



# Correspondent Router based Route Optimisation for NEMO (CRON)

draft-bernardos-mext-nemo-ro-cr-00  
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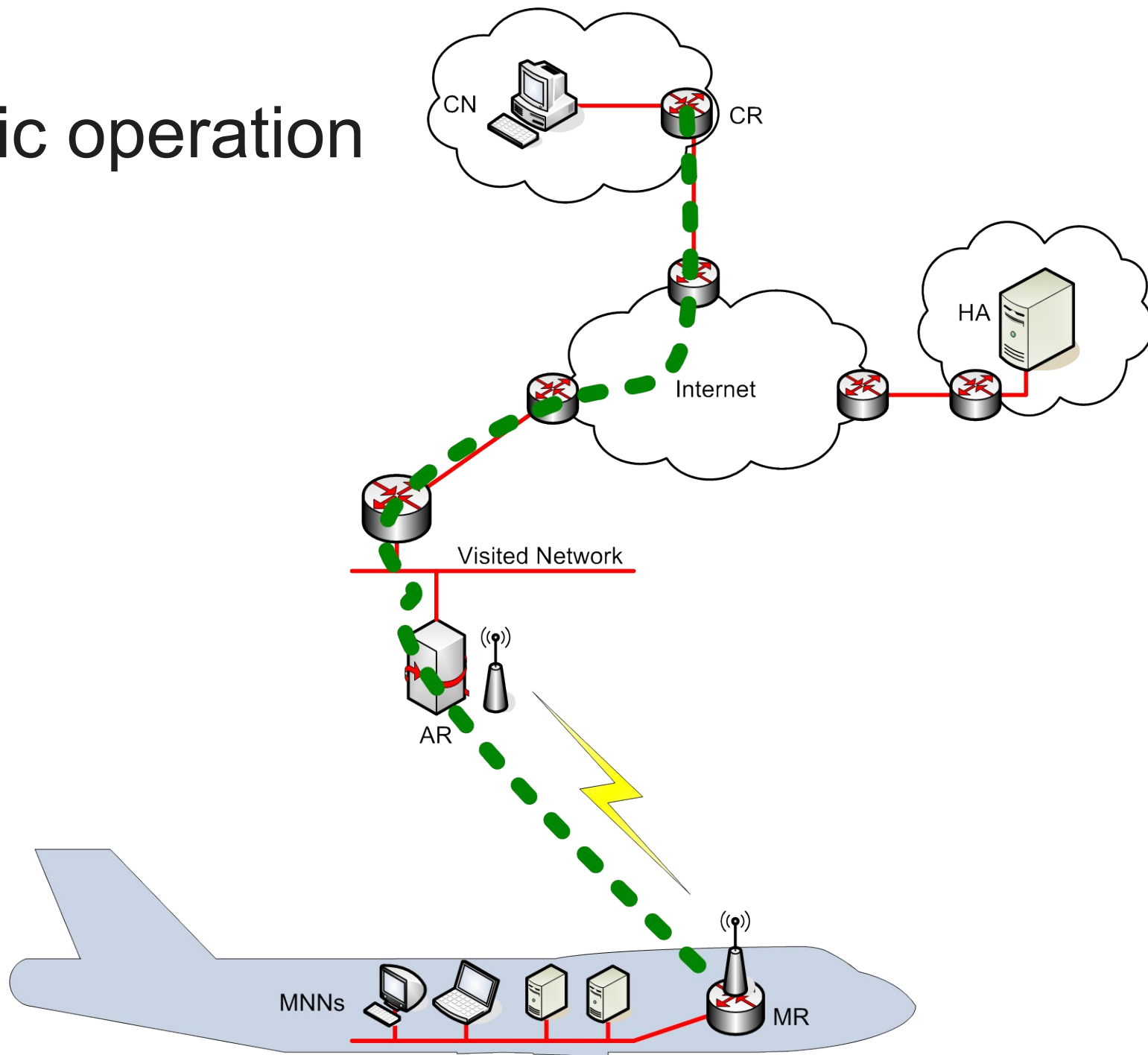
# Background and rationale

- This idea is far from being new
- Some drafts and papers proposed/reviewed this approach in the past
  - draft-wakikawa-nemo-orc
  - draft-na-nemo-path-control-header
- Goal of the draft:
  - Revisit CR-based NEMO and check against Aeronautical NEMO RO requirements

# Basic operation

- Correspondent Router (CR):
  - Entity in the infrastructure that performs RO with the MR (kind-of proxy mobility agent for the CN).  
Should be topologically close to the CN
- Route optimisation performed by MR and CR
  - The MR finds a suitable CR
  - Binding state is created at the MR and the CR
  - A bi-directional tunnel between the MR and CR is established
  - Traffic is sent through the tunnel, bypassing the MR-HA tunnel

# Basic operation

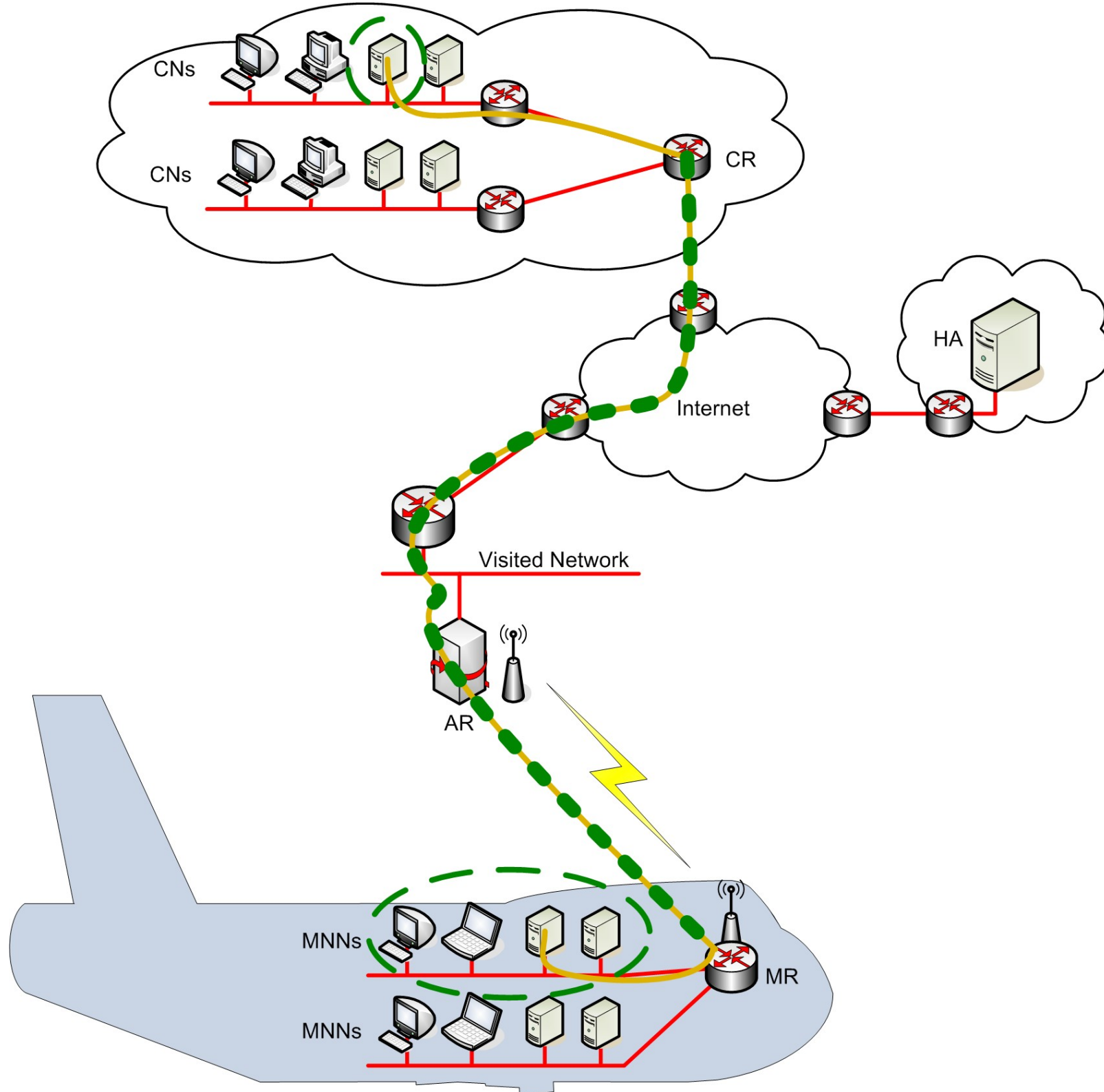


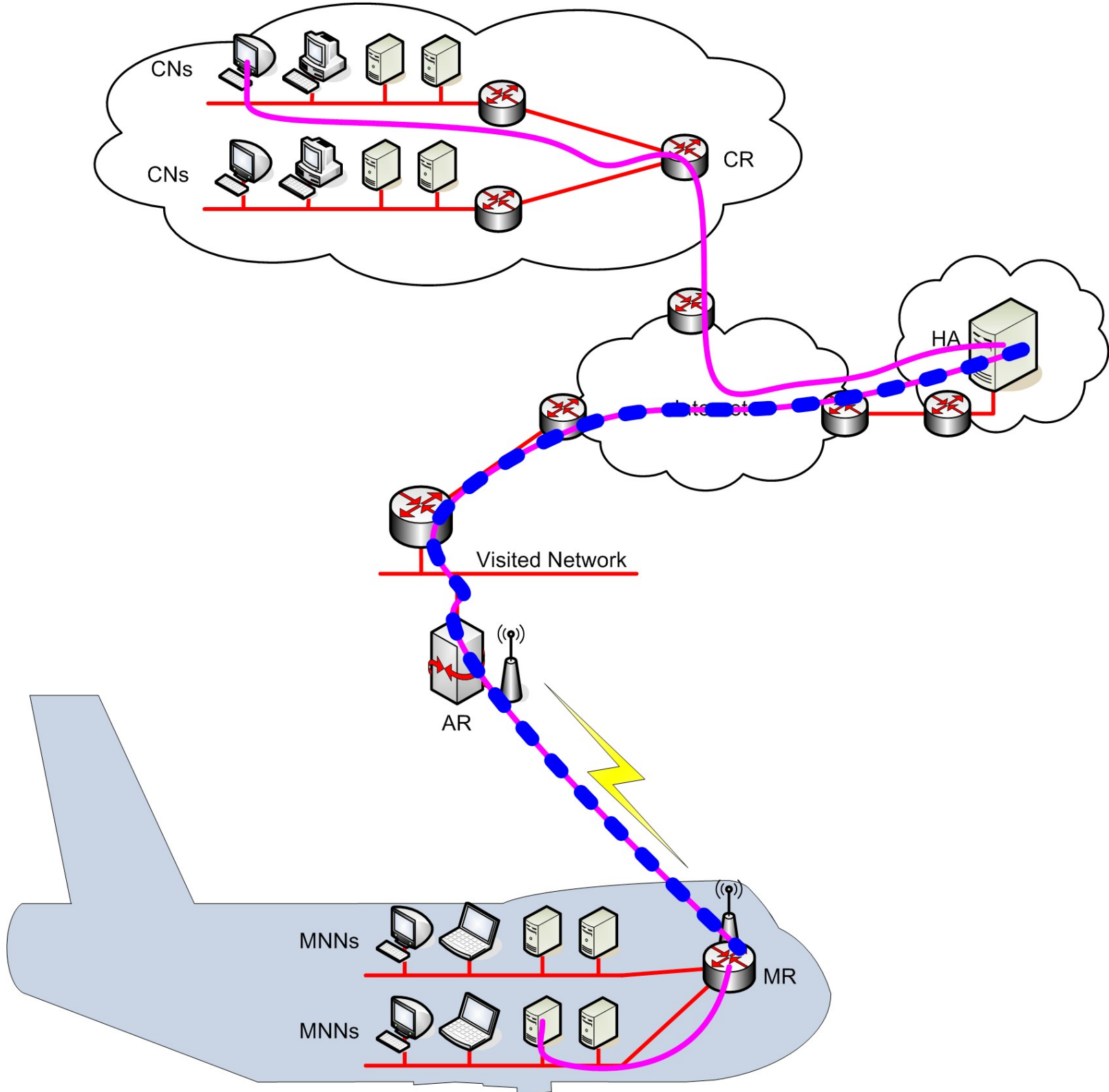
# Some details and open issues (I)

- CR discovery
  - Static configuration might be possible for some scenarios, but it doesn't seem to be enough
  - Dynamic discovery
    - CR on-path: kind-of easy, several potential approaches
    - CR NOT on-path: not so easy, different approaches
      - DNS based/assisted discovery
      - CR anycast address based
      - Deployment of CR-resolver service
        - Might be a distributed service
    - Security considerations/trust assumptions are relevant here

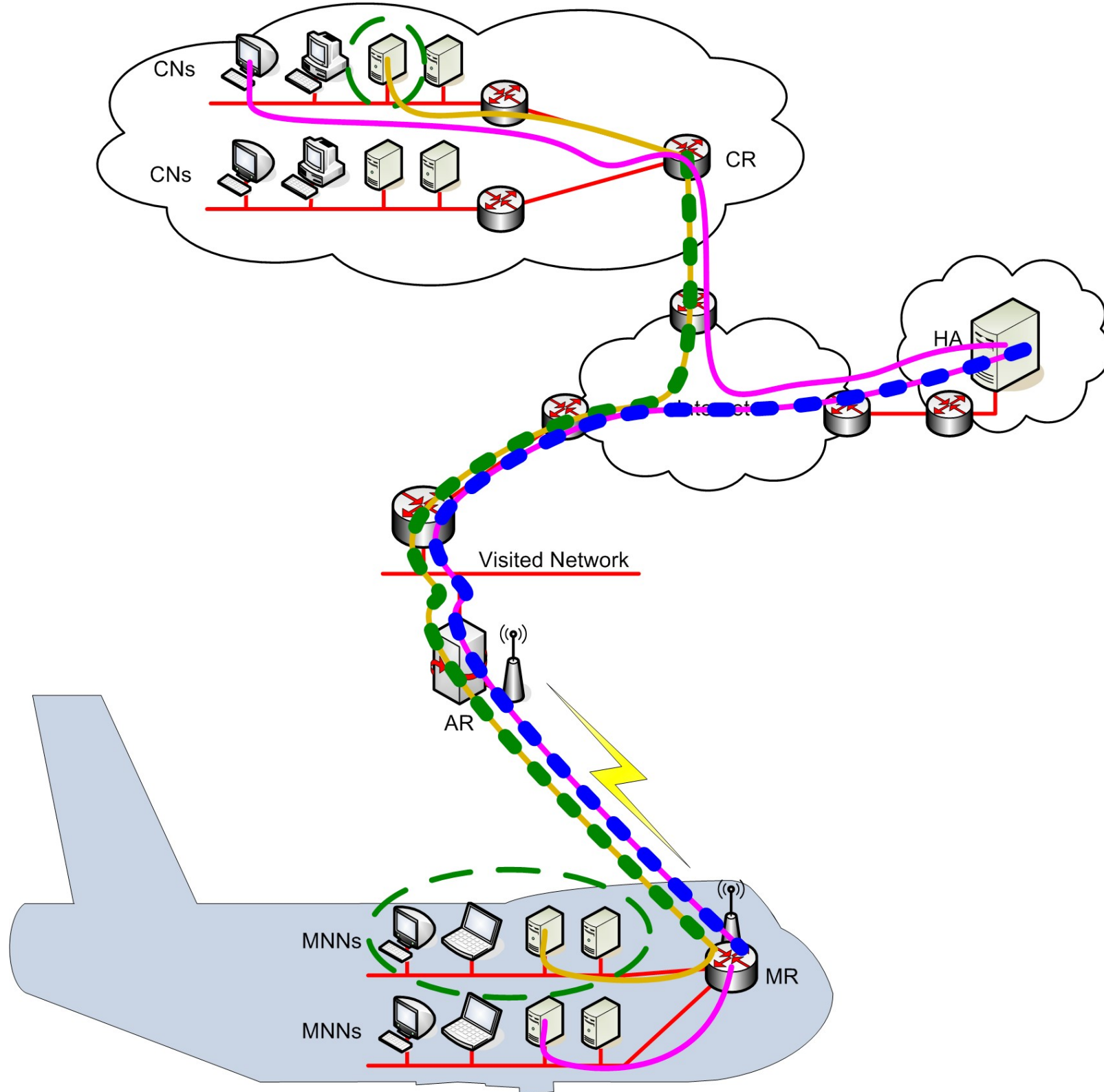
# Some details and open issues (II)

- MR-CR signalling / binding establishment
  - BU/BA based, triggered by the MR
  - Signalling protected by IPsec
  - Binding state generated at the MR and the CR, on a per RO flow basis:
    - MNN IPv6 prefix <--> CN IPv6 prefix
      - MNP Prefix option and a new CR Prefix option defined to carry this information
    - Not limited to MNP <--> CN address binding
    - It allows to meet the “Separability” requirement
  - Proof of prefix ownership based on certificates









# Some details and open issues (III)

- CoA reachability
  - The MR's CoA reachability should be tested by the CR
    - RR might be used if assuming ingress filtering is not enough
- Use of the MR-CR bi-directional tunnel
  - Once the signalling has been completed, the MR-CR tunnel is used for data traffic with...
    - source address within MNN IPv6 prefix, destination address within CN IPv6 prefix,
    - and the other way around
  - Routing tables of MR, CR are updated accordingly
    - Source address based routing might be needed

# Some details and open issues

- If the CR is not the gateway of the CNs, the CR would have to inject IGP routes towards the MNN IPv6 prefix
  - In complex scenarios, this might require a more careful analysis
  - seems doable/feasible though

# TODO: what's next? 🤔

- Careful check of security/trust assumptions
  - Are those feasible for AOS and/or ATS?
- Is it worthwhile to go deeper into the details of a CR-based NEMO RO approach?
  - Protocol details...
  - Security...
- Check out other issues
  - draft-wakikawa-mext-cr-consideration-00
- Look at automotive and CE requirements