Simulating LISP-Based Multilink Communications in Aeronautical Networks

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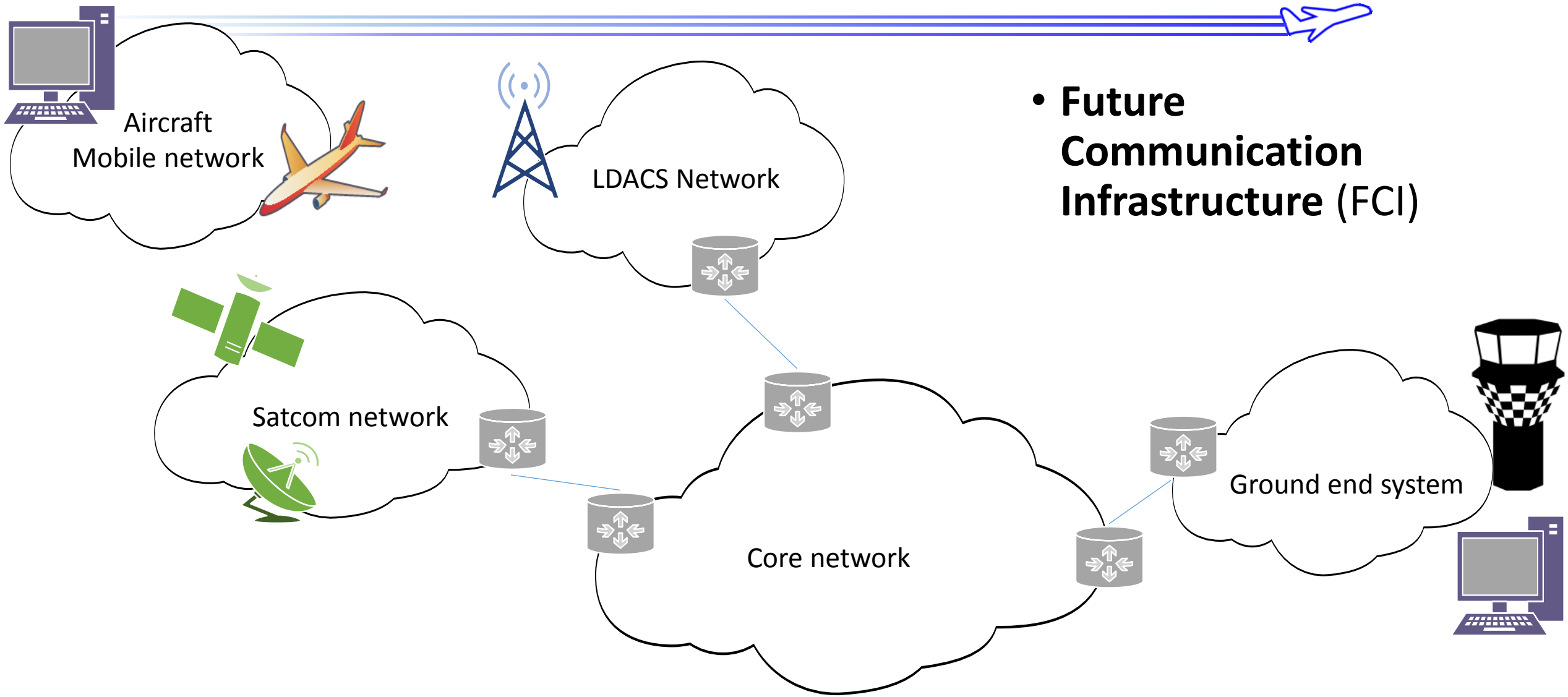
Outline

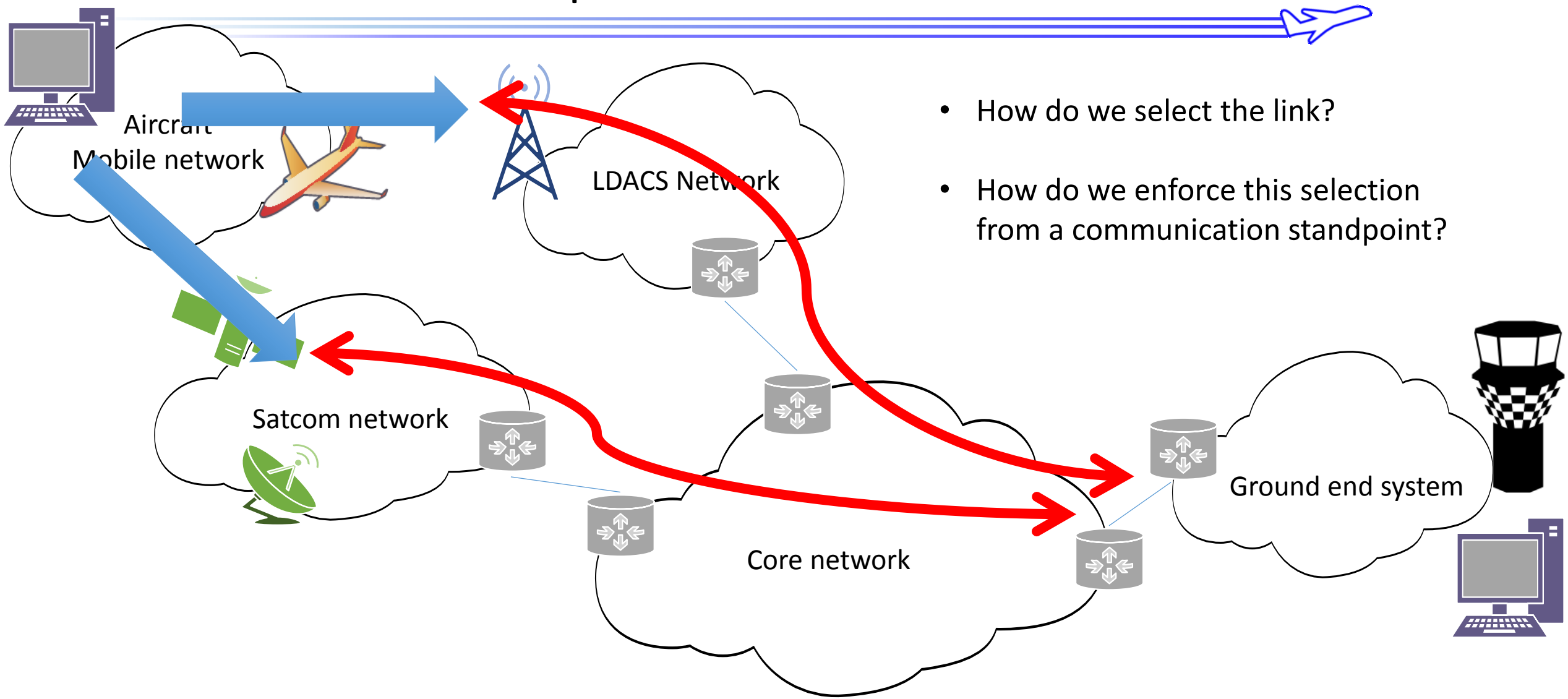
- Overview of aeronautical communications
- Handover and Multilink
- LISP protocol
- Performance evaluation
- Conclusions

Aeronautical communications



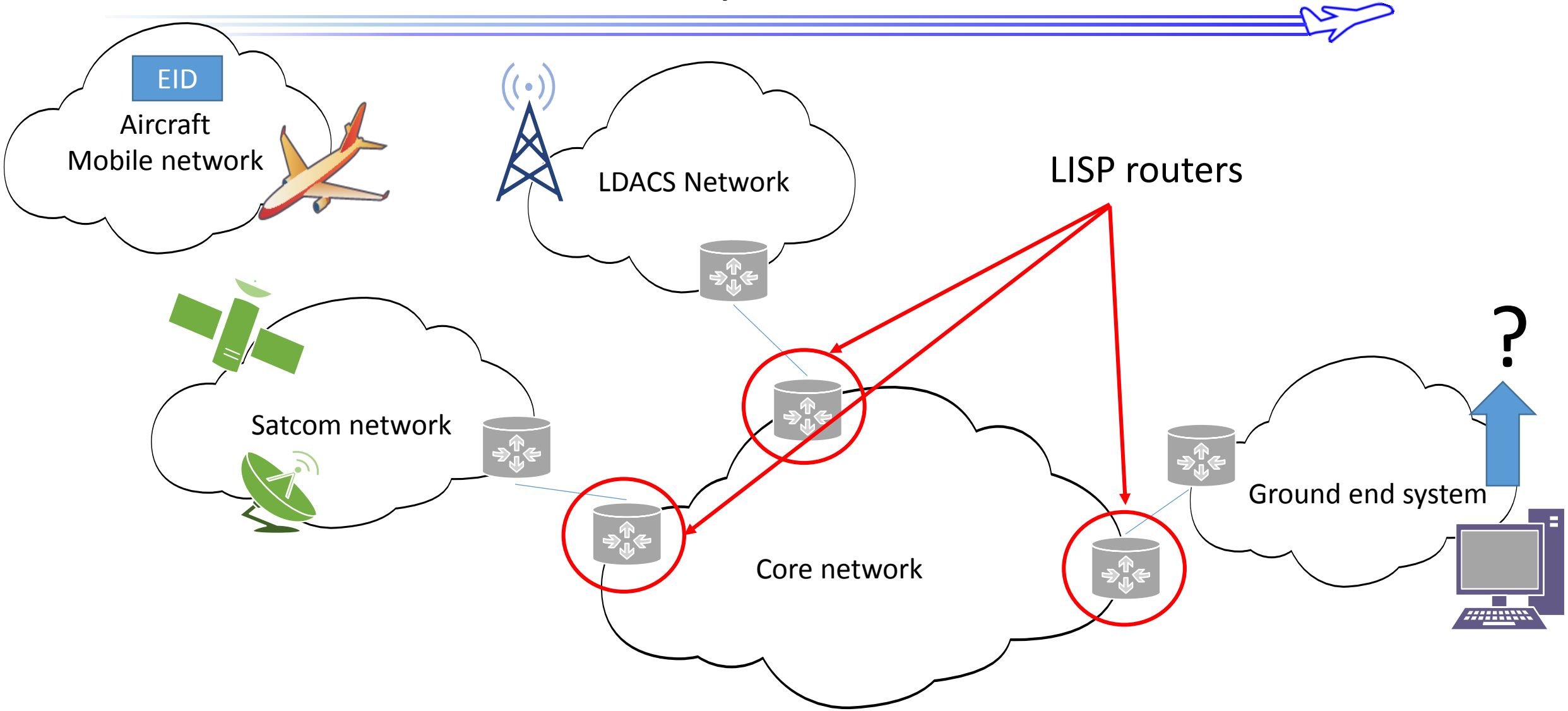
- **Future Communication Infrastructure** (FCI)

Multilink Concept

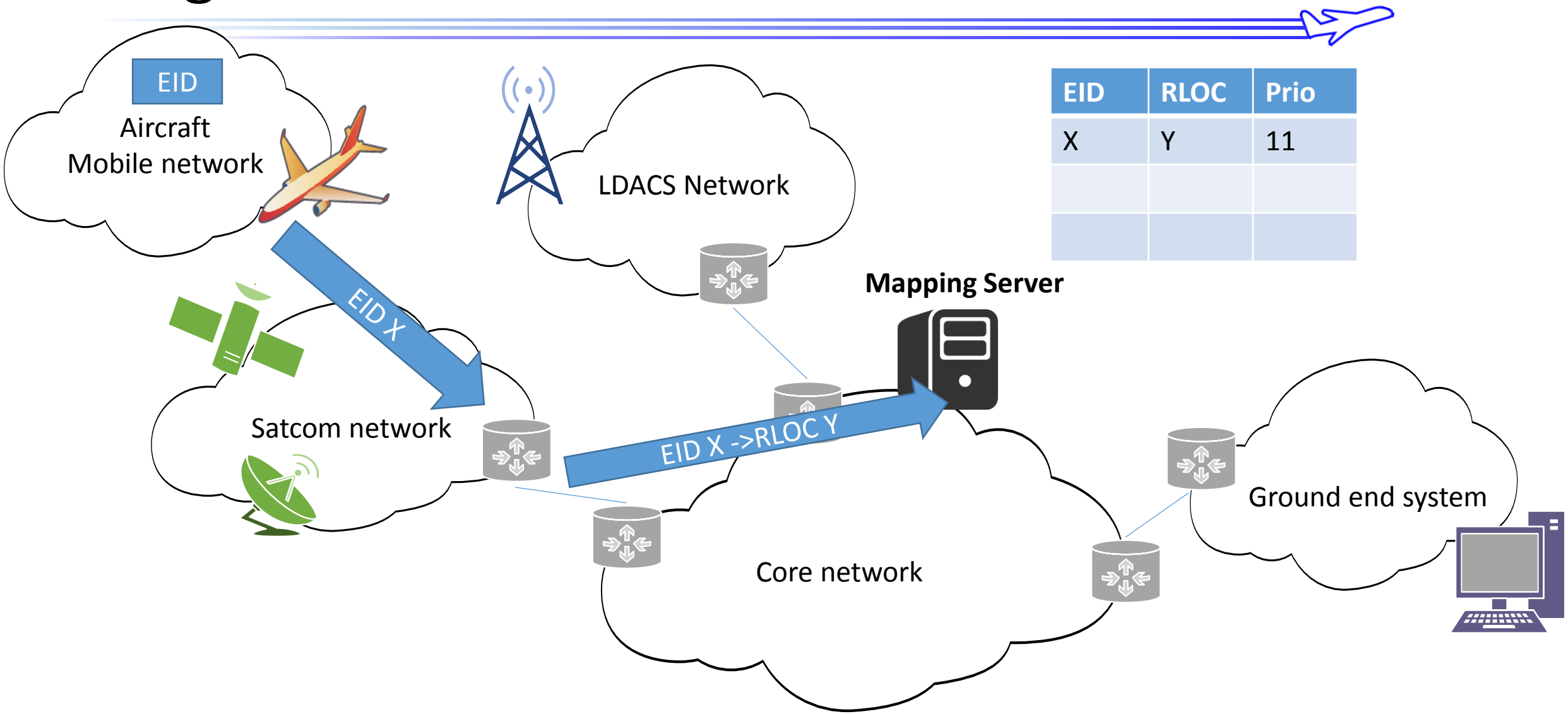


- How do we select the link?
- How do we enforce this selection from a communication standpoint?

Locator/Identifier Separation Protocol (LISP)

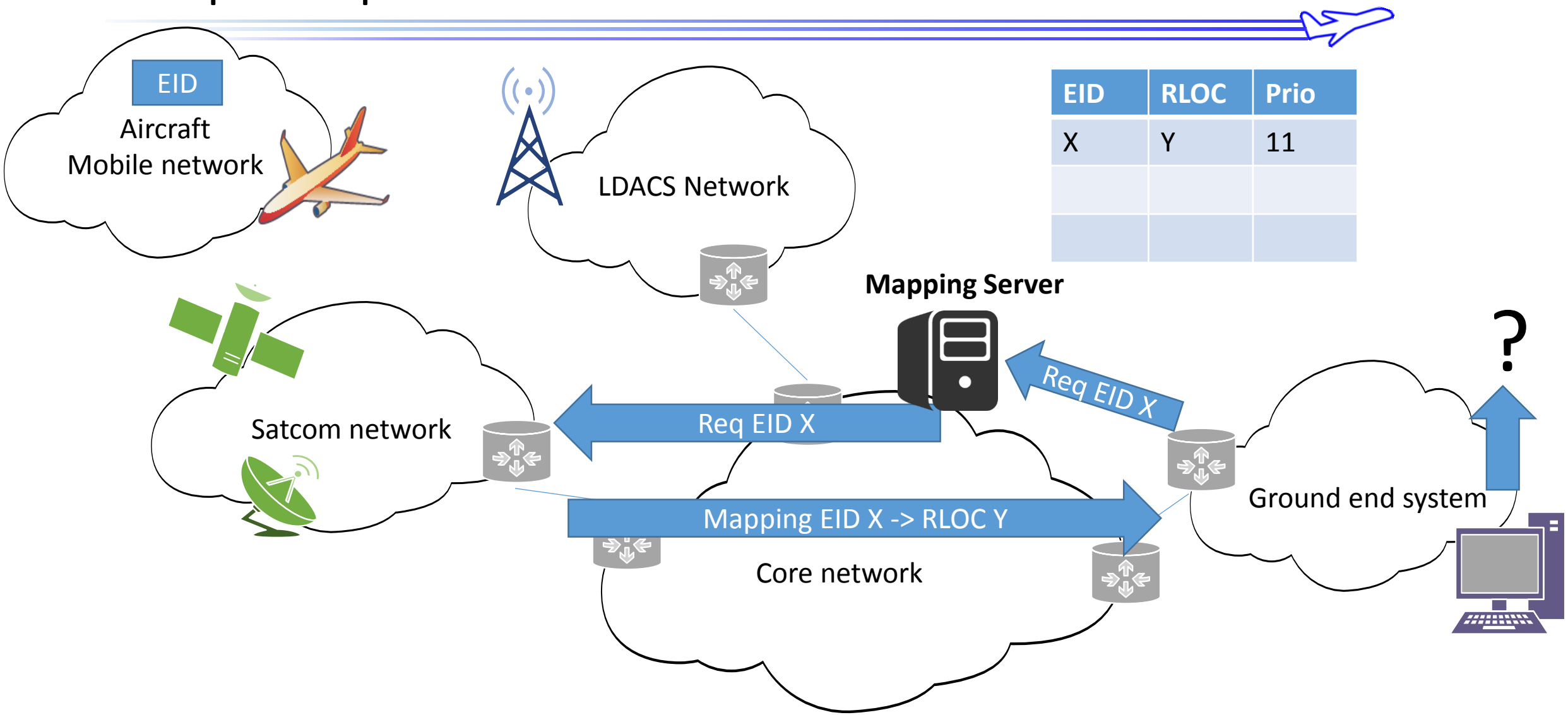


Registration: EID to RLOC



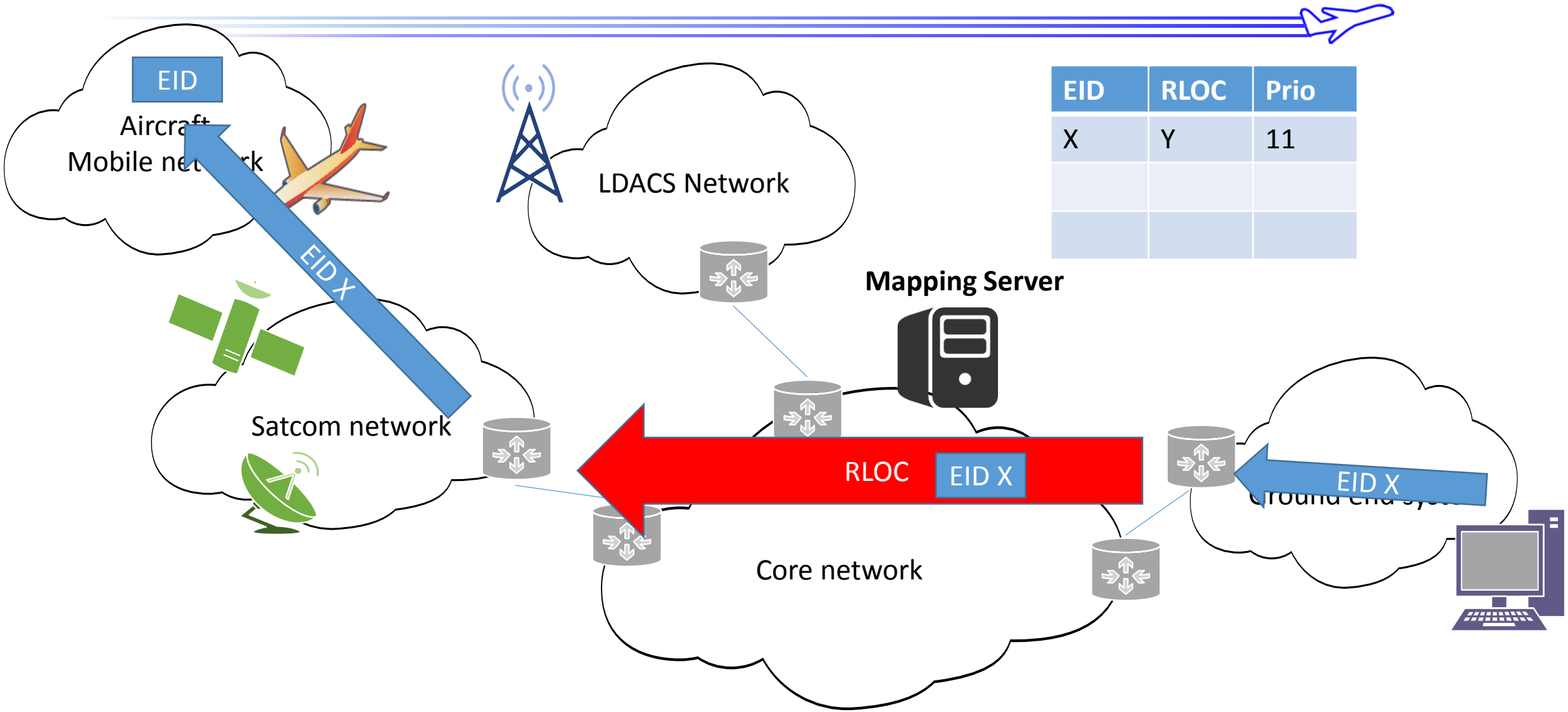
EID	RLOC	Prio
X	Y	11

Map Request



EID	RLOC	Prio
X	Y	11

Data Transmission



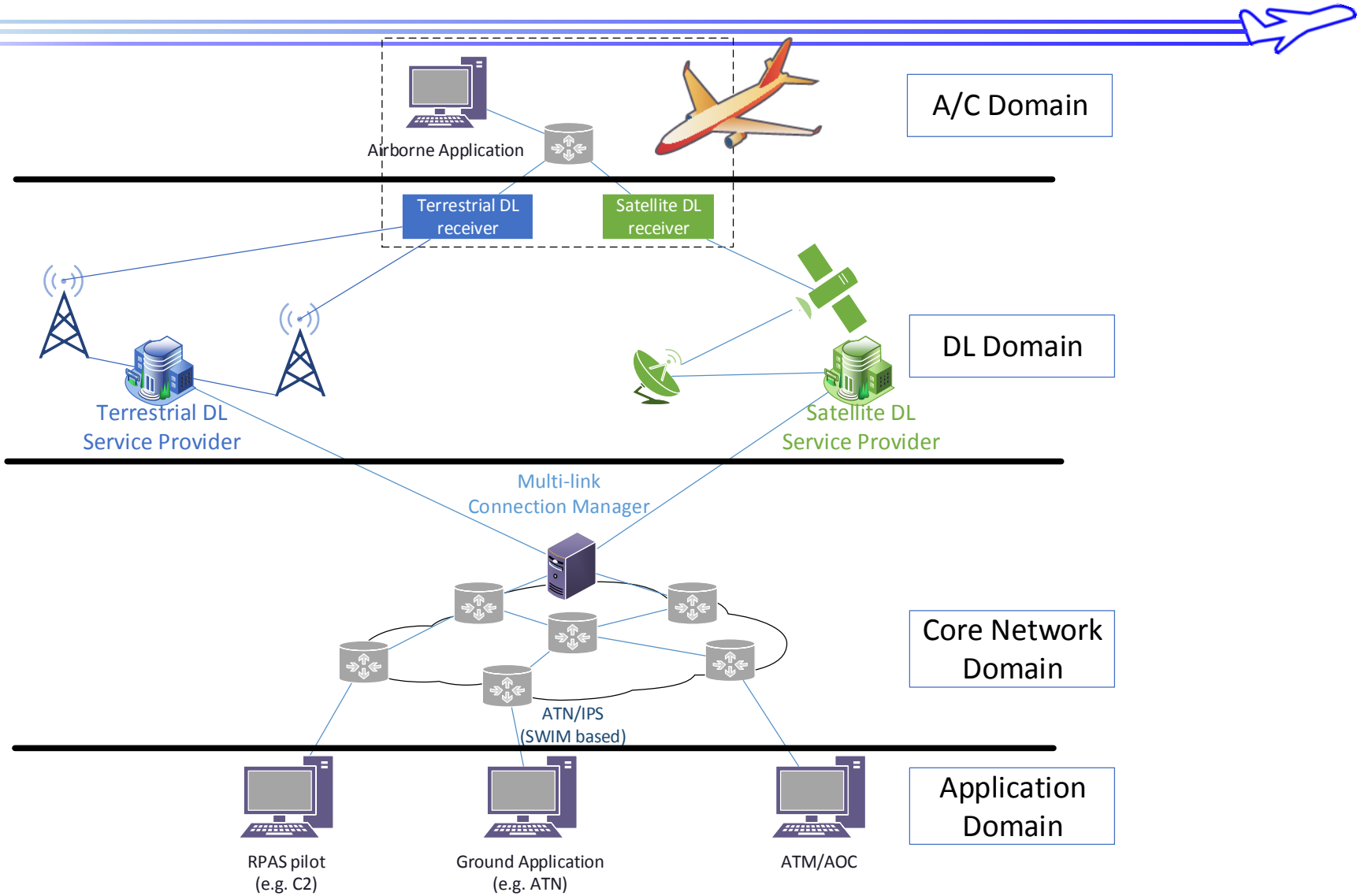
EID	RLOC	Prio
X	Y	11

Motivation

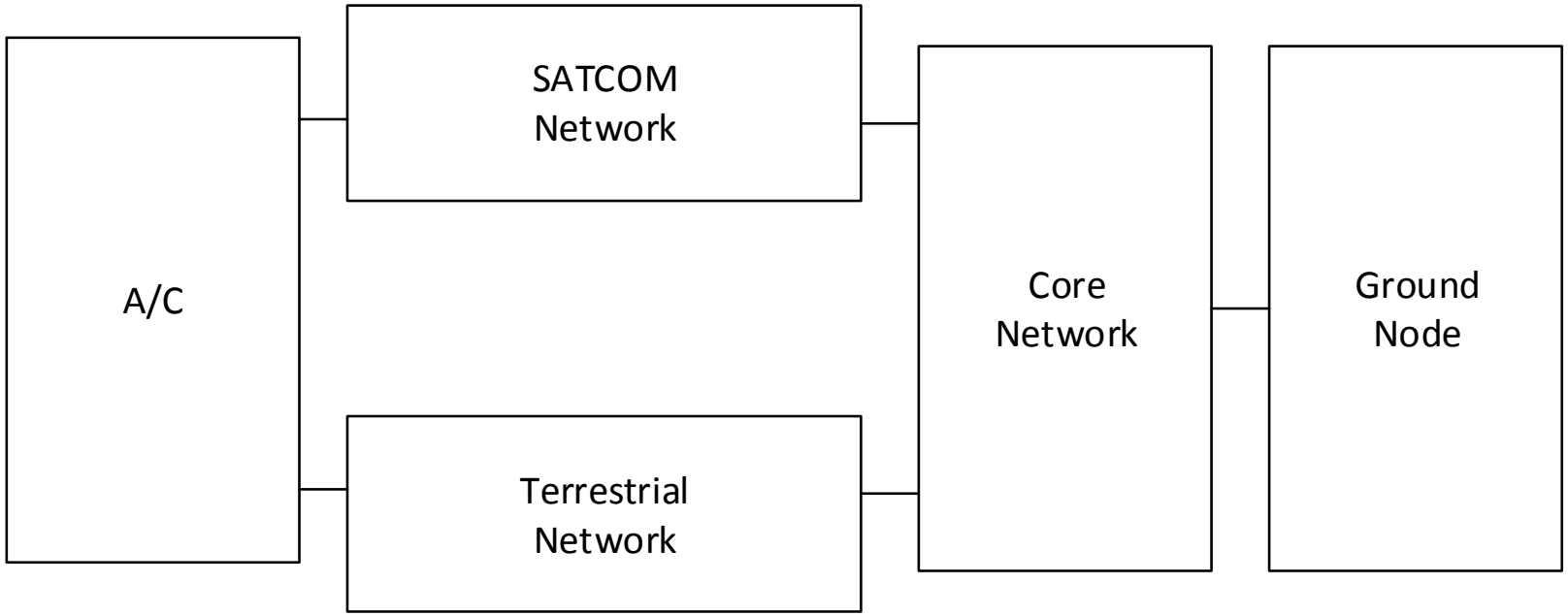
- Studying **Aeronautical communications** in a **Multilink environment**
- Evaluating the impact of communication protocols in terms of:
  - System **overhead** (number of additional messages)
  - System **load** (computation at critical nodes, storage capacity)

- Extensible to:
  - Multiple DataLinks
  - Multiple Applications and Communication Services

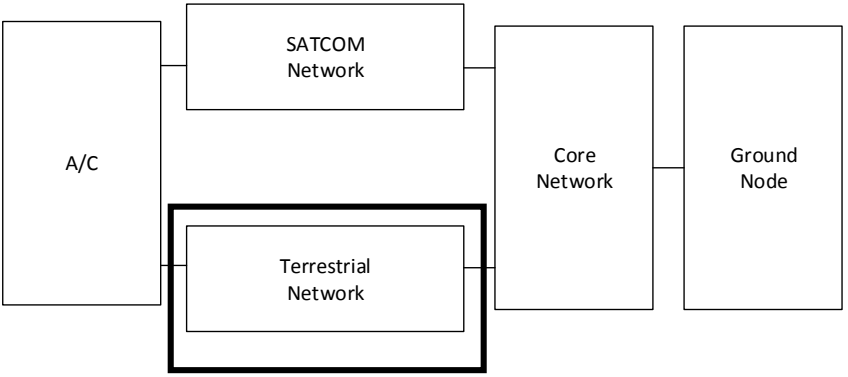
SAPIENT Simulator: Modeling the Communication Network

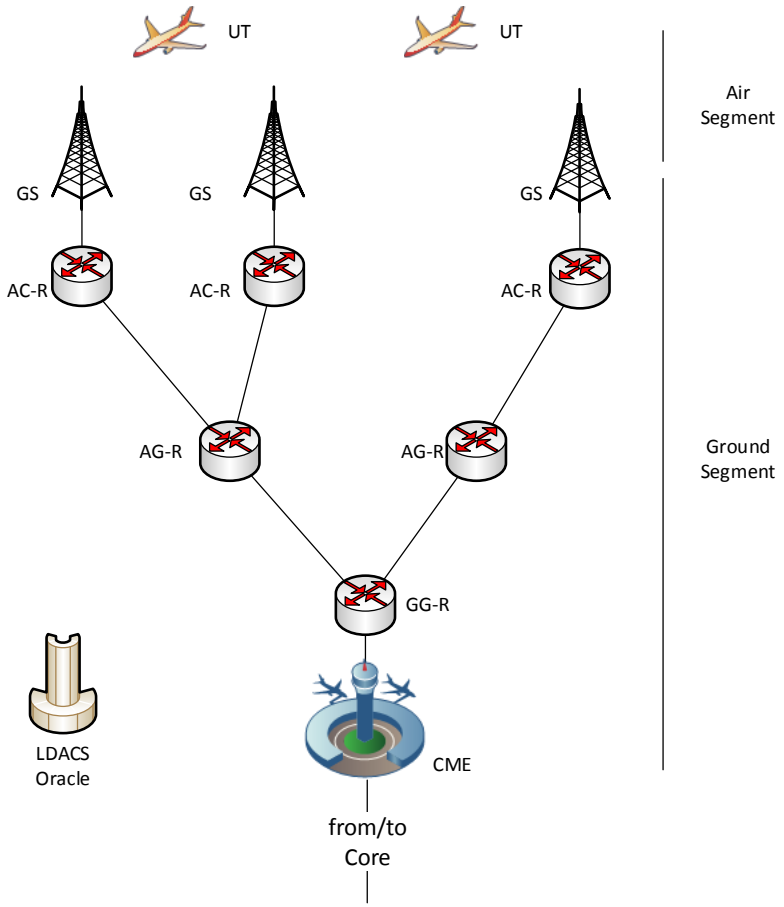


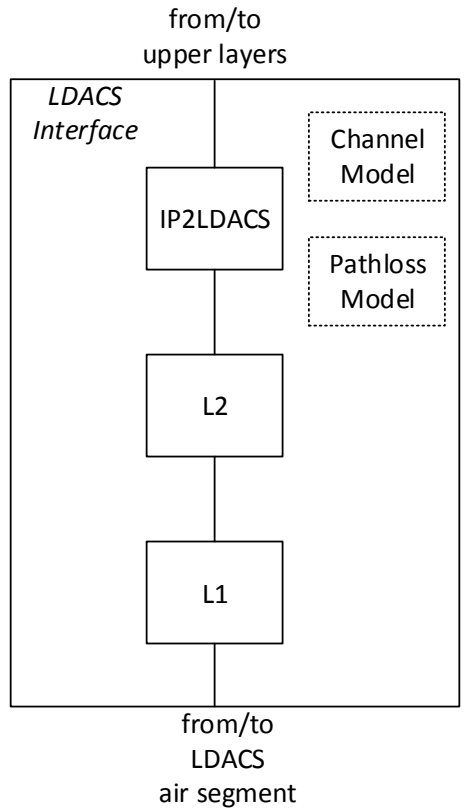
SAPIENT Simulator

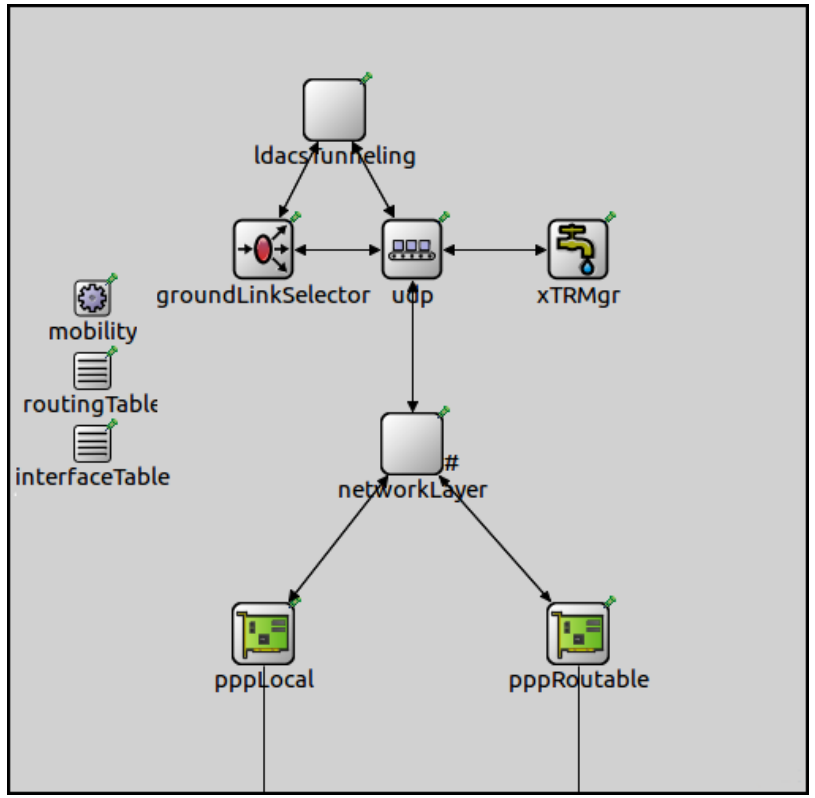


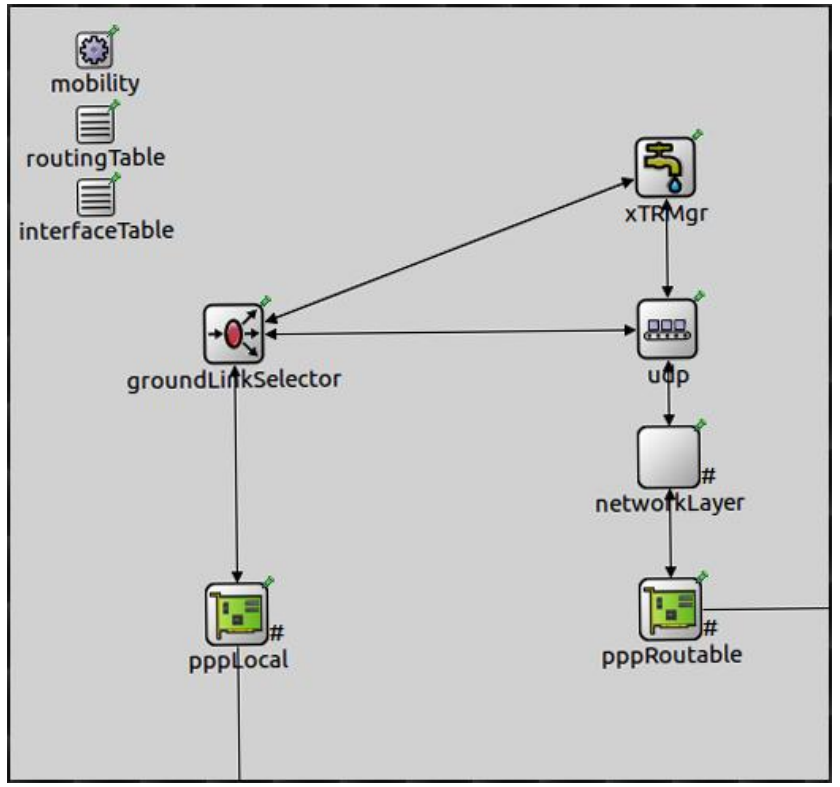
Example: Terrestrial DL (LDACS)








ldacsTunneling
groundLinkSelector
udp
xTRMgr
mobility
routingTable
interfaceTable
networkLayer
pppLocal
pppRoutable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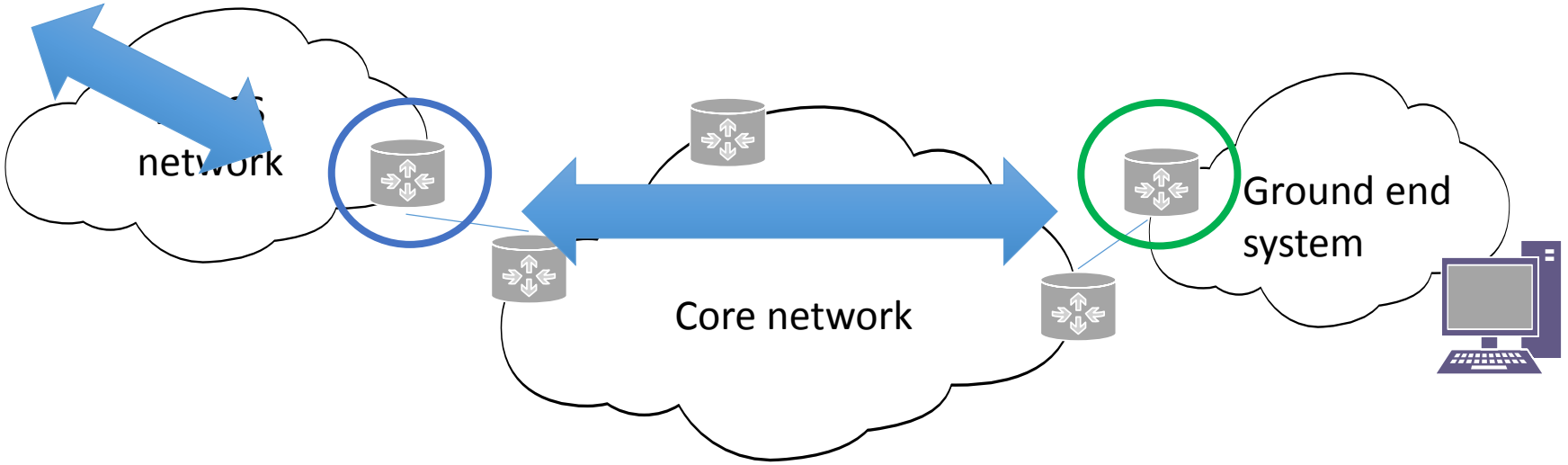
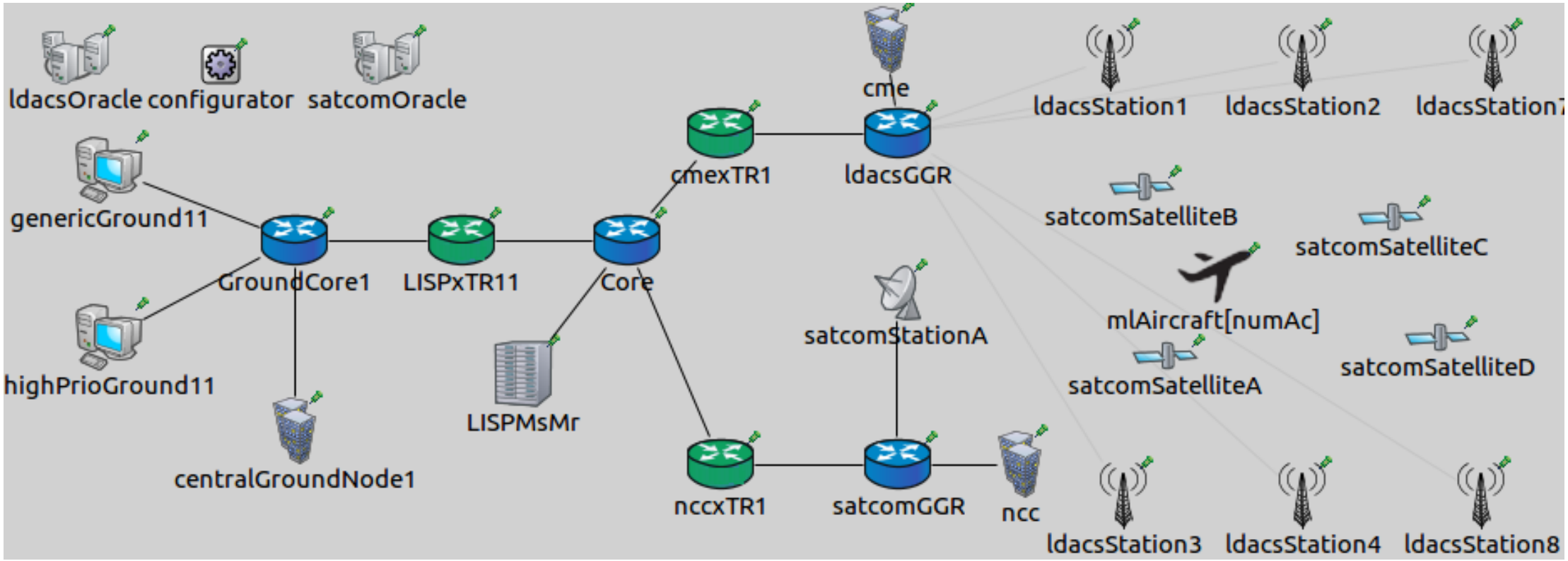
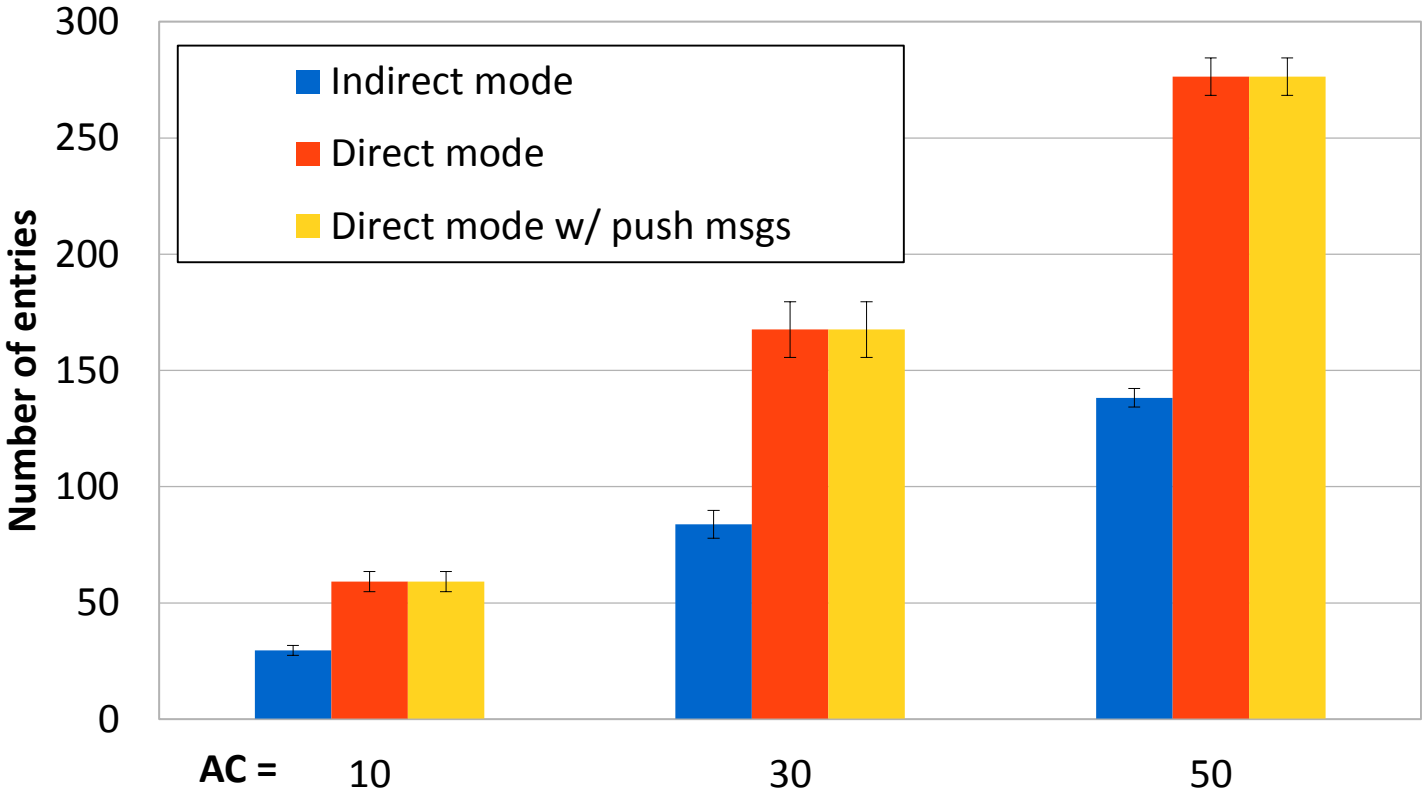

network
Core network
Ground end system

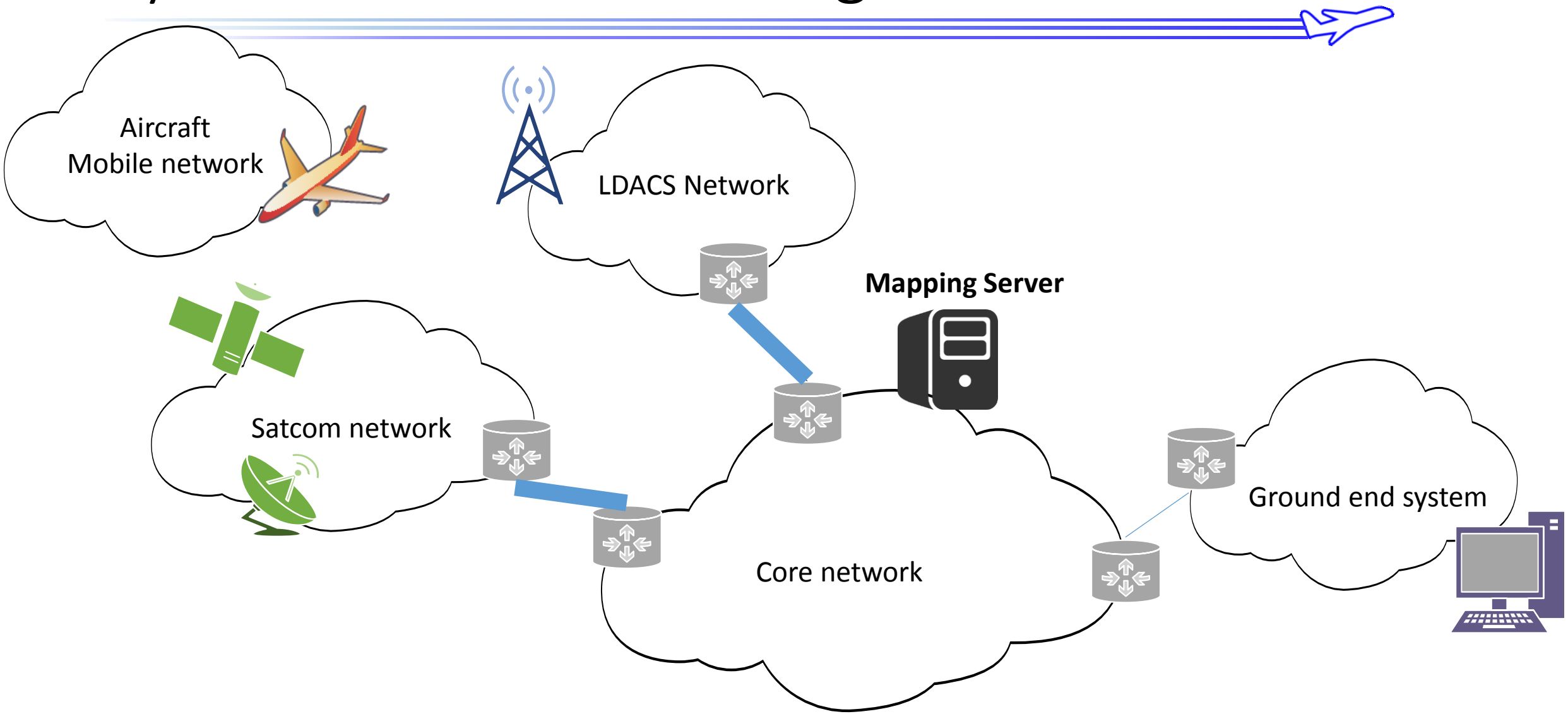
Simulation Scenario



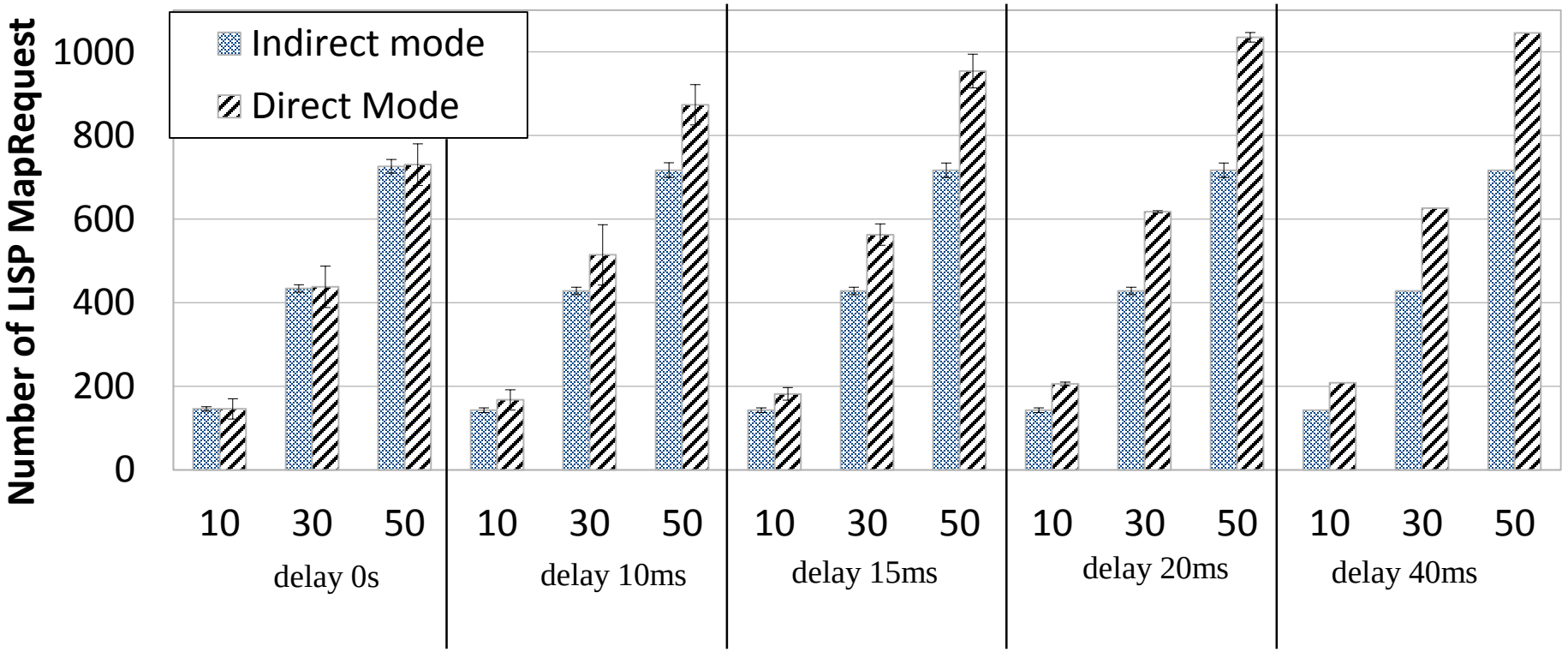
System Load: stored entries



System Load: # of messages



System Load: # of messages (2)



Conclusions and Future Work

- SAPIENT + LISP: system-level simulator for FCI and Multilink
- Arbitrarily increase the complexity of domains, keeping the same Router Architecture
- Evaluation of the system LOAD

- Move everything to IPv6
- Testing using realistic traffic models and mobility patterns