

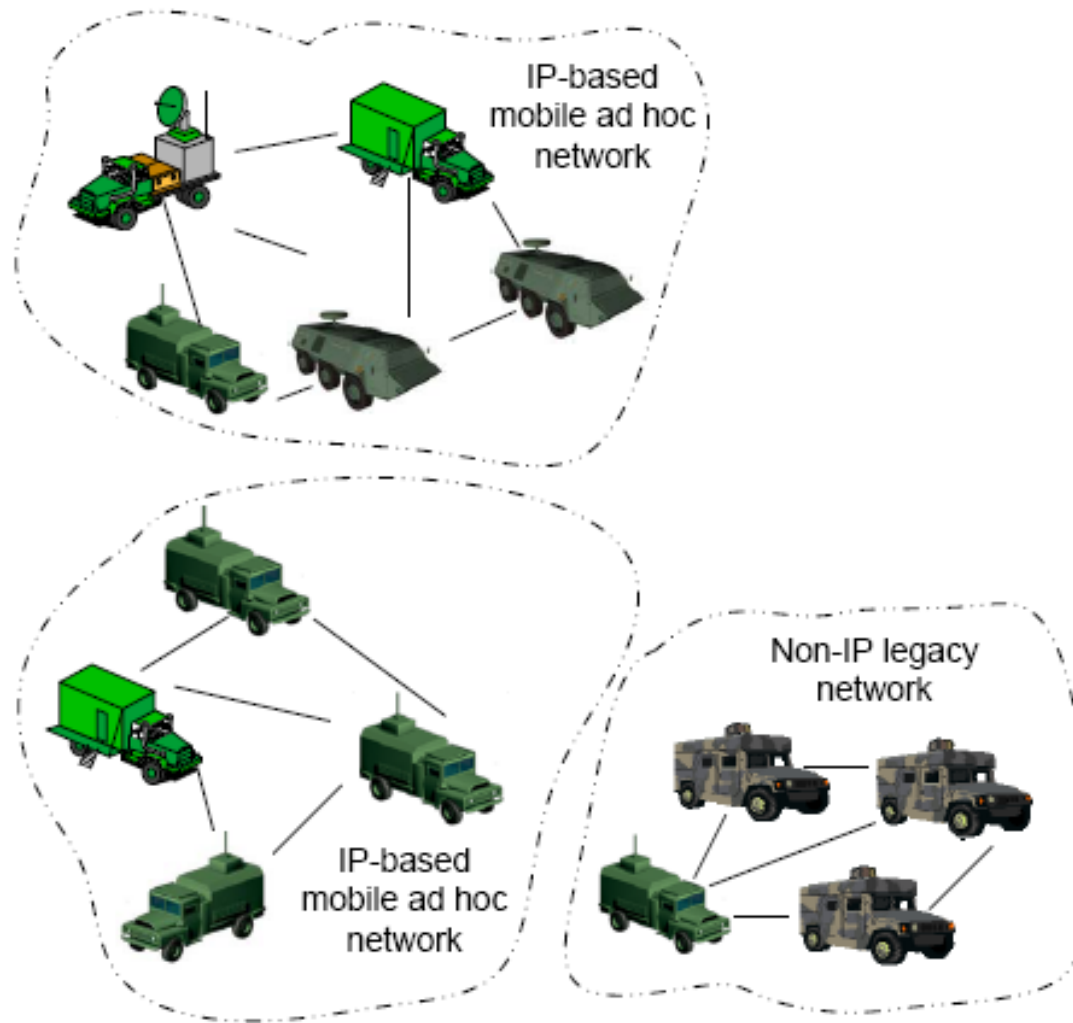
A Distributed Routing Architecture for Secure Communication over Highly Dynamic Radio Networks

Presentation at COMSNETS 2009
Technical Program
8 January 2009, Bangalore

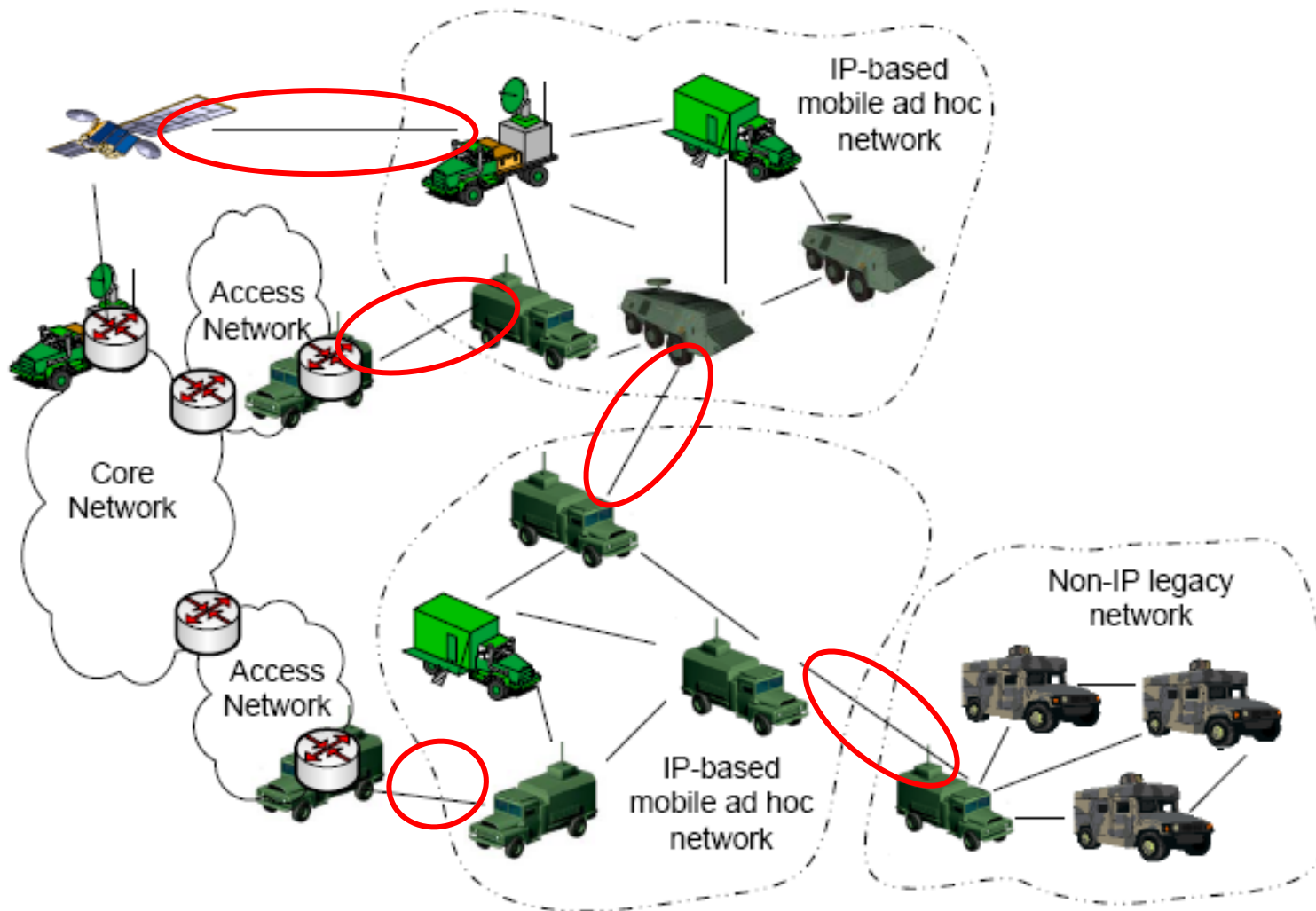
{Sebastian.Hanigk, Michael.Kretzschmar,
Frank.Eyermann} @unibw.de

- Problem Description
- Idea of our Approach
- ForCES
- Architecture of a Distributed Router
- Generic Design
- Further work

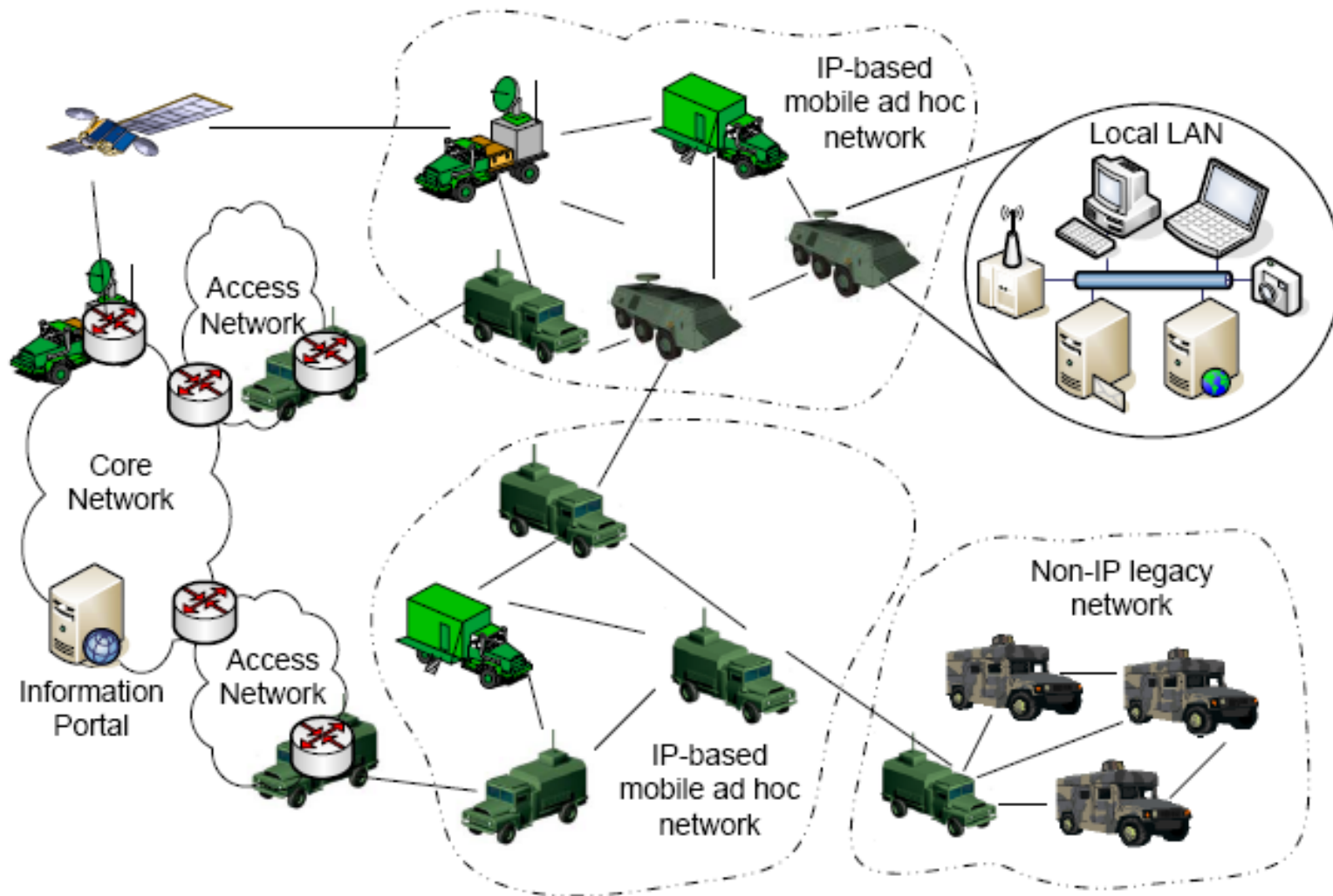
Scenario



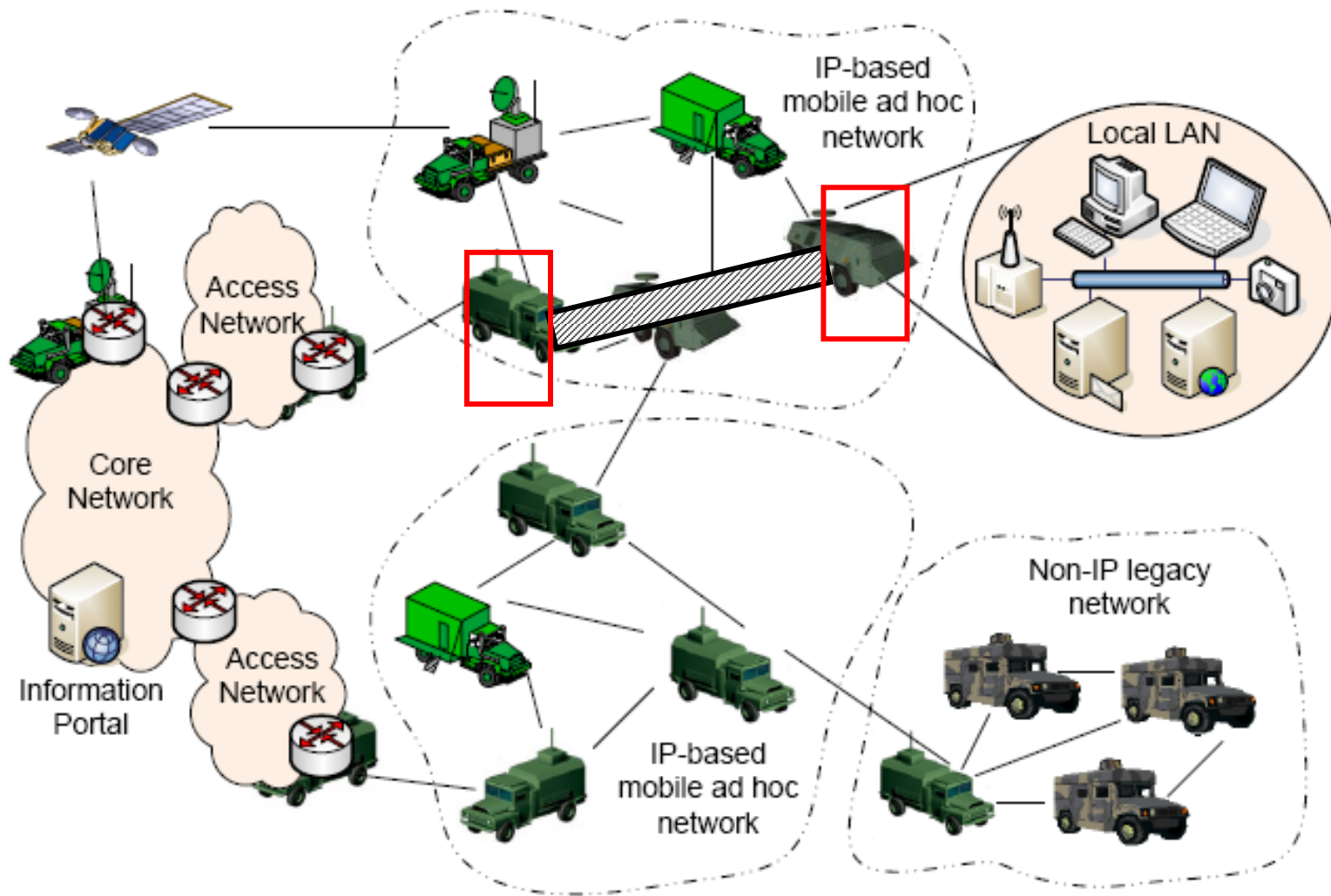
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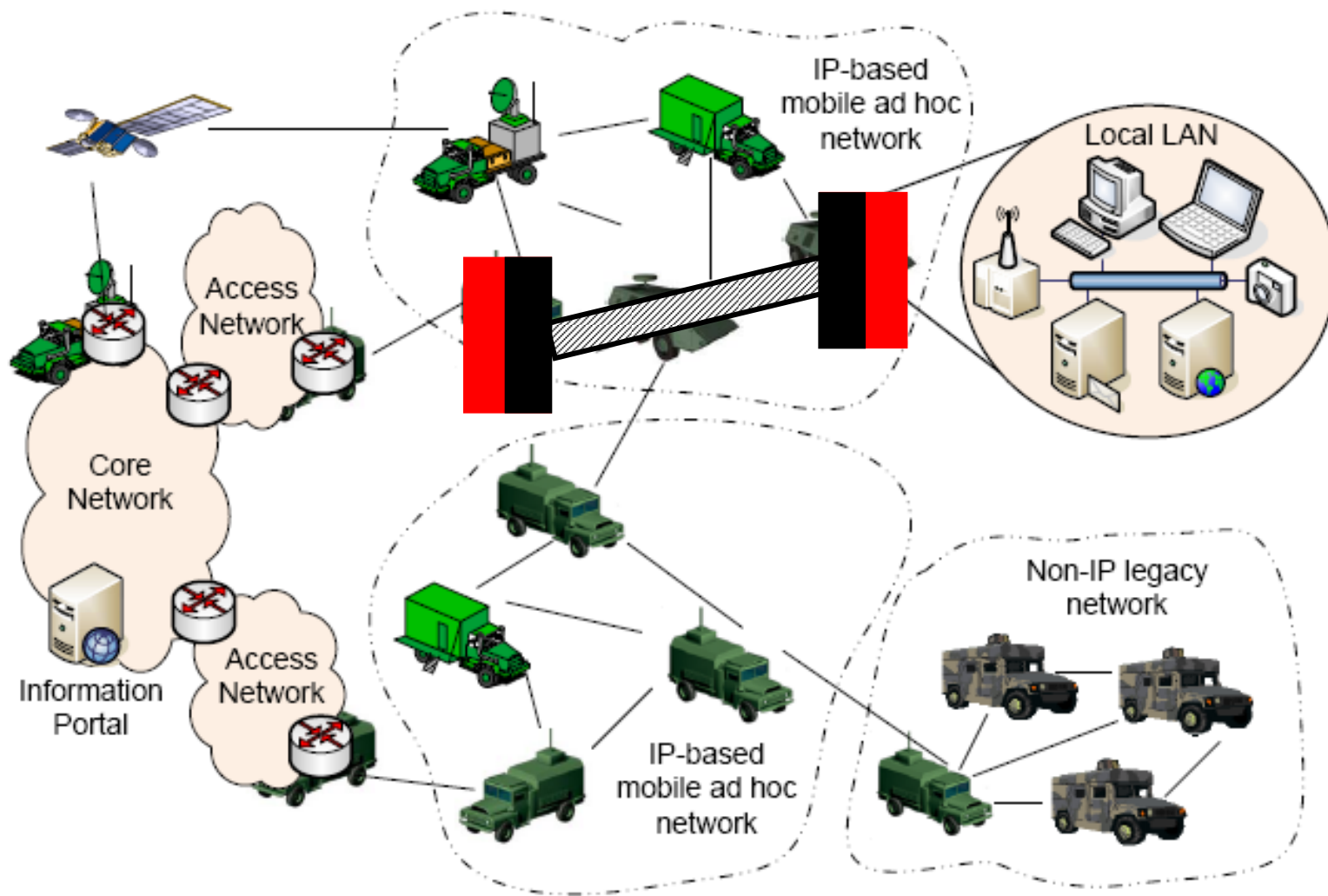
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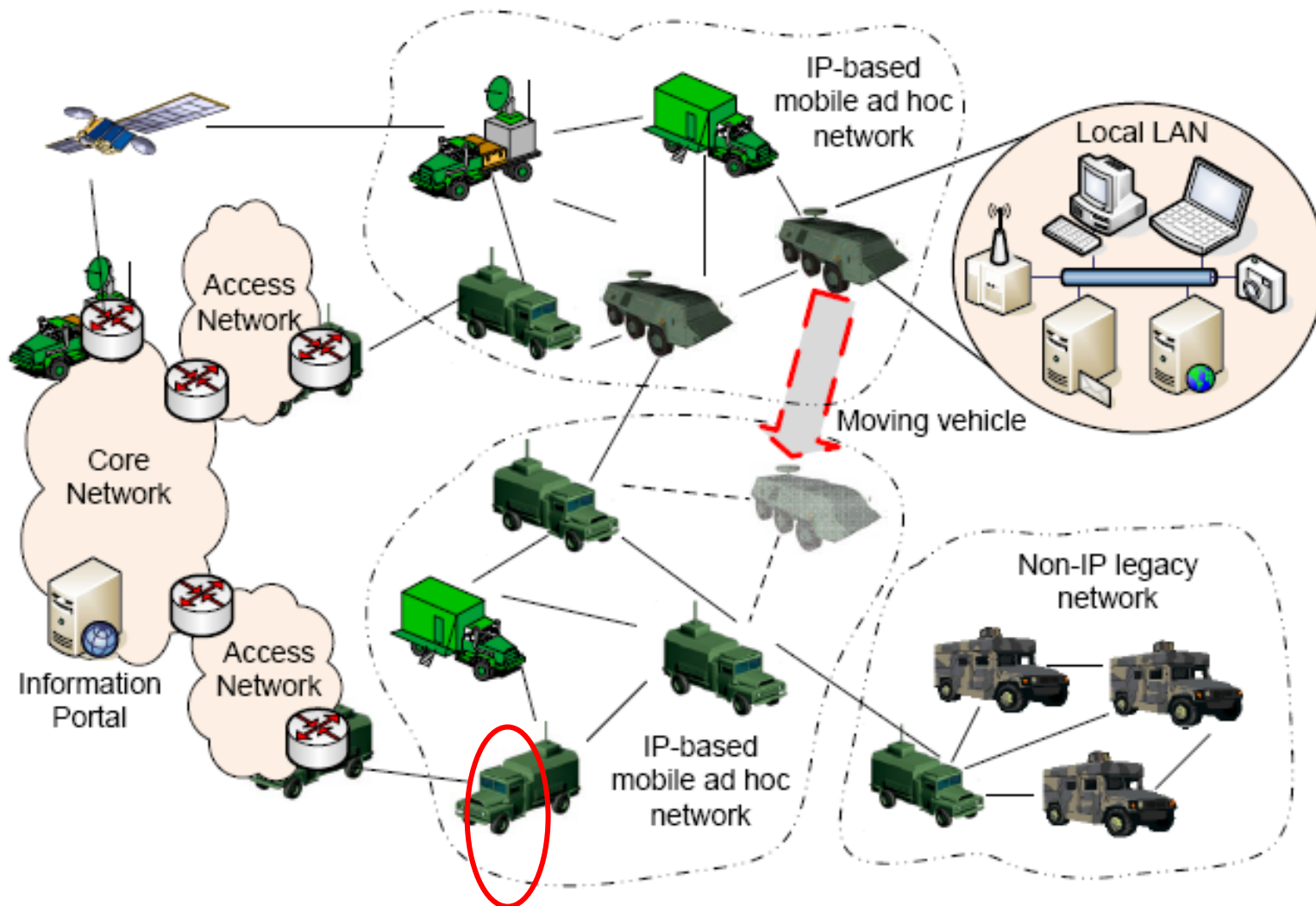
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Scenario



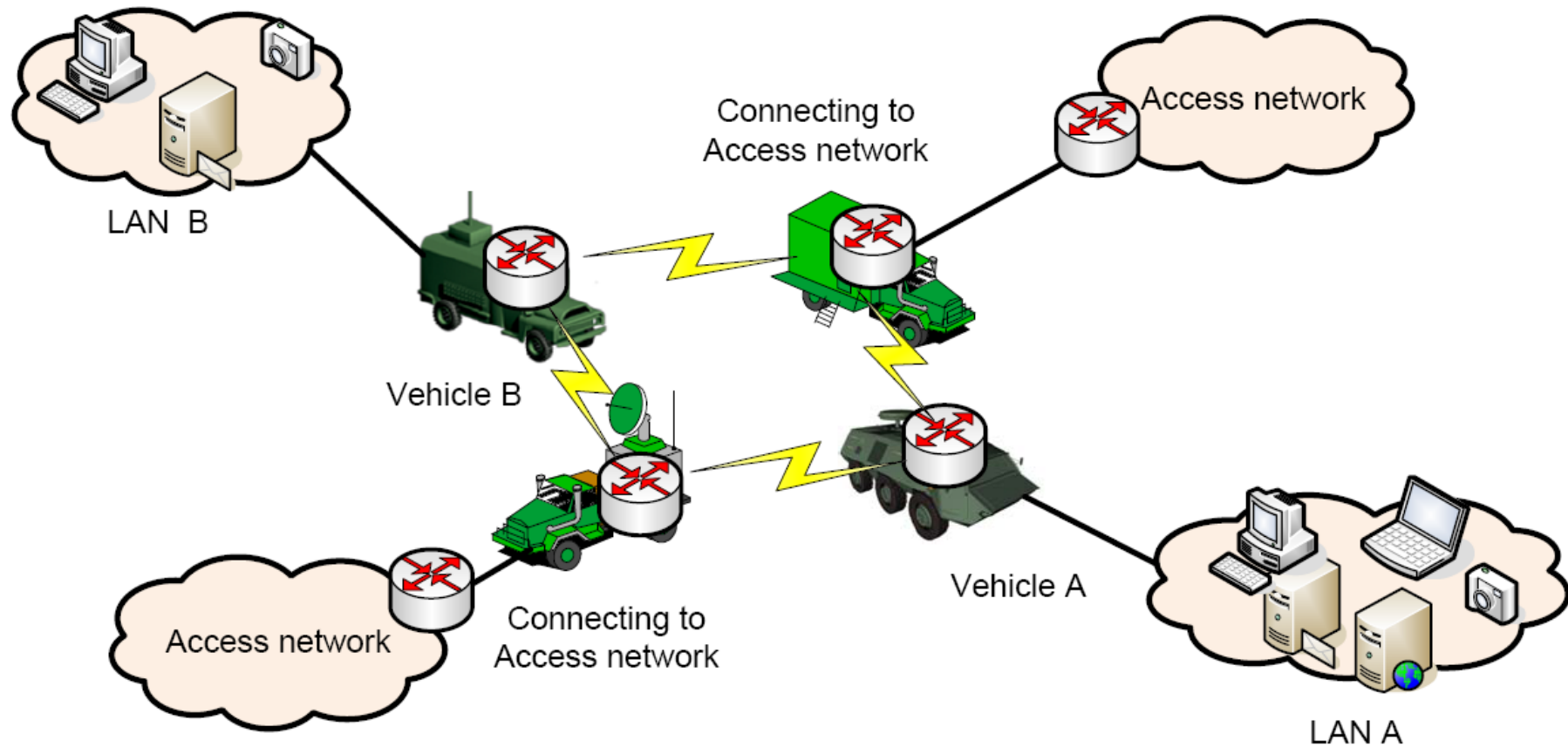
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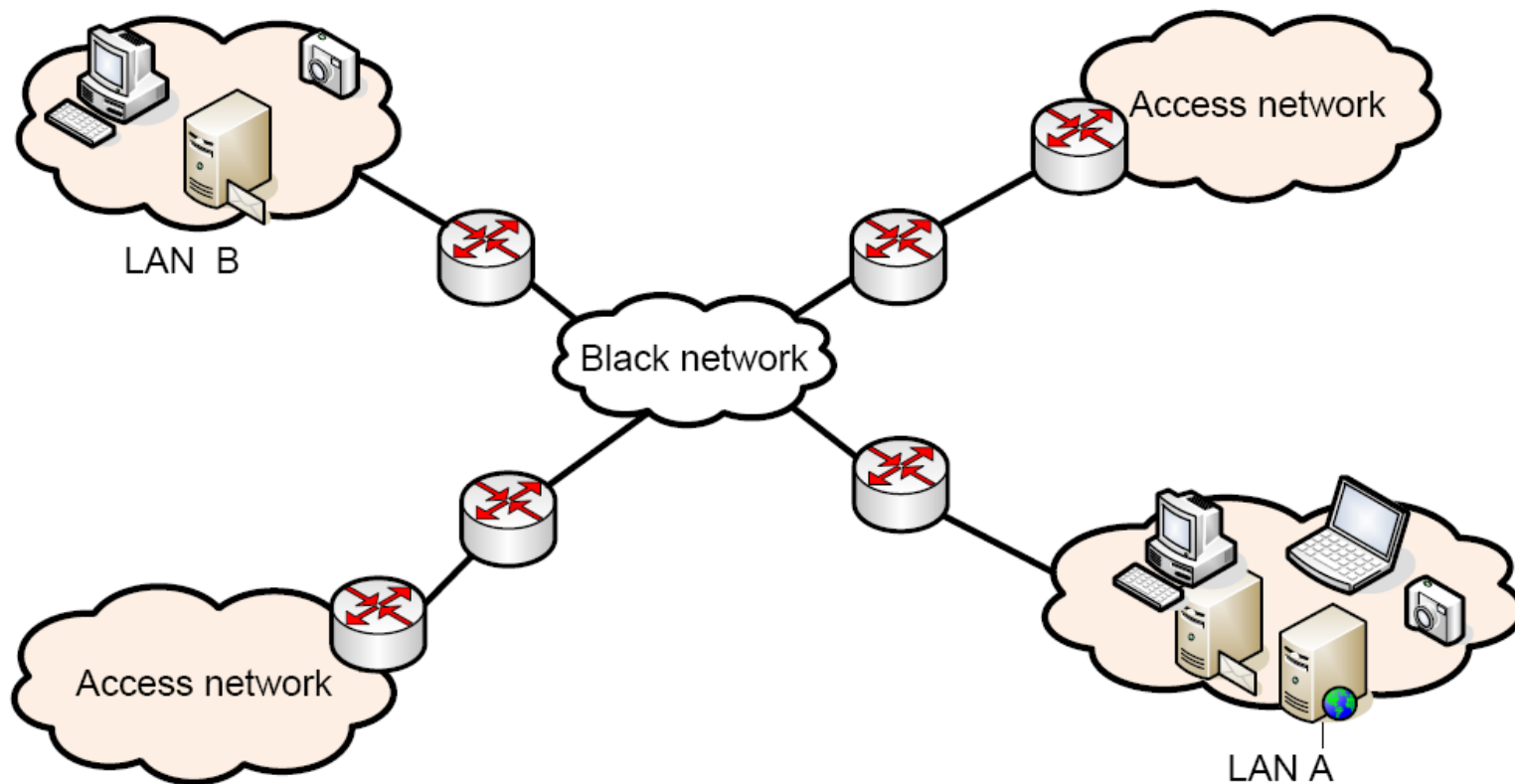
Fields



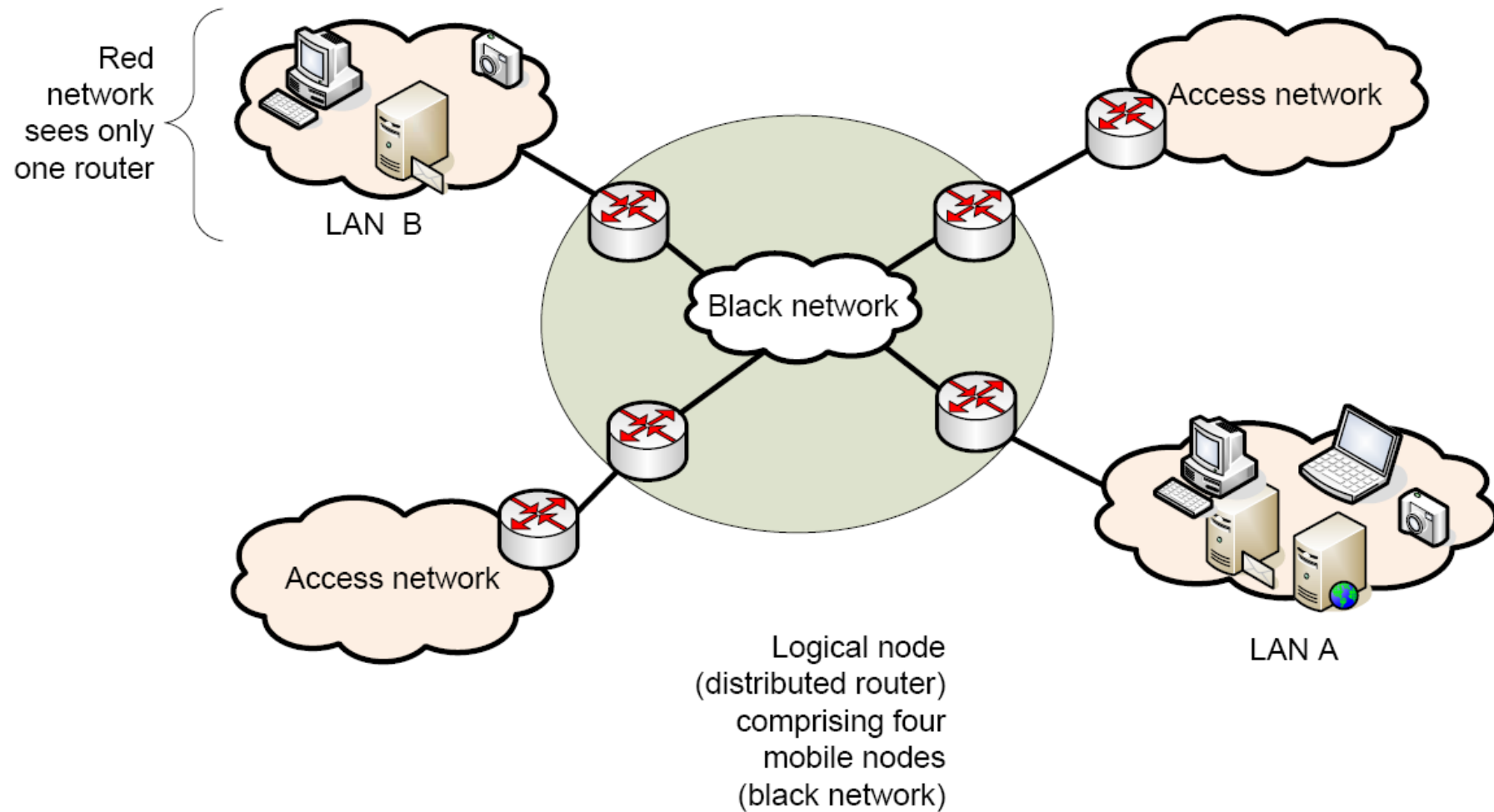
Idea of our Approach



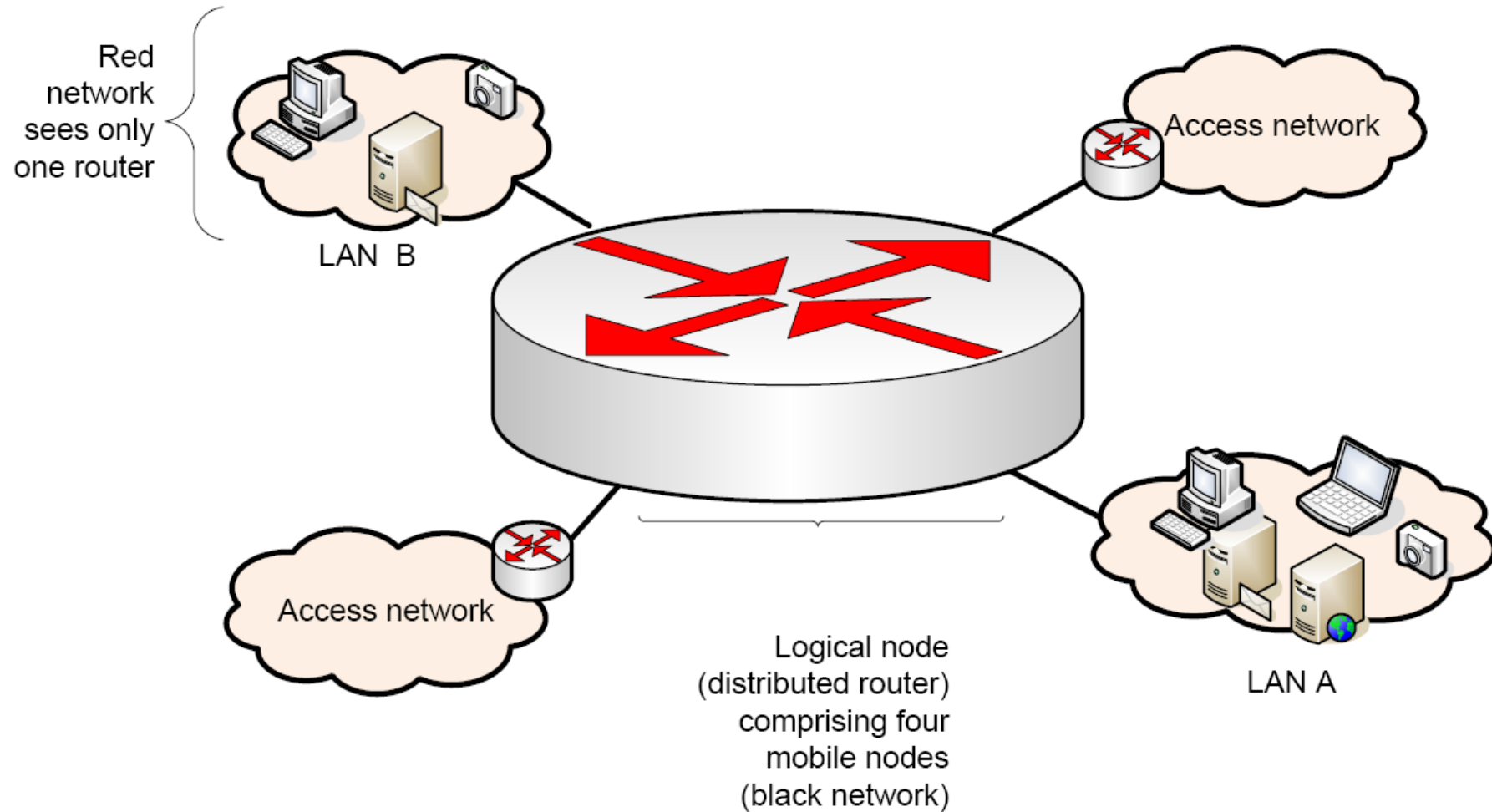
Idea of our Approach

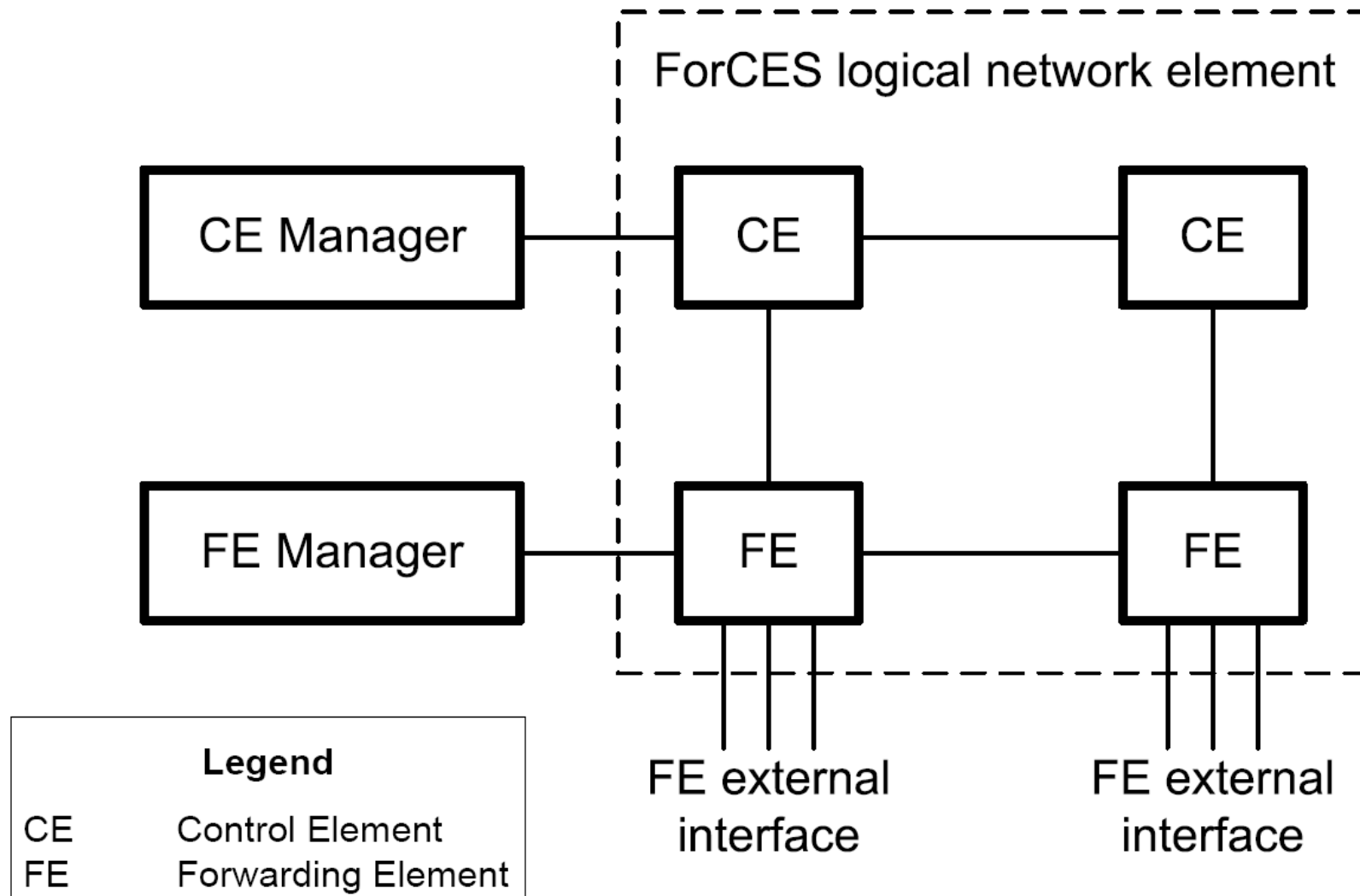


Idea of our Approach

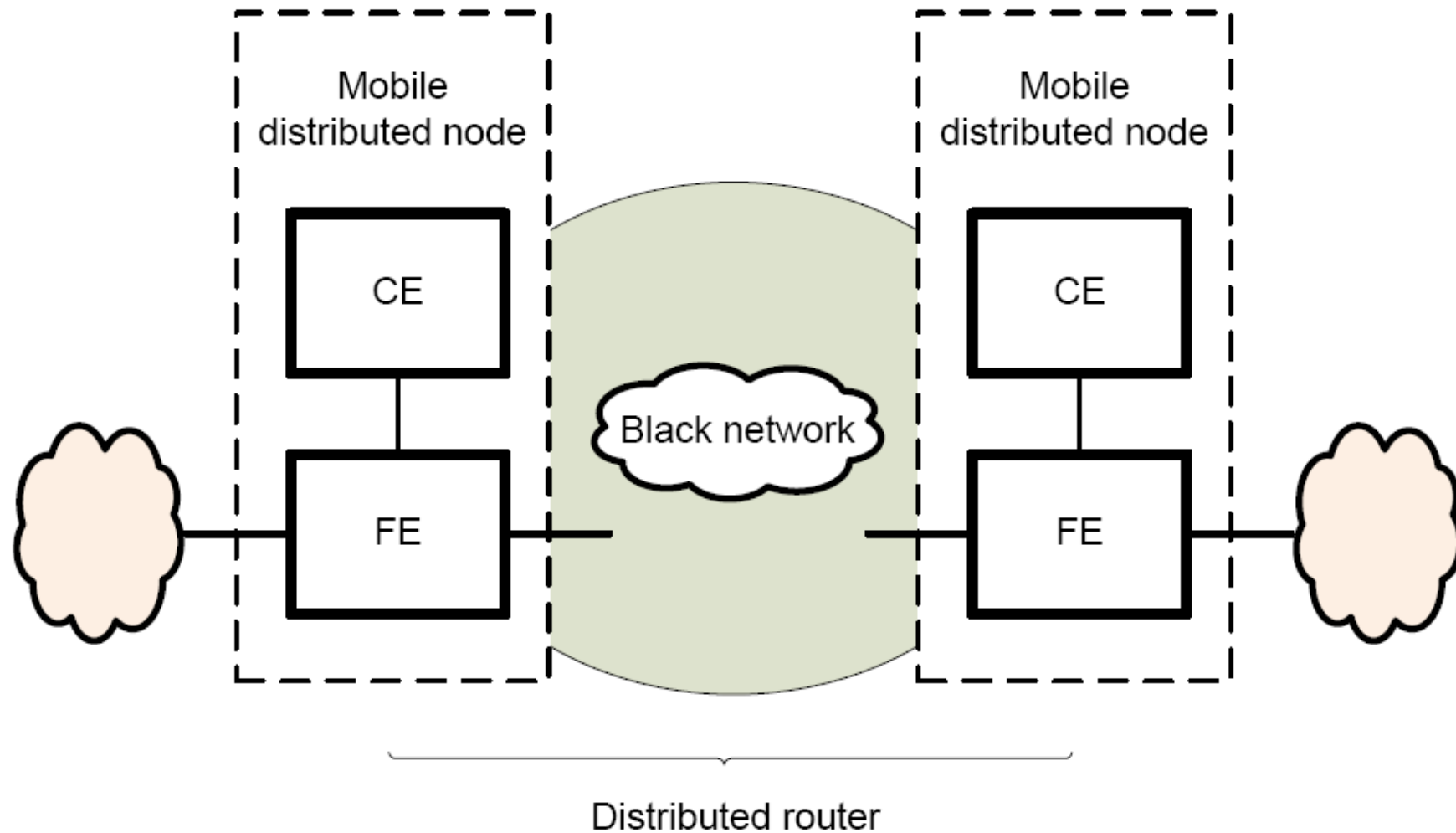


Idea of our Approach

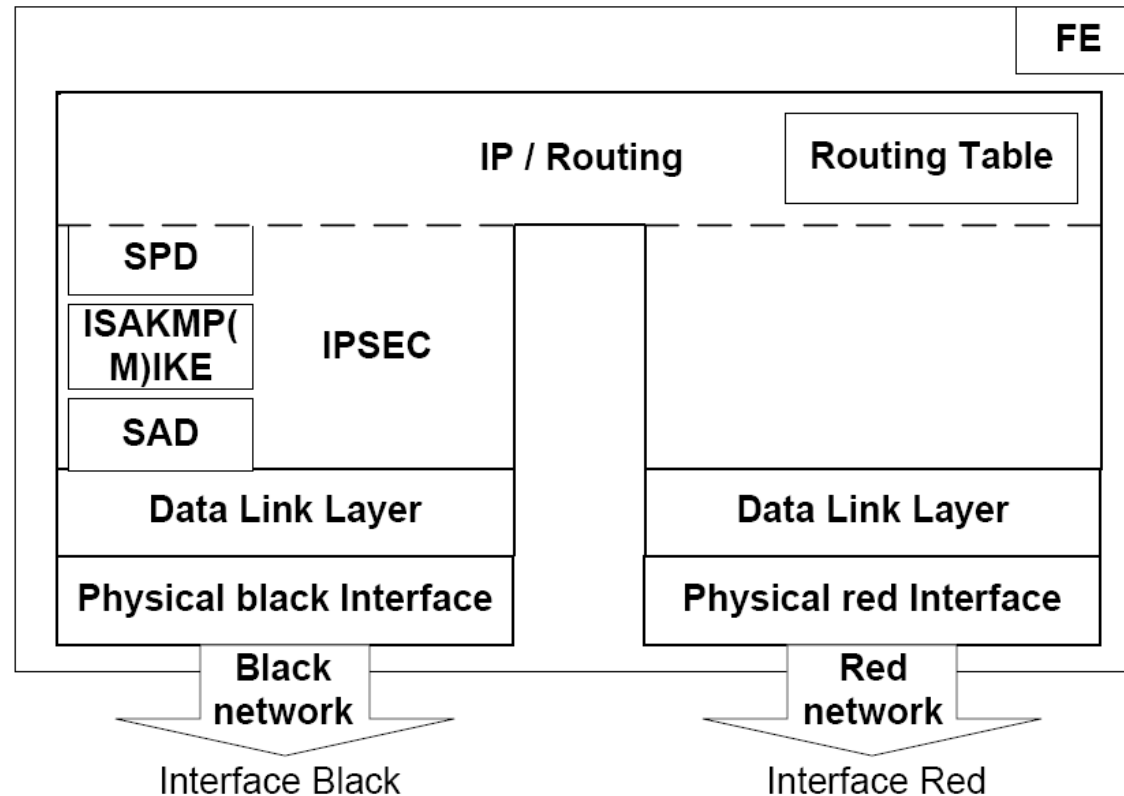




Distributed router

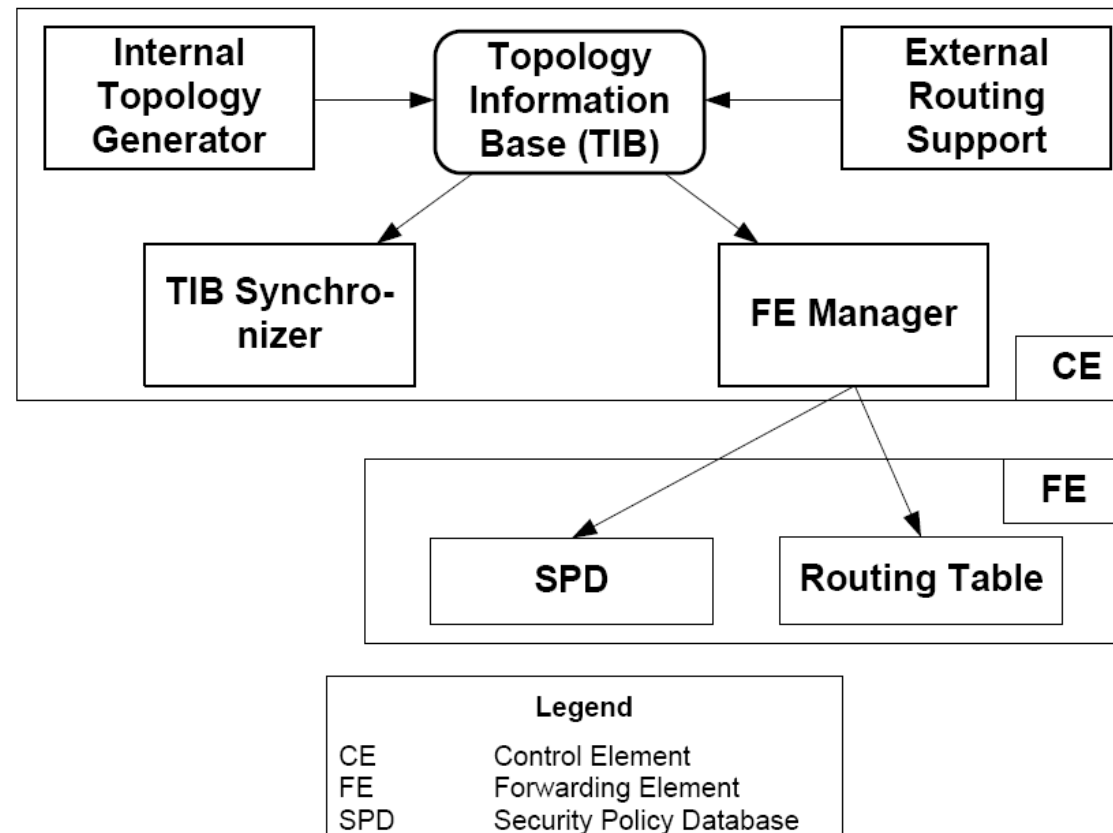


Mobile distributed node



Legend	
FE	Forwarding Element
SPD	Security Policy Database
ISAKMP	Internet Security Association and
IKE	Key Management Protocol
SAD	Internet Key Exchange
	Security Associations Database

Mobile distributed node



- Pre-association phase:
 - CE discover topology
 - Hello message to other CEs (own TIB entries)
 - Receive Hello messages from CEs
- Route announcement:
 - Change within TIB of CE
 - Update message for all CEs
 - Receive update message → TIB update
 - Update Routing Table and SPD
- Heartbeat

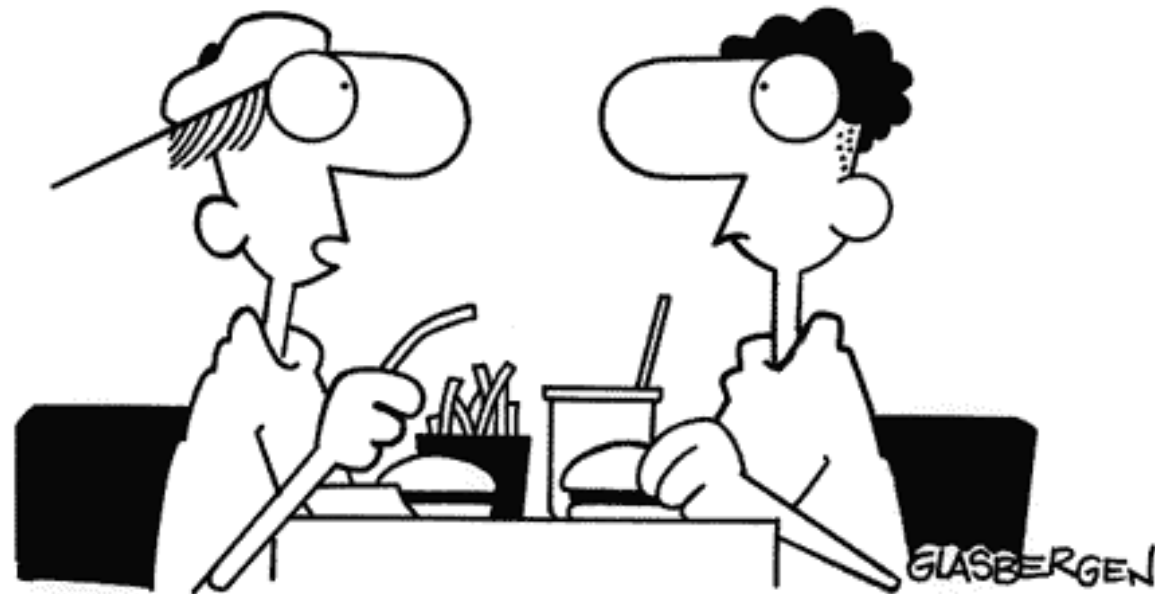
- Generic Design principles:
 - Generic addresses (IP vs. Non-IP radio networks)
 - Virtual node: Router, Switch
 - Generic crypto
 - IP-based radio networks: different External/Internal routing protocols

- Implementation of further Architectures (including Non-IP radio networks)
- Management Aspects:
 - Defining security mechanisms
 - Analysis requirements for a management system
 - Defining Management components



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**"I forgot to make a back-up copy of my brain,
so everything I learned last semester was lost."**