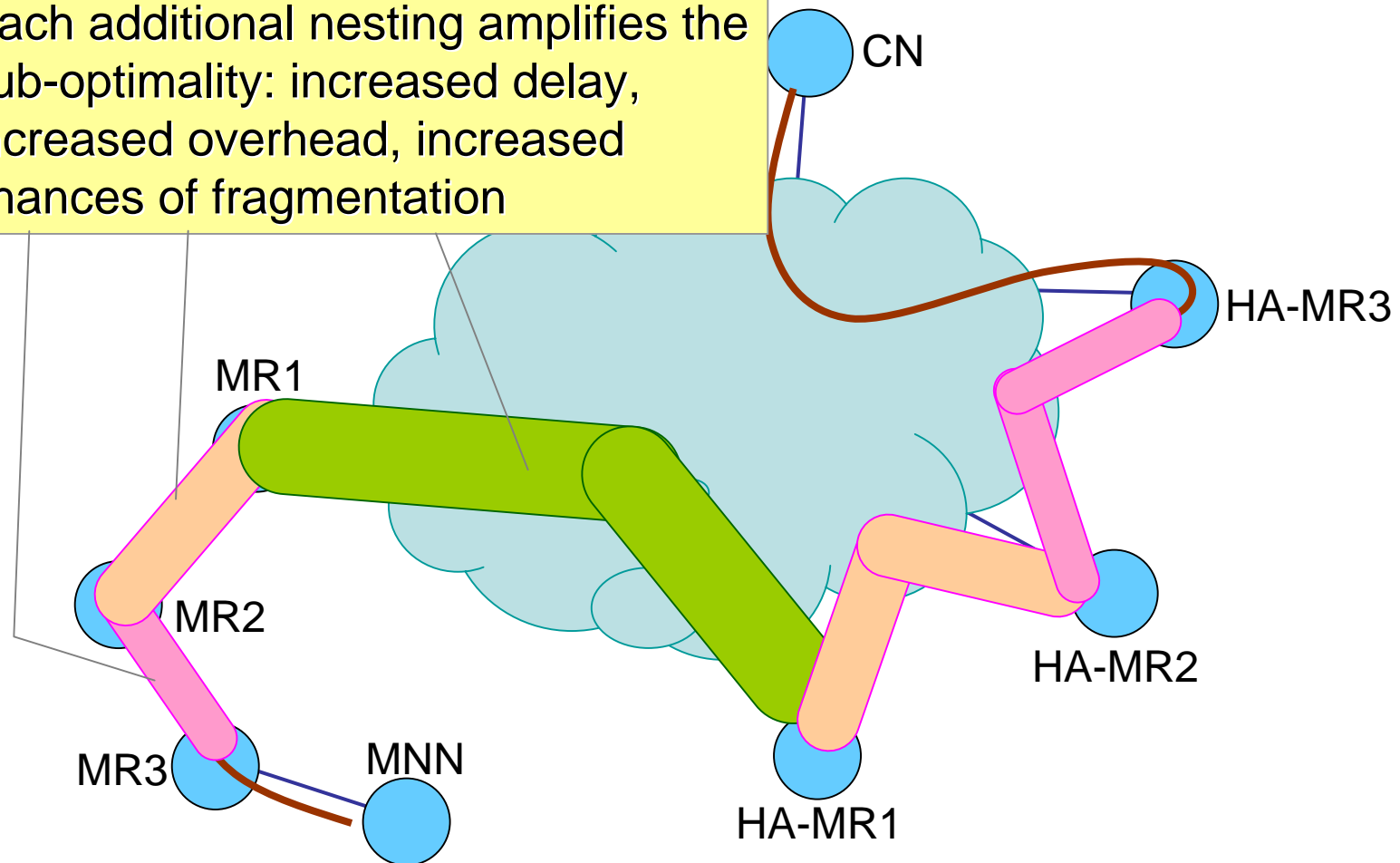


## 2.2 Bottleneck In Home Network

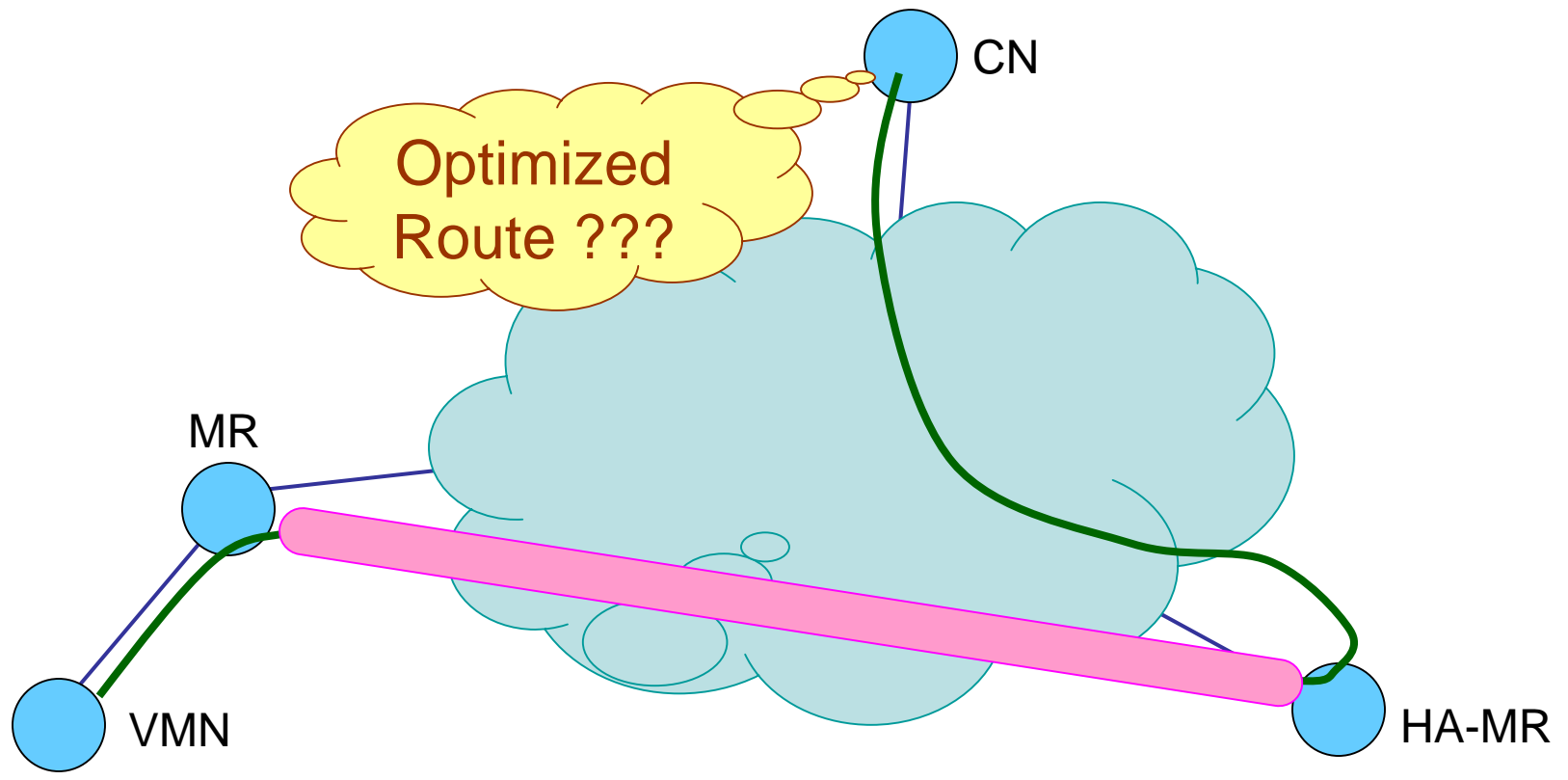


## 2.3 Amplified Sub-Optimality in Nested NEMO

Each additional nesting amplifies the sub-optimality: increased delay, increased overhead, increased chances of fragmentation

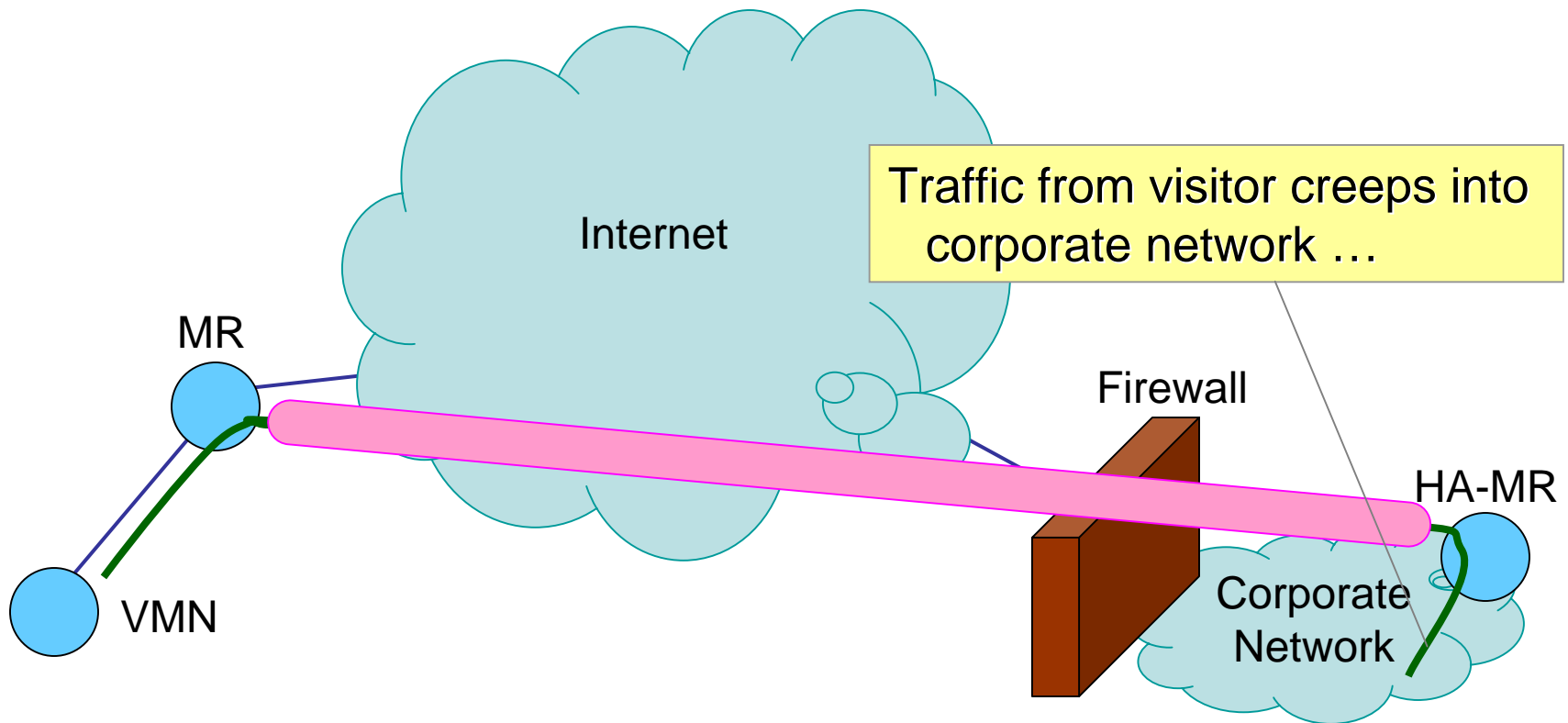


# 2.4 Sub-Optimality with Combined MIPv6 RO

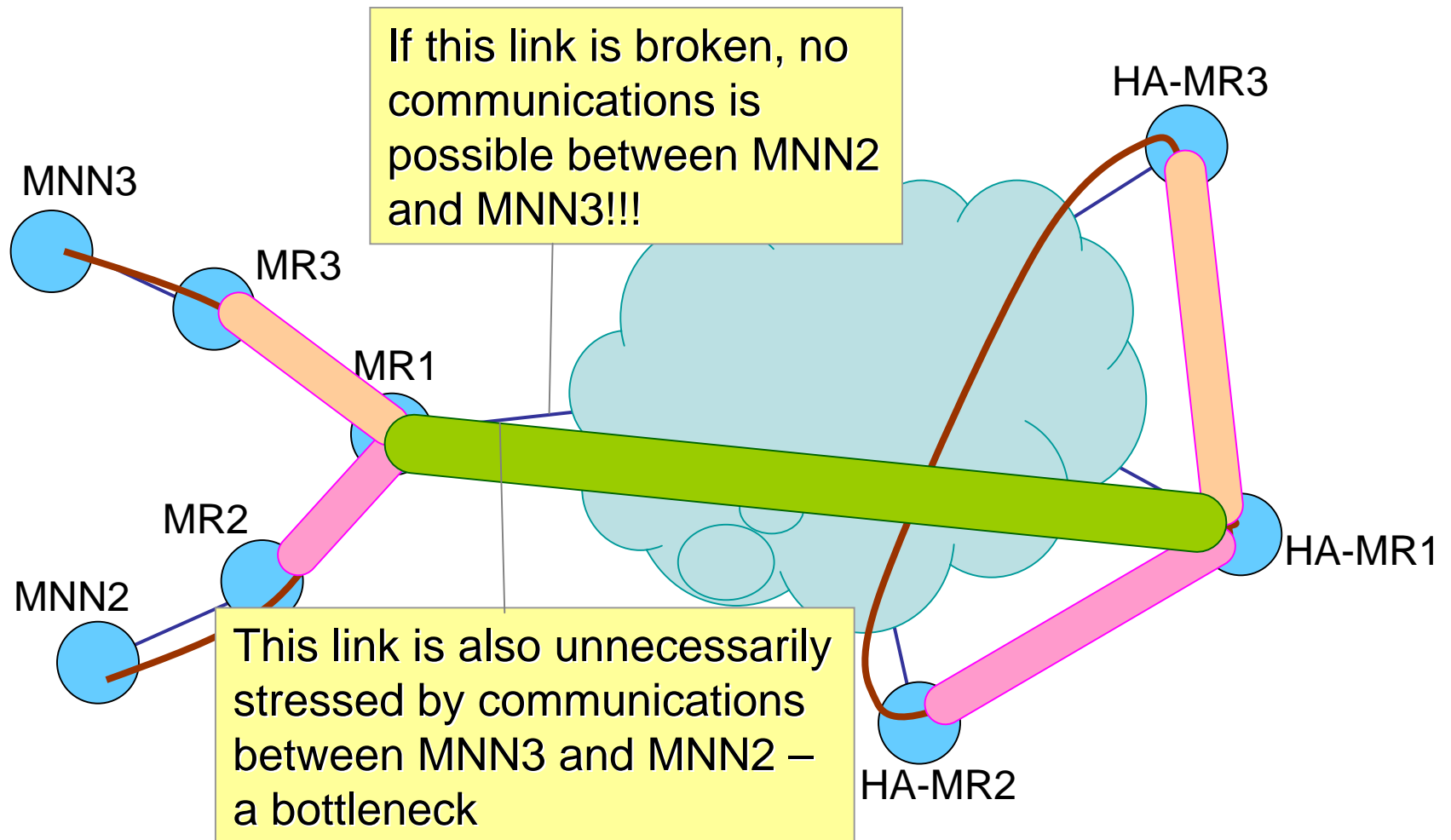




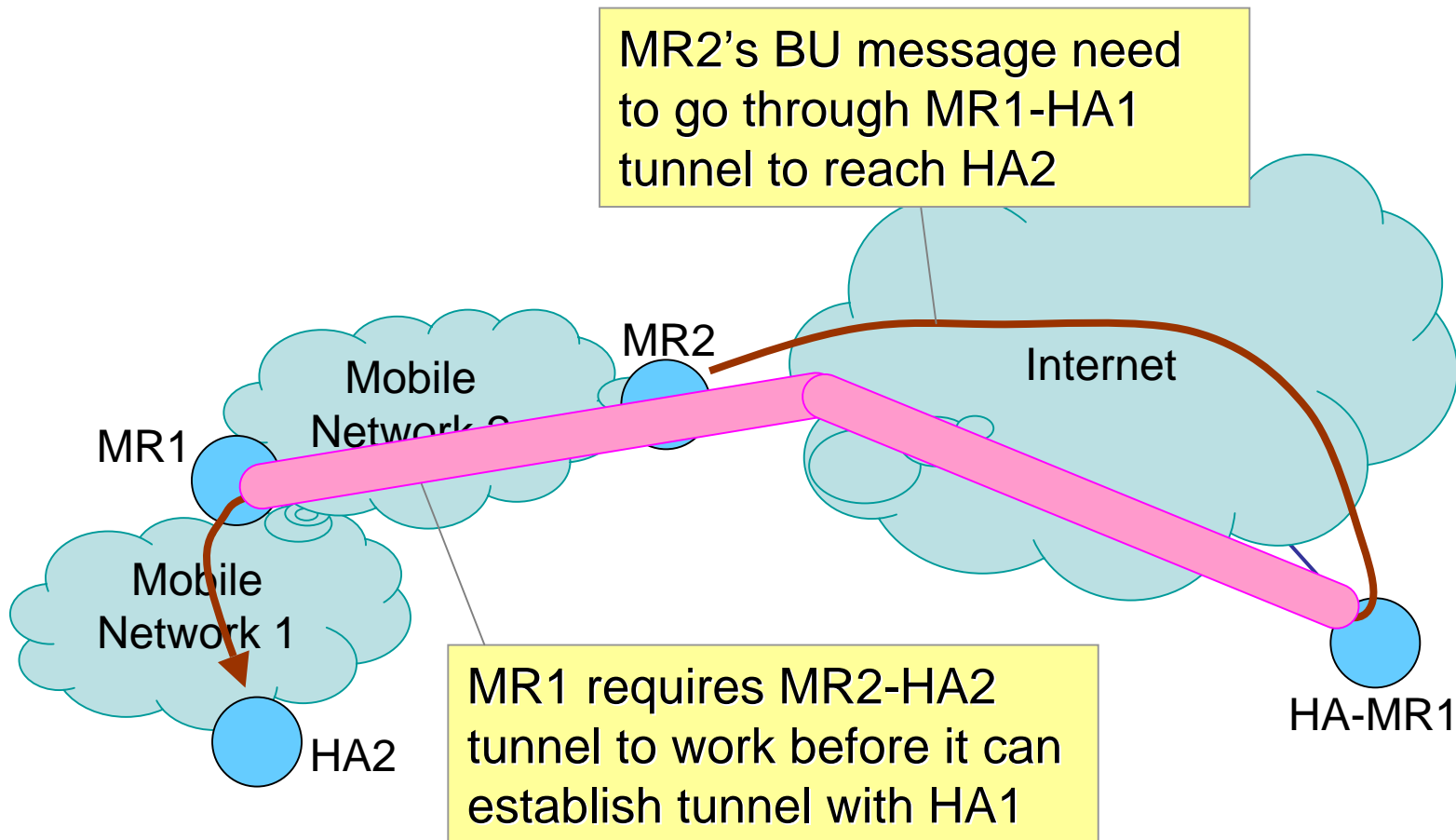
## 2.5 Security Policy Prohibiting Traffic from VMN



## 2.6 Instability of Communications within a Nested NEMO



# 2.7 Deadlock with a HA in a Nested NEMO



# Discussions on the Mailing List (1/4)

- Suggestion to add text on the effects of sub-optimal routing on the TCP performance
  - Text in draft concentrates on effects of sub-optimality on real-time multimedia stream
  - Comment suggests that sub-optimality will also affect the congestion algorithm of TCP

# Discussions on the Mailing List (2/4)

- Suggestion to move Sect 2.2 as a sub-bullet in Sect 2.1
  - [Author's Response]: Keep them separate, since Sect 2.1 concentrates on sub-optimality for one flow, whereas Sect 2.2 looks at the combined effect of multiple flows

# Discussions on the Mailing List (3/4)

- Questions on the Tit-4-Tat example
  - How can MR know a MNN is actually a child MR?
  - are we threading too near to MANET?

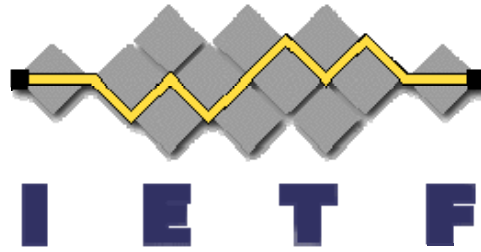
# Discussions on the Mailing List (4/4)

- Suggestion to add text on VMN being able to use its CoA for short-lived communications (ex. DNS queries)
- Some editorial comments and questions

# Questions to WG

- How many people have read the draft?
- Is the content what the WG expected?
- Any problem we have missed?
- Anything else missing from the draft?





# Network Mobility Route Optimization Solution Space Analysis

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draft-ietf-nemo-ro-space-analysis-00.txt  
(to be published)  
63rd IETF - NEMO WG

# Current Status

- Section 1: Introduction
- Section 2: Benefits of Route Optimization
  - Basically the reverse of RO Problem Statement draft
- Section 3: Issues of Route Optimization
  - General tradeoffs of having Route Optimization
- Section 4: Analysis of solutions space
  - We are currently spending our effort here
- Section 5: Goals and requirements?
  - A possible addition to have a set of metrics
- An initial release is targeted at end of August

# Issues of Route Optimization

Some issues that might be faced for a RO Solution:

- Additional Signaling Overhead
- Increased Protocol Complexity
- Increased Delay During Handoff
- New Functionalities
- Detection of New Functionalities
- Scalability
- Mobility Transparency and Location Privacy
- Security Consideration

# Analysis of Solution Space

- Construct the taxonomy by trying to answer the following questions:
  - What entities are involved in RO?
  - How location is bound to identity?
  - How data packets are routed in RO?

# Goals and Requirements

- A set of metrics to evaluate route optimization solutions?
- Or more of a requirements of a route optimization solution?