

# **CCNx Extension for NRS**

draft-hong-icnrg-ccnx-nrs-01

ICNRG Interim meeting in London

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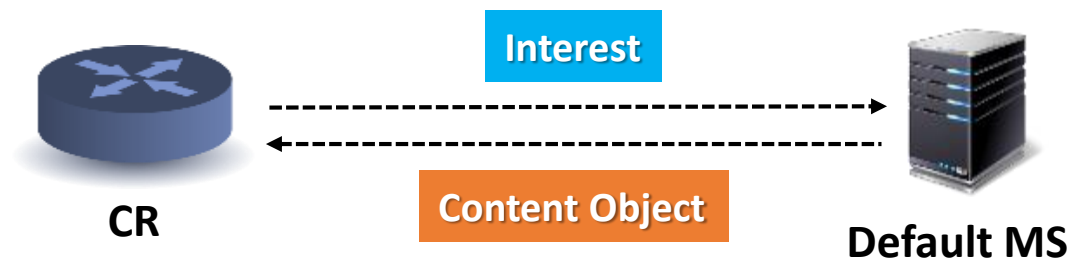
**ETRI**

# Draft motivation

- NDN and CCN are representative projects of ICN which use the hierarchical name based routing
  - NDNS, a distributed mapping system was designed in order to address the routing scalability problem in NDN's DFZ
    - NDNS maintains and lookups the mapping information from a name to its globally routed prefixes
  - CCN also has the same challenge
- *We designed and implemented a NRS for CCN*

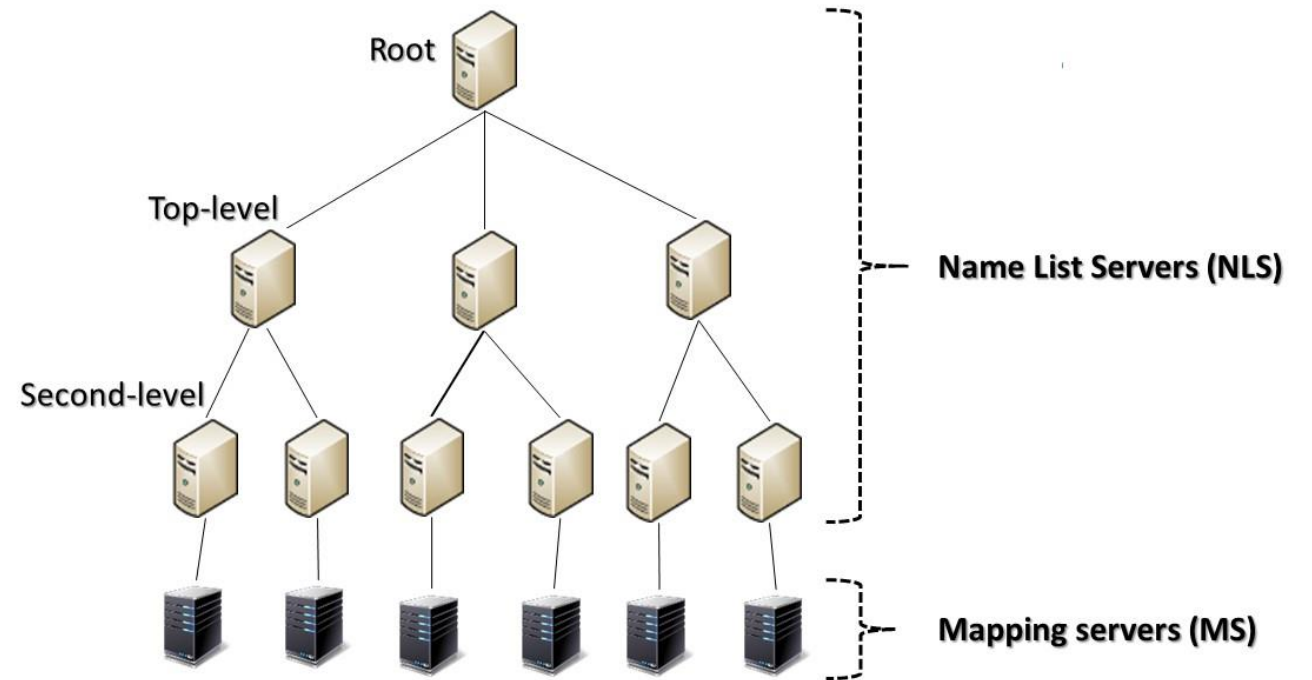
# Mapping server (MS)

- New network entity
- Stores and maintains the mapping table which keeps the bindings of name to some information that is used for Interest forwarding
- All NRS messages are created in CR : network-based approach
  - NRS lookup occurs when no information in FIB
- Assumes that each CR knows its default MS



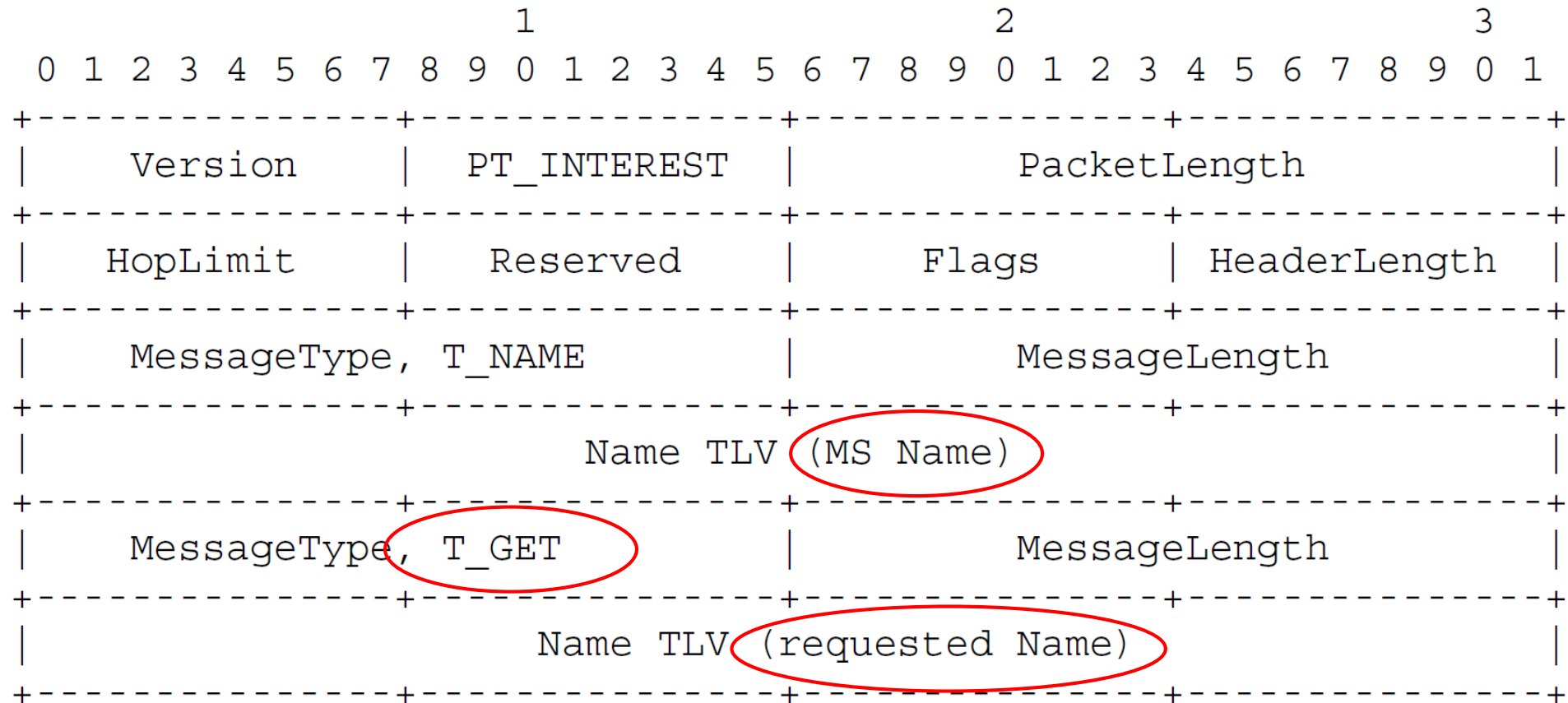
# Name list server (NLS)

- New network entity
- Constructs a tree according to the name hierarchy in CCN
- Only used to find the corresponding MS which stores the binding information of the requested name
  - CR sends the NRS lookup request to its default MS whether it has the binding information of the requested name or not
- IP communication is used between MSs and NLSs

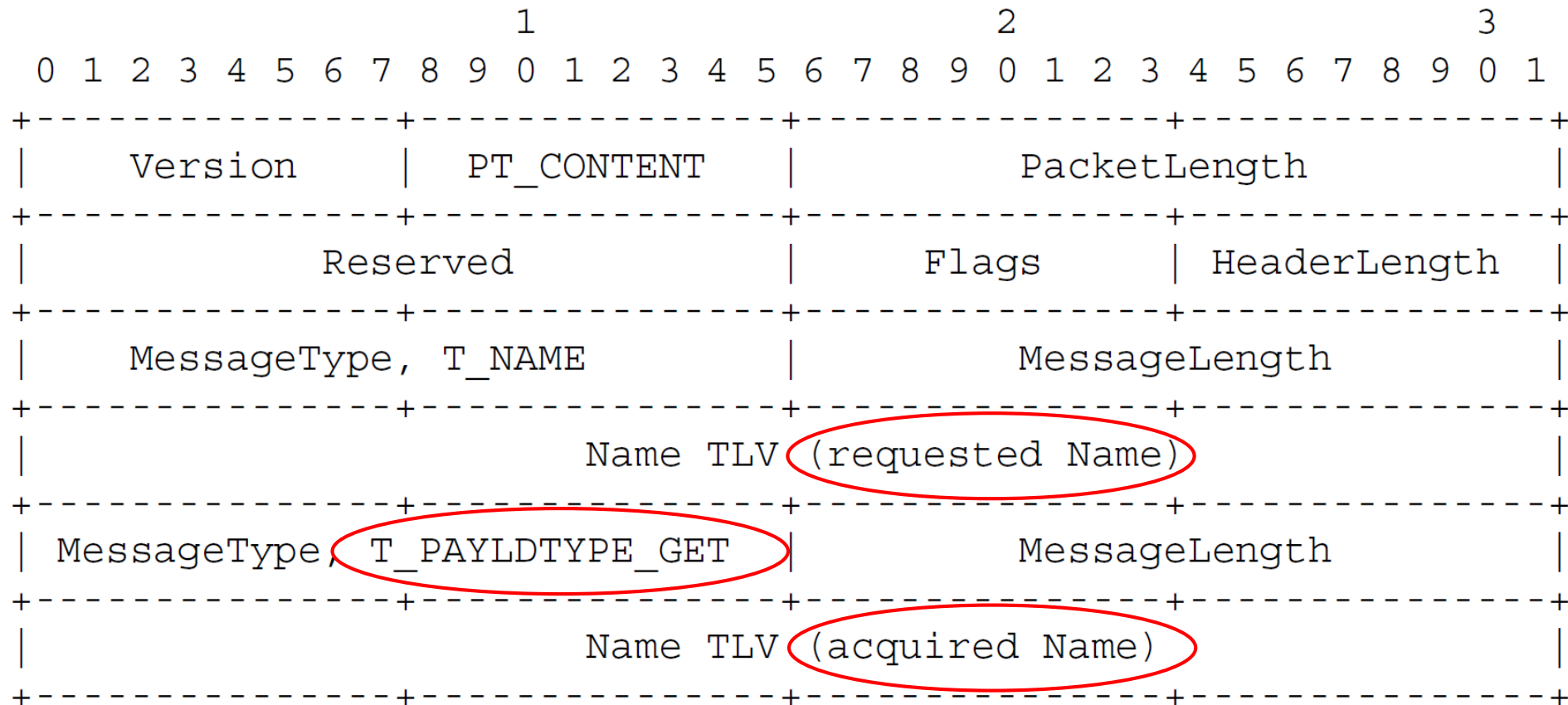


Mapping Table	
com/ccnx/presentation/slide10	com/ccnx/server1 com/ccnx/server2
⋮	⋮

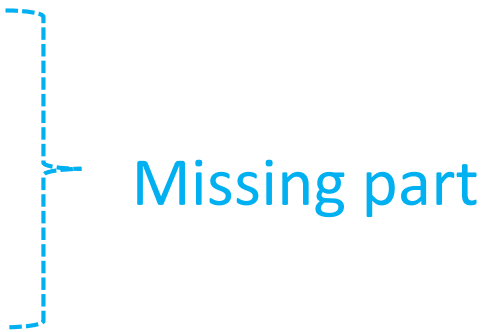
# Interest format for name resolution (I-get)



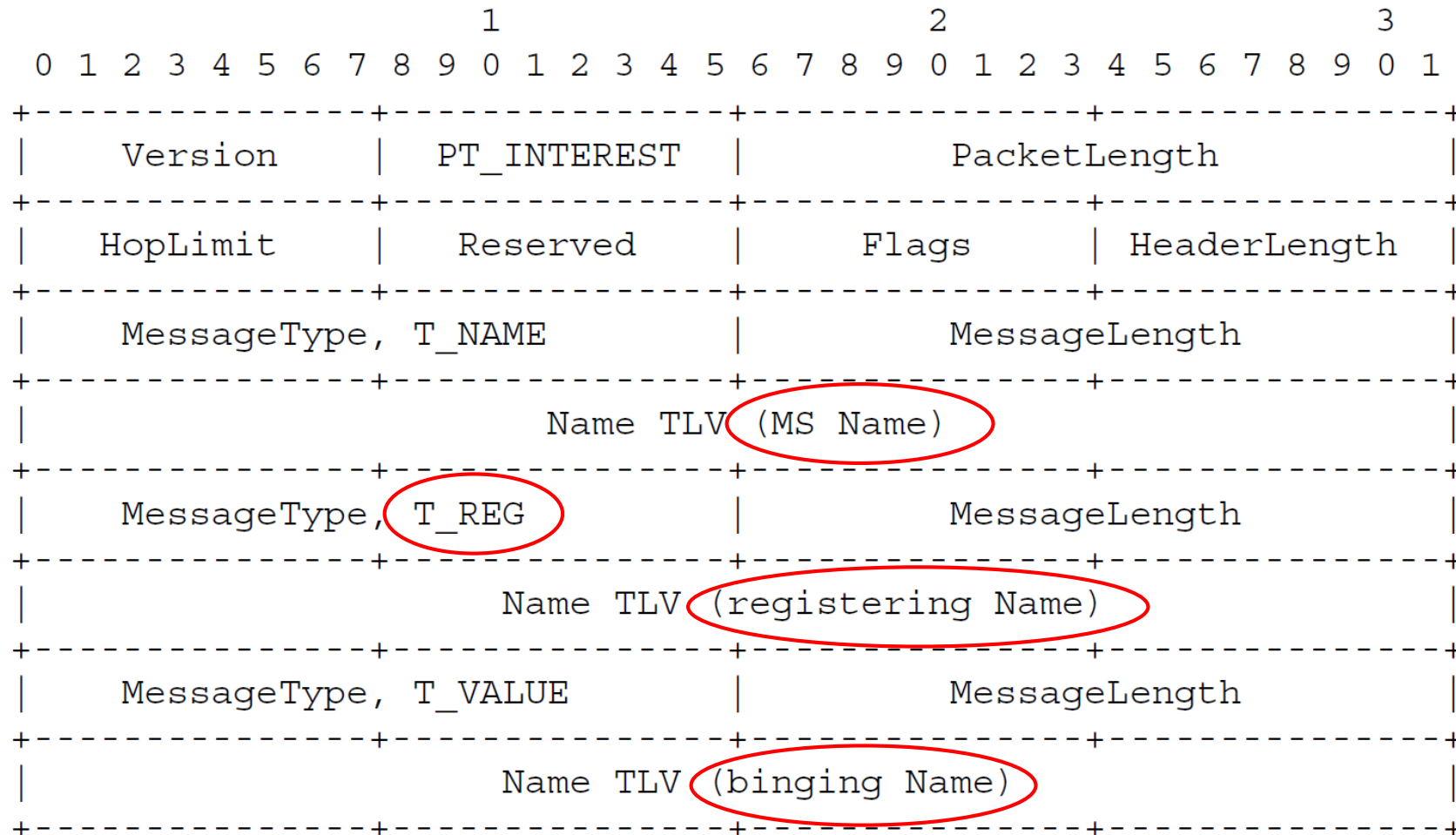
# Content Object format for name resolution (CO-get)



# Name management

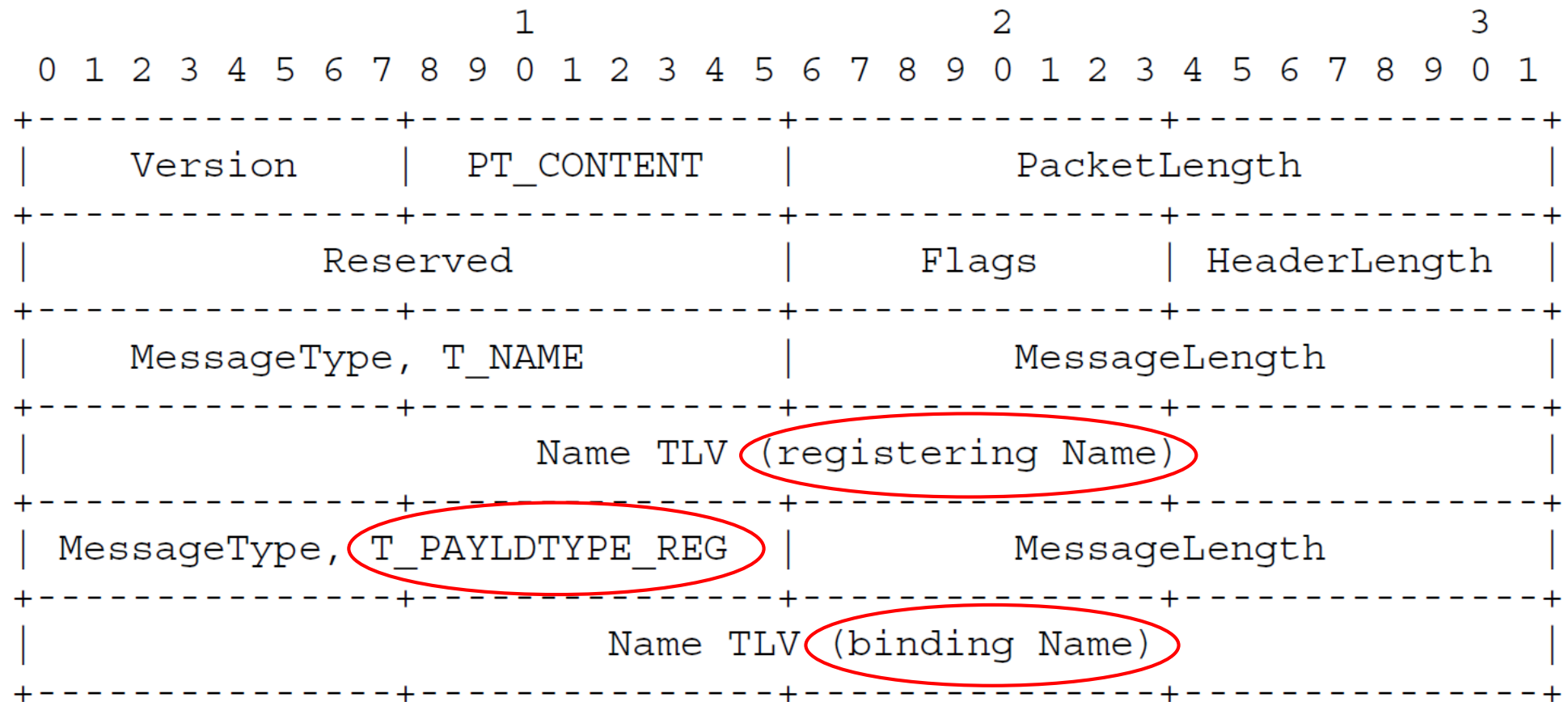
- In order to serve the NRS lookup, the name of data object has to be registered in a mapping server (MS) and its binding information also has to be stored in a MS
  - Name registration → added part
  - Binding information update
    - Add
    - Delete
  - Name de-registration
- 
- Missing part

# Interest format for name registration (I-reg)





# Content Object format for name registration (CO-reg)



# Forwarder changes

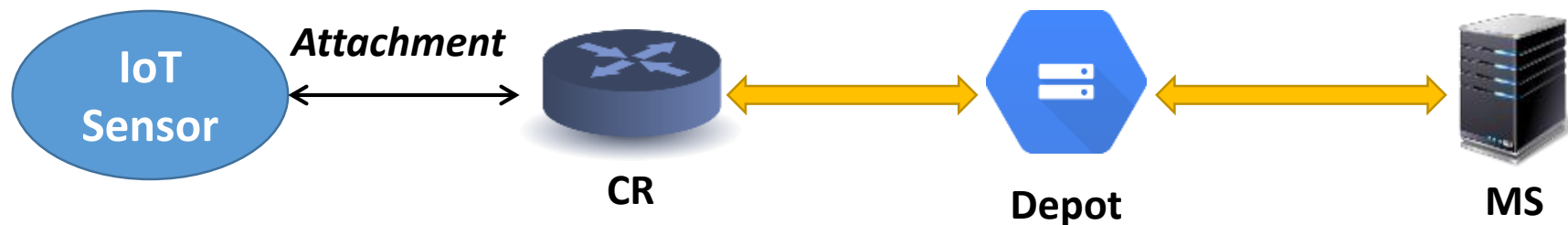
- This is missing in draft but implemented
- Interests for I-get and I-reg need to be forwarded to a MS
- So, the first MS name is used only for Interest forwarding
- The requested/registering name is used for PIT update
- So, CO-get and CO-reg are forwarded to the corresponding CR by the requested/registering name

# Next plan : Add our NRS use cases (1/3)

- Replica service
  - Getting replica's name(s) by NRS
  - Implementation is done

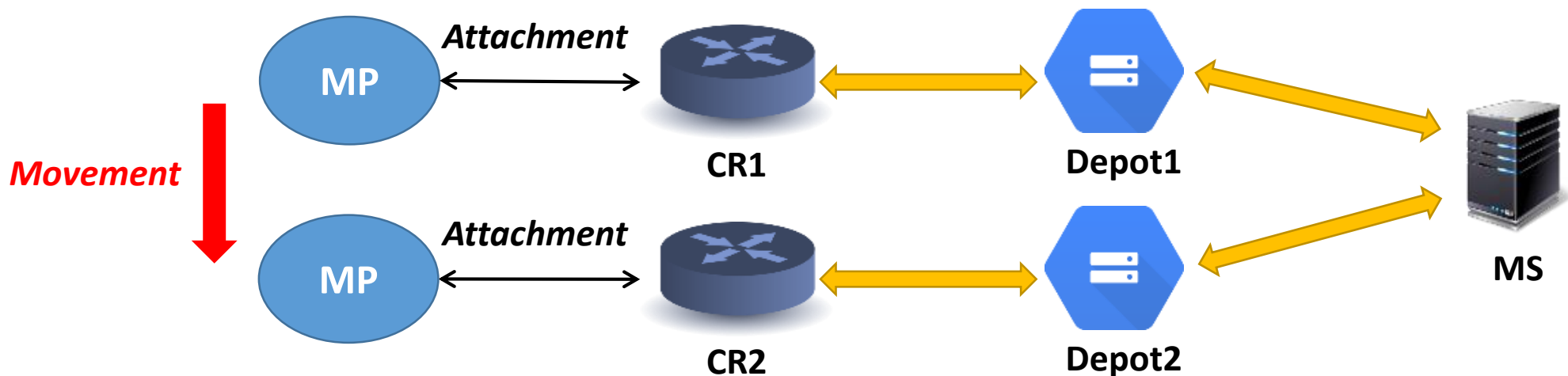
# Next plan : Add our NRS use cases (2/3)

- IoT sensing data gathering (in progress)
  - Enabling IoT sensing data to be stored in a depot
  - Assumes that NRS registration procedure of IoT sensor's information is going through the depot



# Next plan : Add our NRS use cases (3/3)

- Producer mobility (in progress)
  - Data produced by moving producer (MP) is assumed to be stored in distributed depots
    - Depots are chosen according to the MP's movement
    - So, the depot for a MP may be changed by its movement
  - Getting the corresponding depot's name by NRS



# Questions and comments?