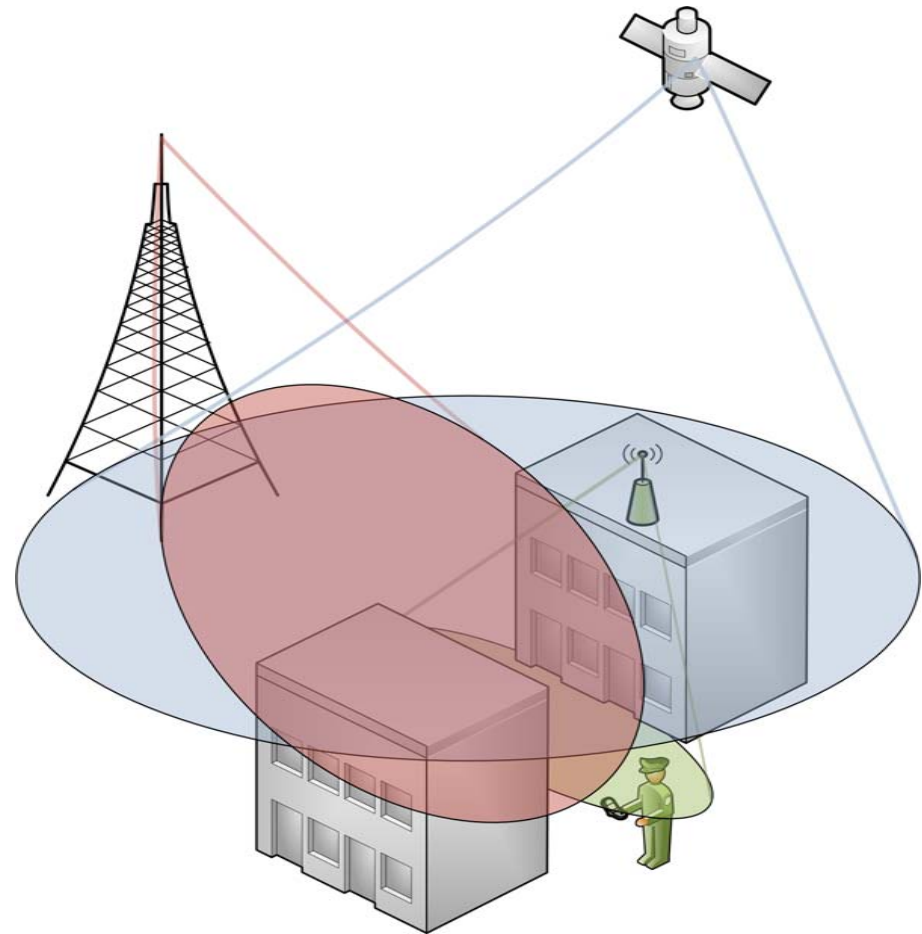


# Mobile SCIP: Managing Terminal Mobility in Heterogeneous Networks with the SIP Handover Extension

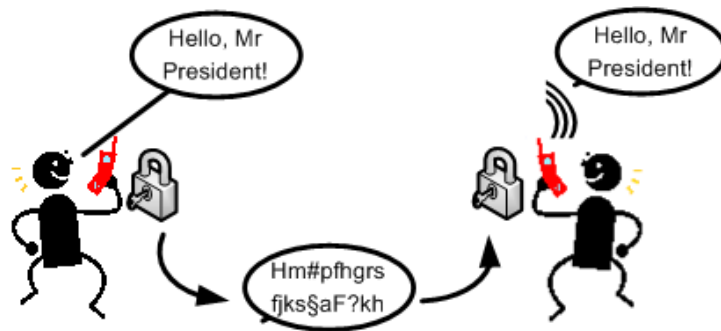
Elin Sundby Boysen

Norwegian Defence Research  
Establishment (FFI)

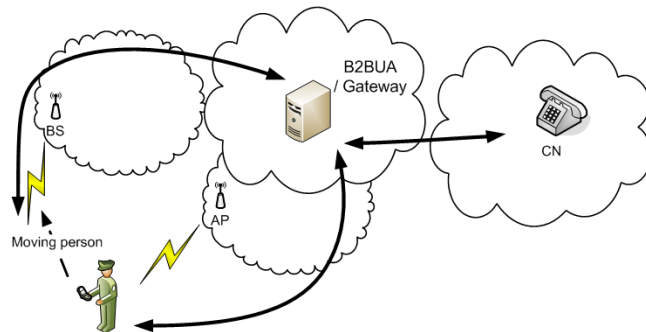
June 22, 2010



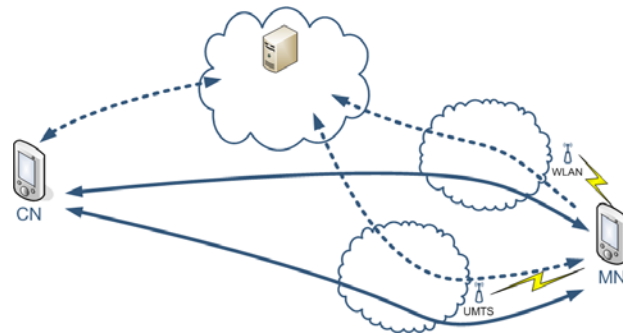
# This presentation will introduce the SIP Handover Extension and its importance for SCIP.



**Secure communication  
with SCIP**

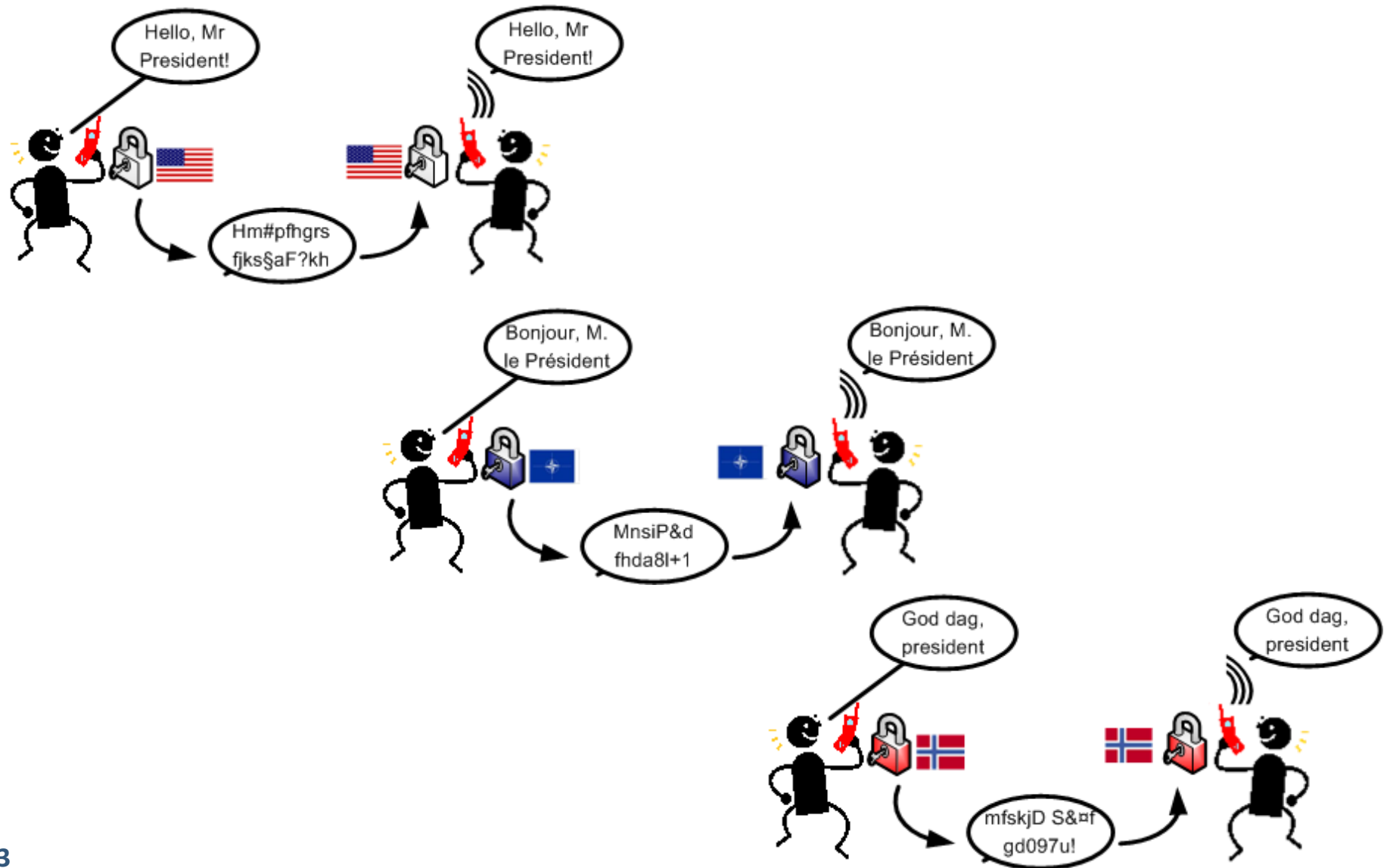


**Mobile SCIP and implications  
of handover delay**

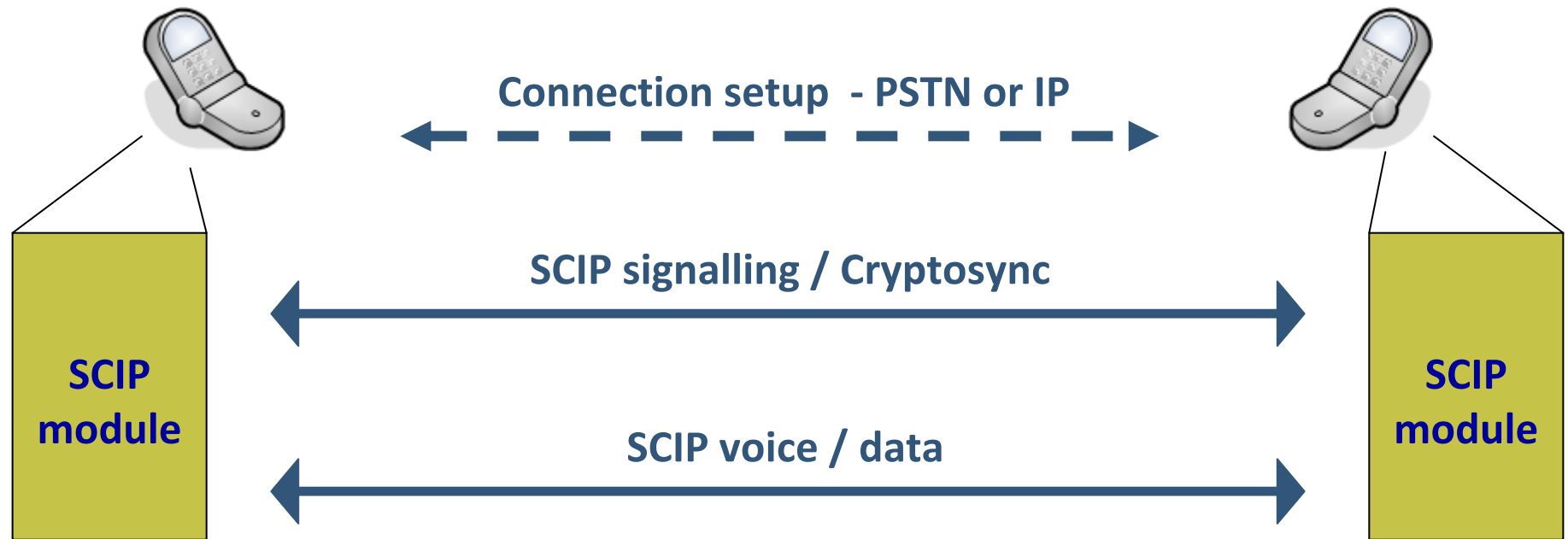


**Reducing the handover  
delay using the  
SIP Handover Extension**

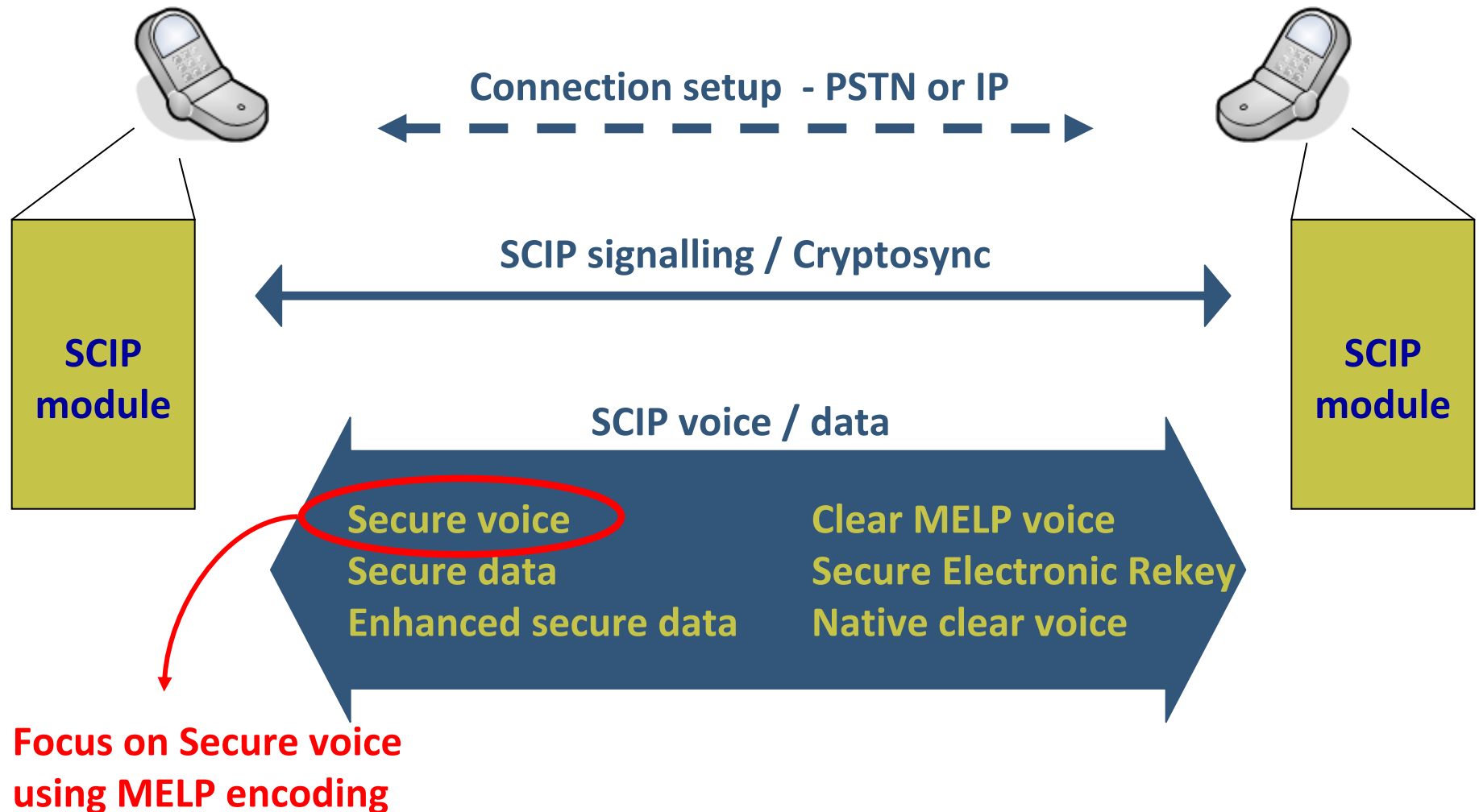
# Secure Communications Interoperability Protocol (SCIP) supports both national sovereignty and interoperability.



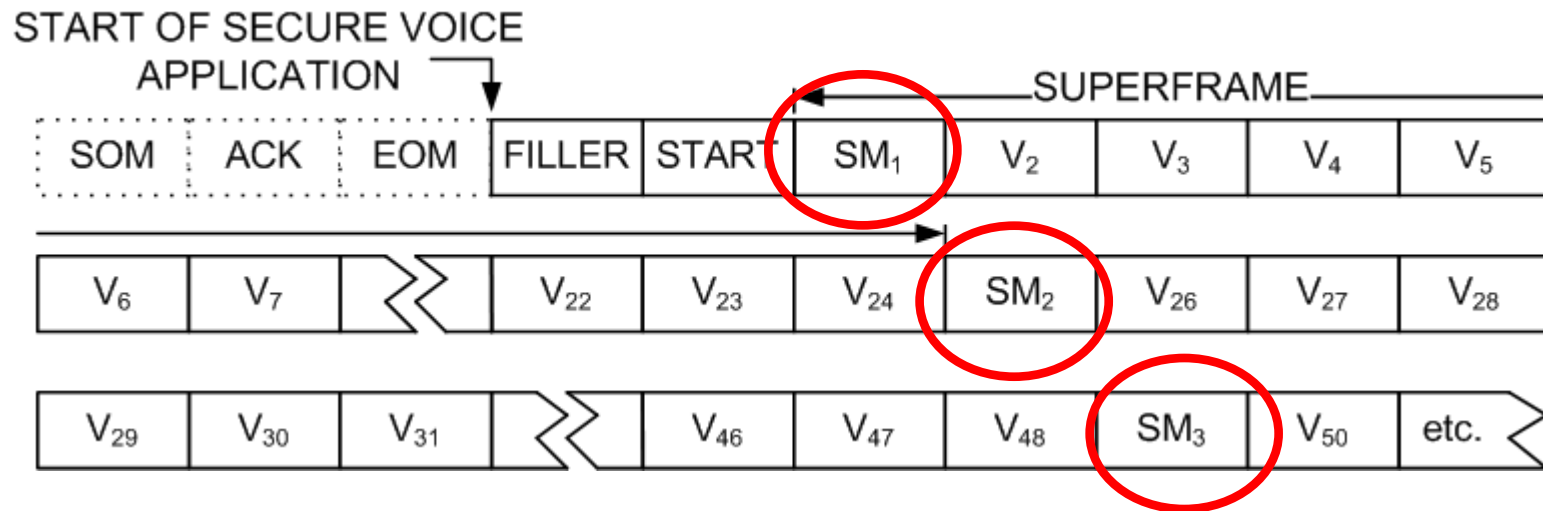
**A network connection is established before control is passed to a SCIP module.**



A network connection is established before control is passed to a SCIP module.



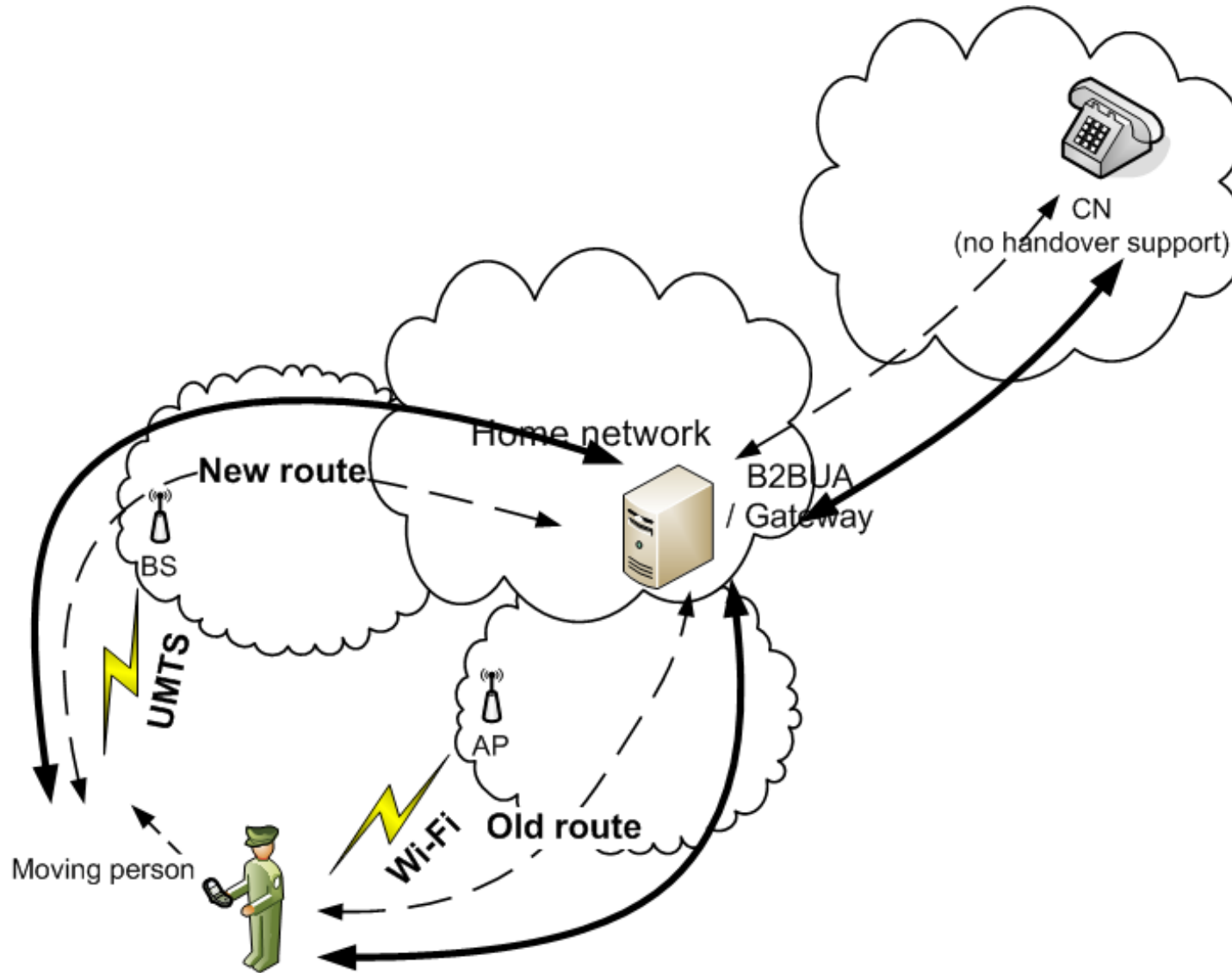
**MELP is the minimum requirement for speech coding in SCIP.**



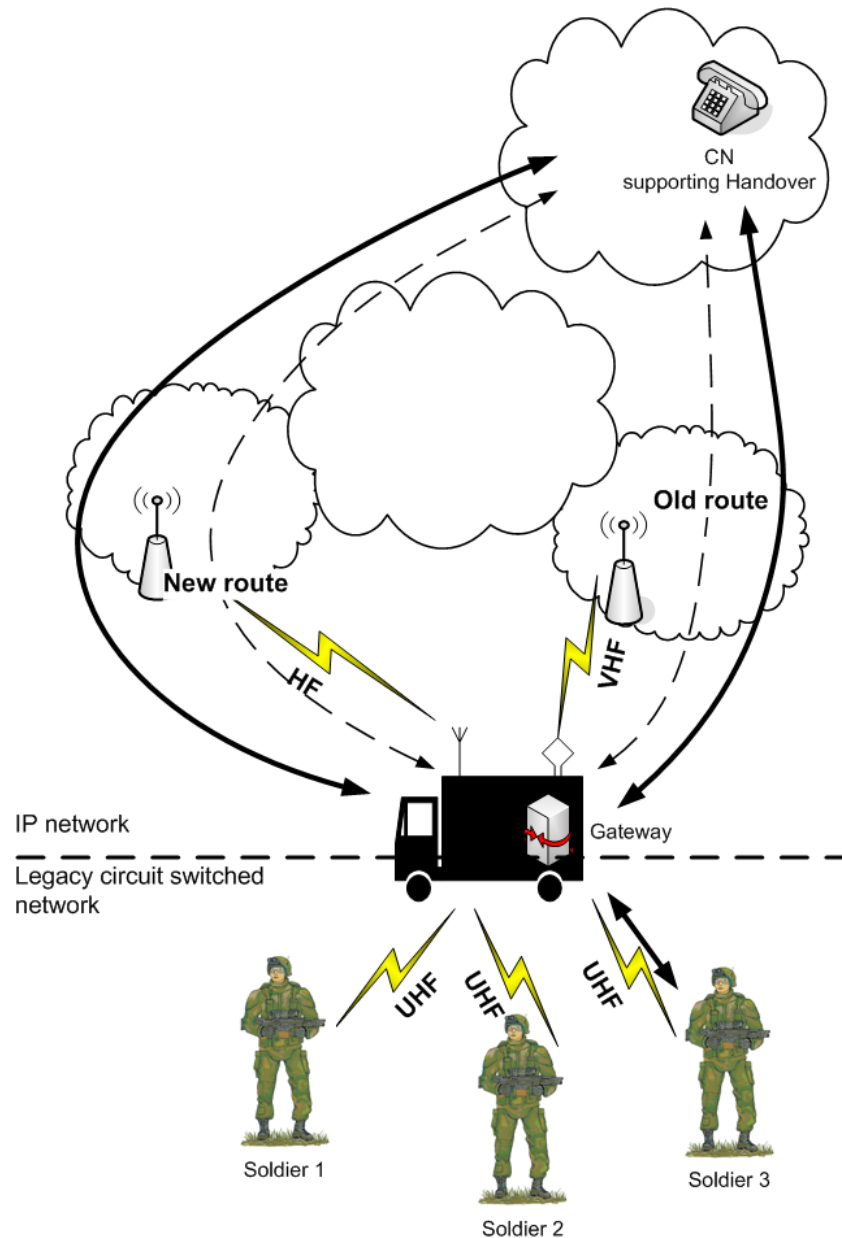
**Secure MELP Blank and Burst**

**Minimum channel capacity requirement in SCIP is 2400 bit/s**

A handover can happen either in the end node or in a part of the network.

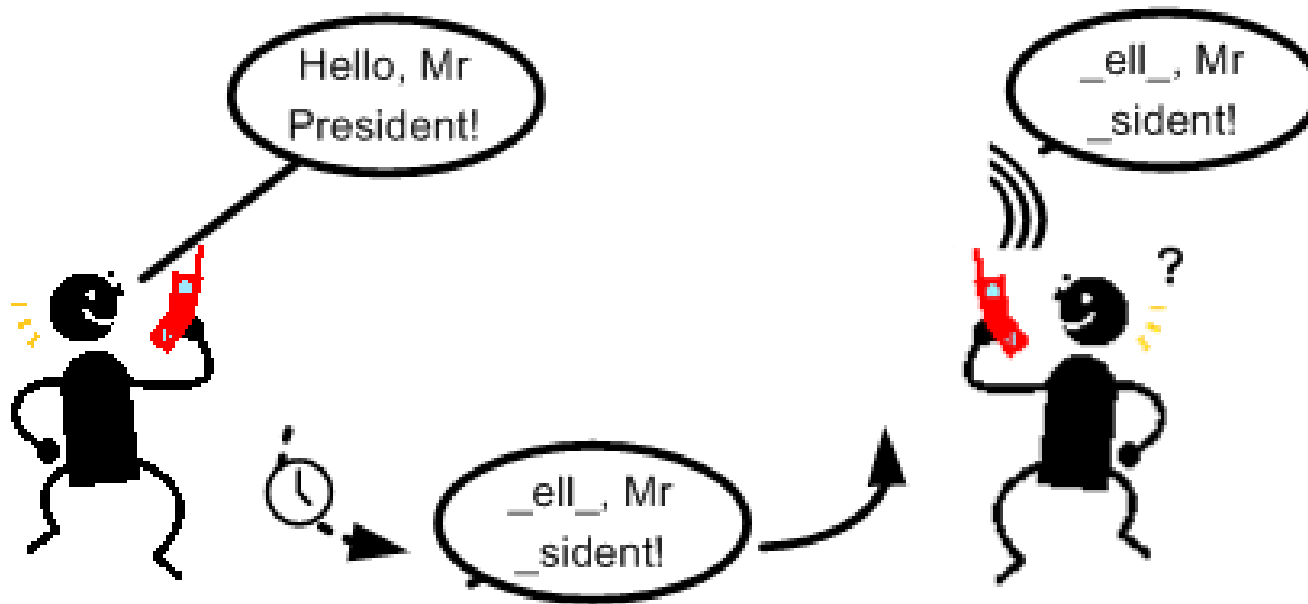


A handover can happen either in the end node or in a part of the network.





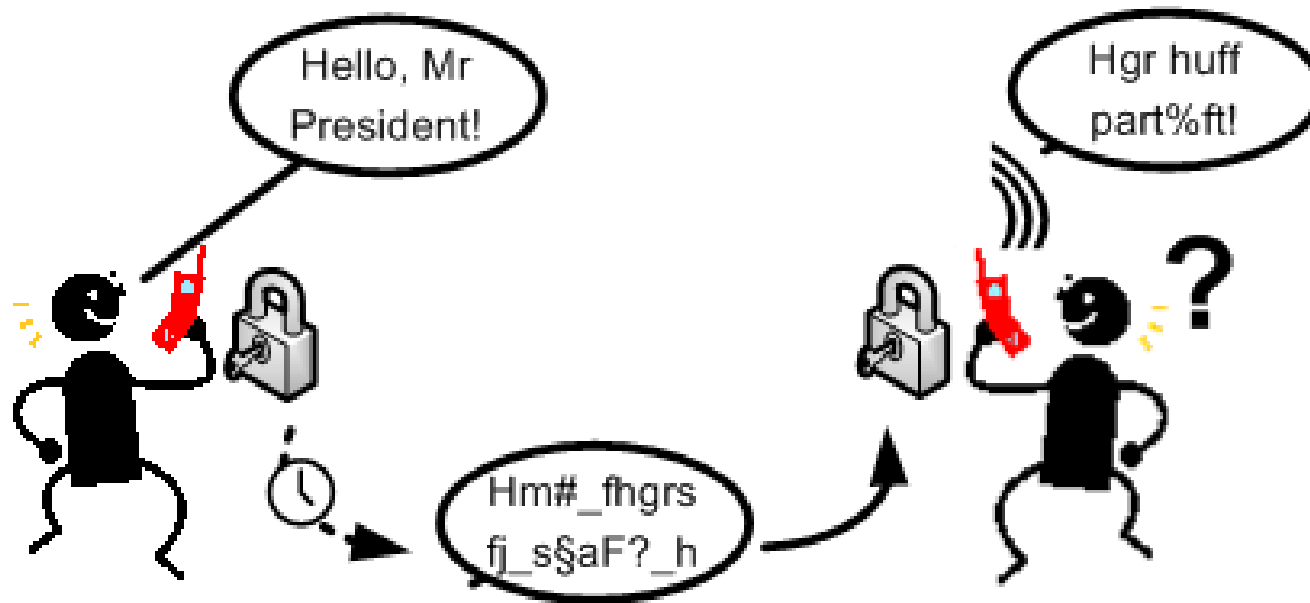
During a handover, packets can be lost leading to poor user experience.



Worst case handover delay: 450 ms [Nakajima et al. 2003]

Delay should not exceed 200 ms [ETSI 2002]

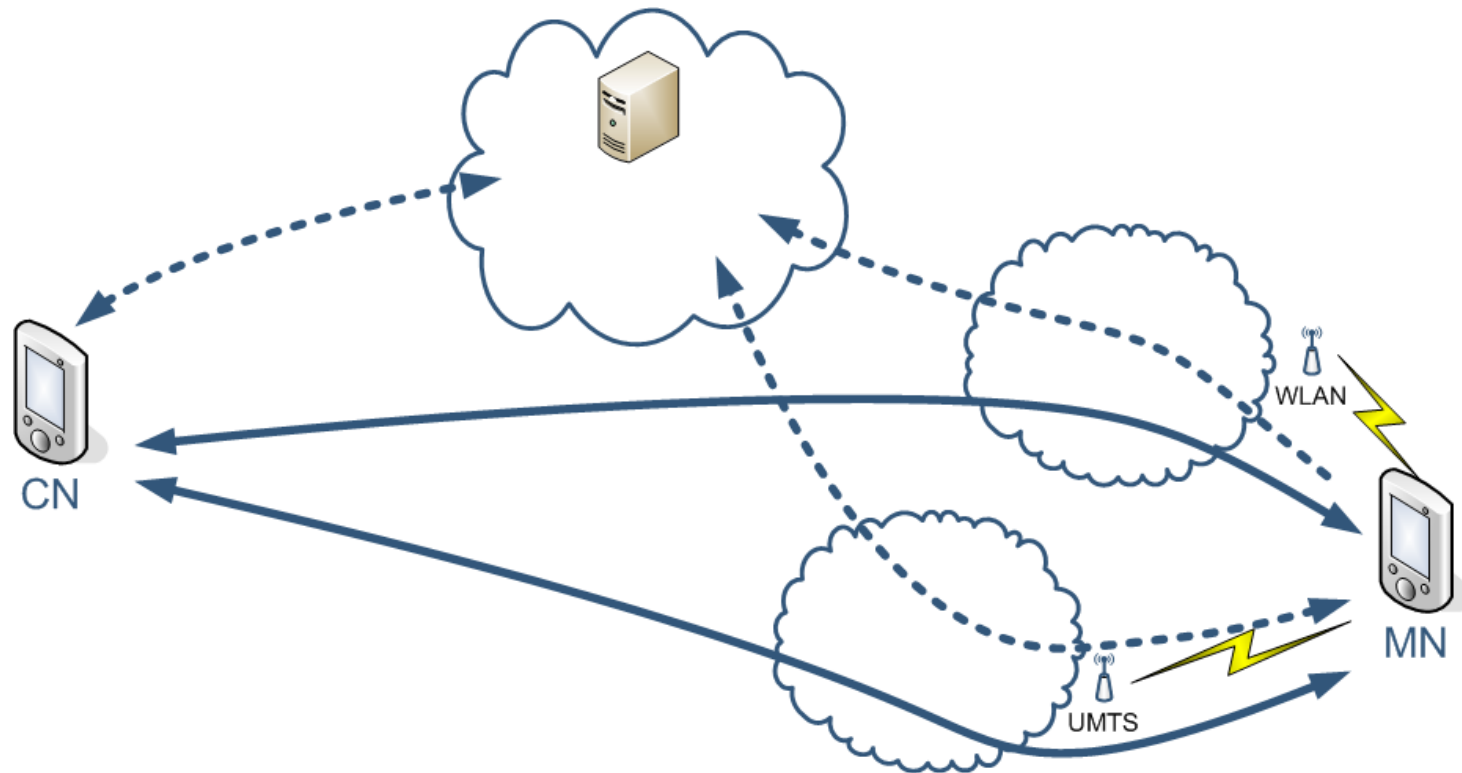
**When using secure MELP, lost packets can give even worse results due to lost SYNC management frames.**



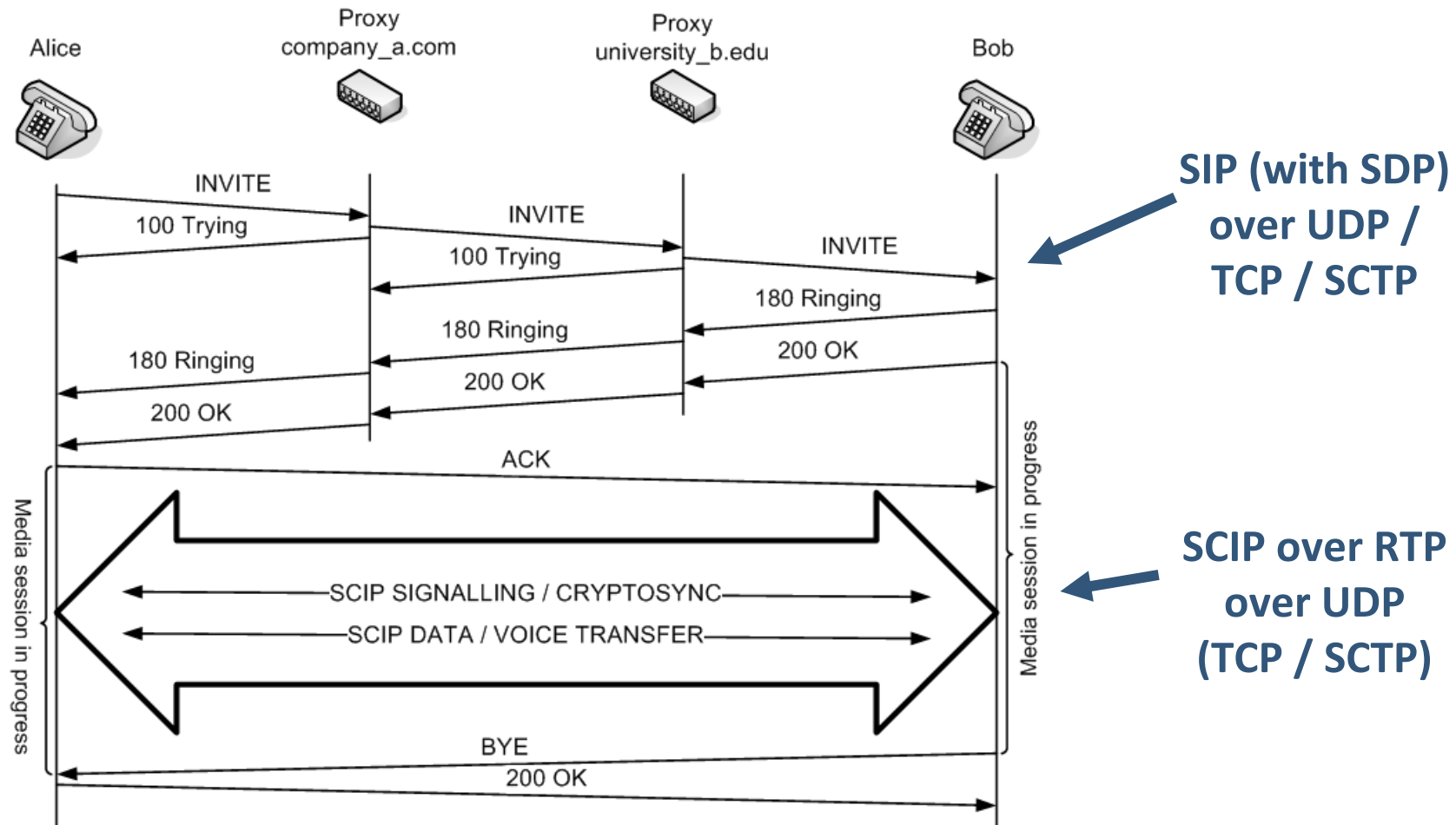
**Worst case due to total resync: 1620 ms**

**Delay should not exceed 200 ms [ETSI 2002]**

**In a heterogeneous network there is usually no centralized mobility management.**

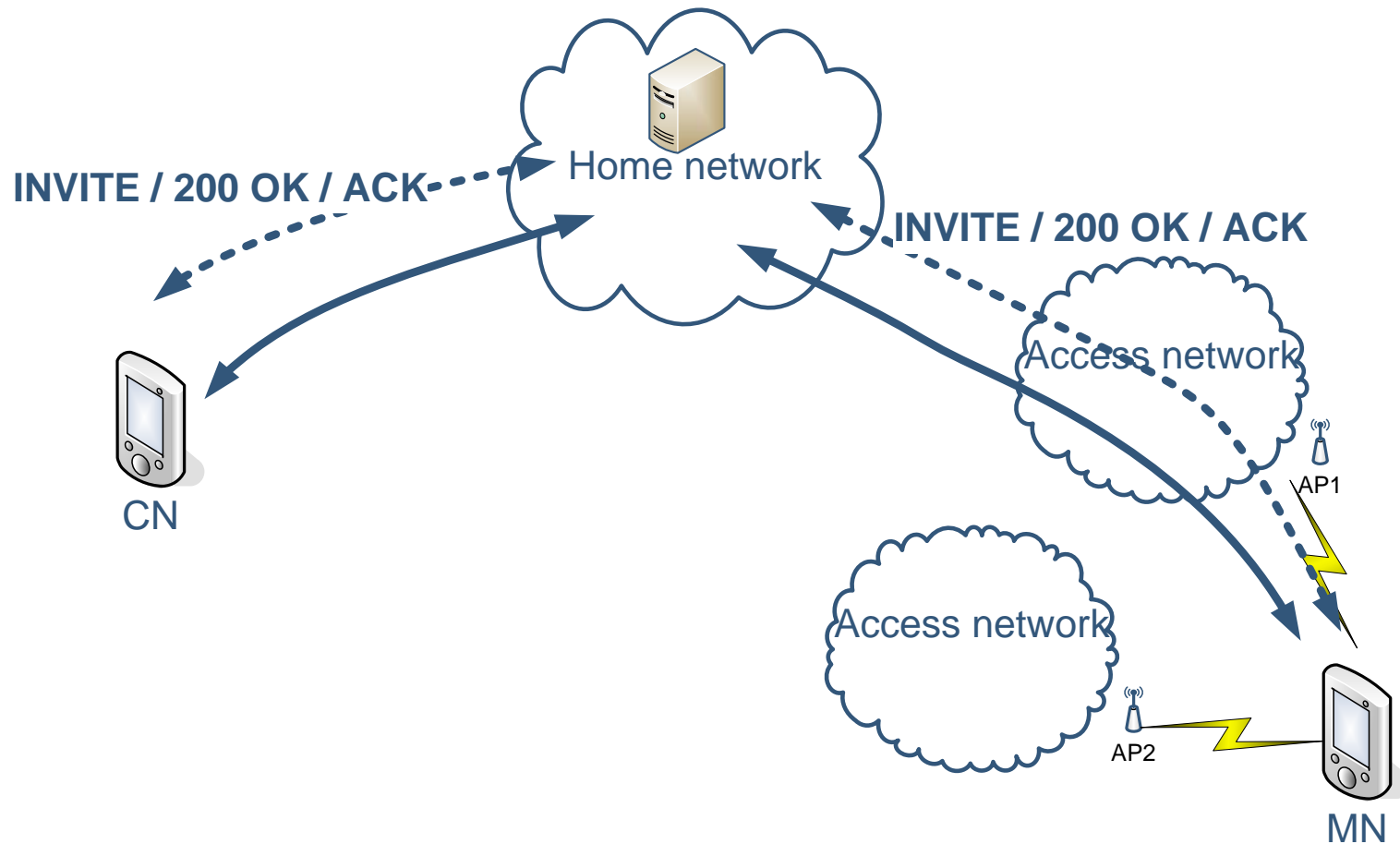


For SCIP over IP/RTP, SIP has been proposed as the signalling protocol .

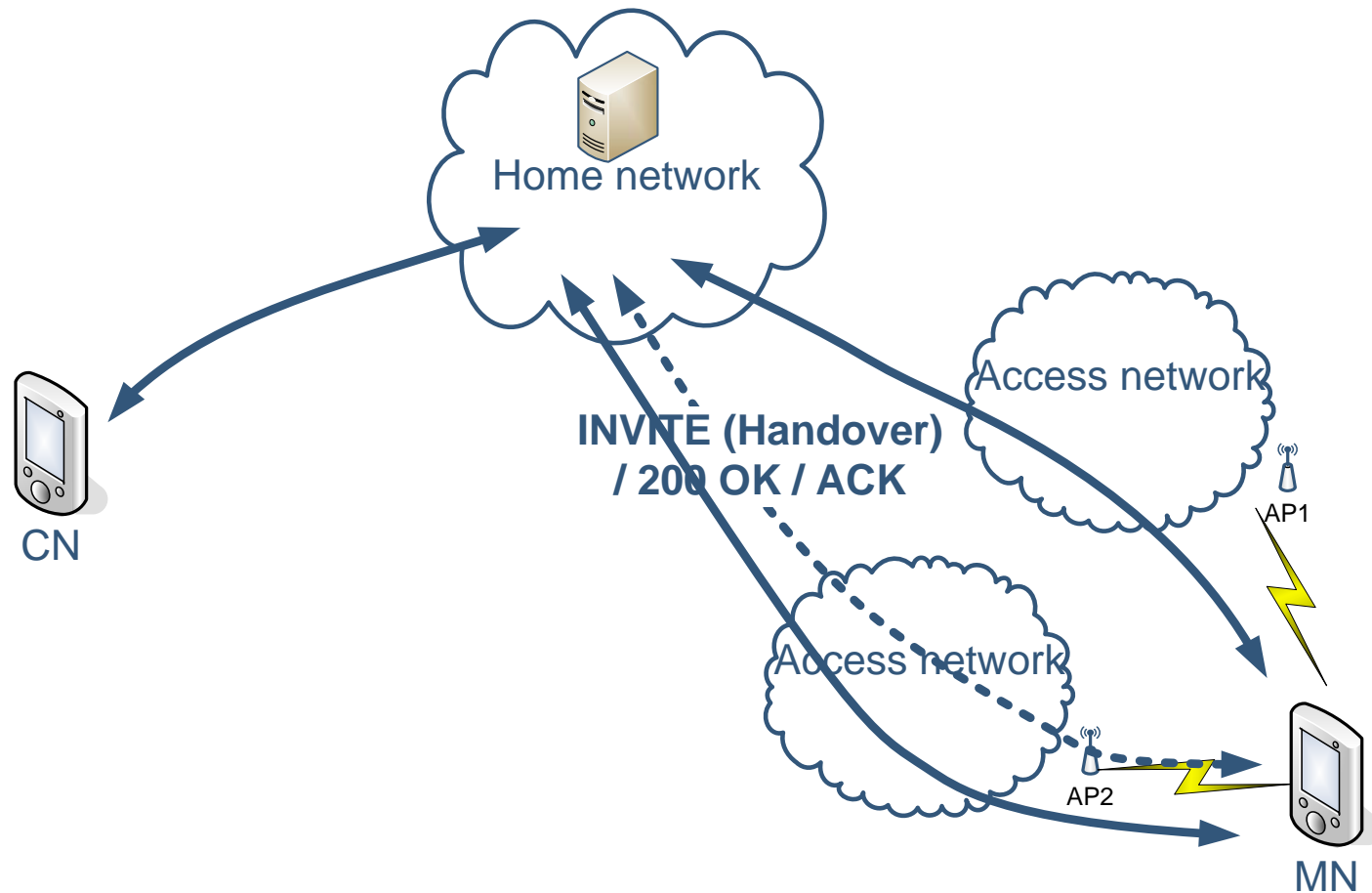


**SIP = Session Initiation Protocol**

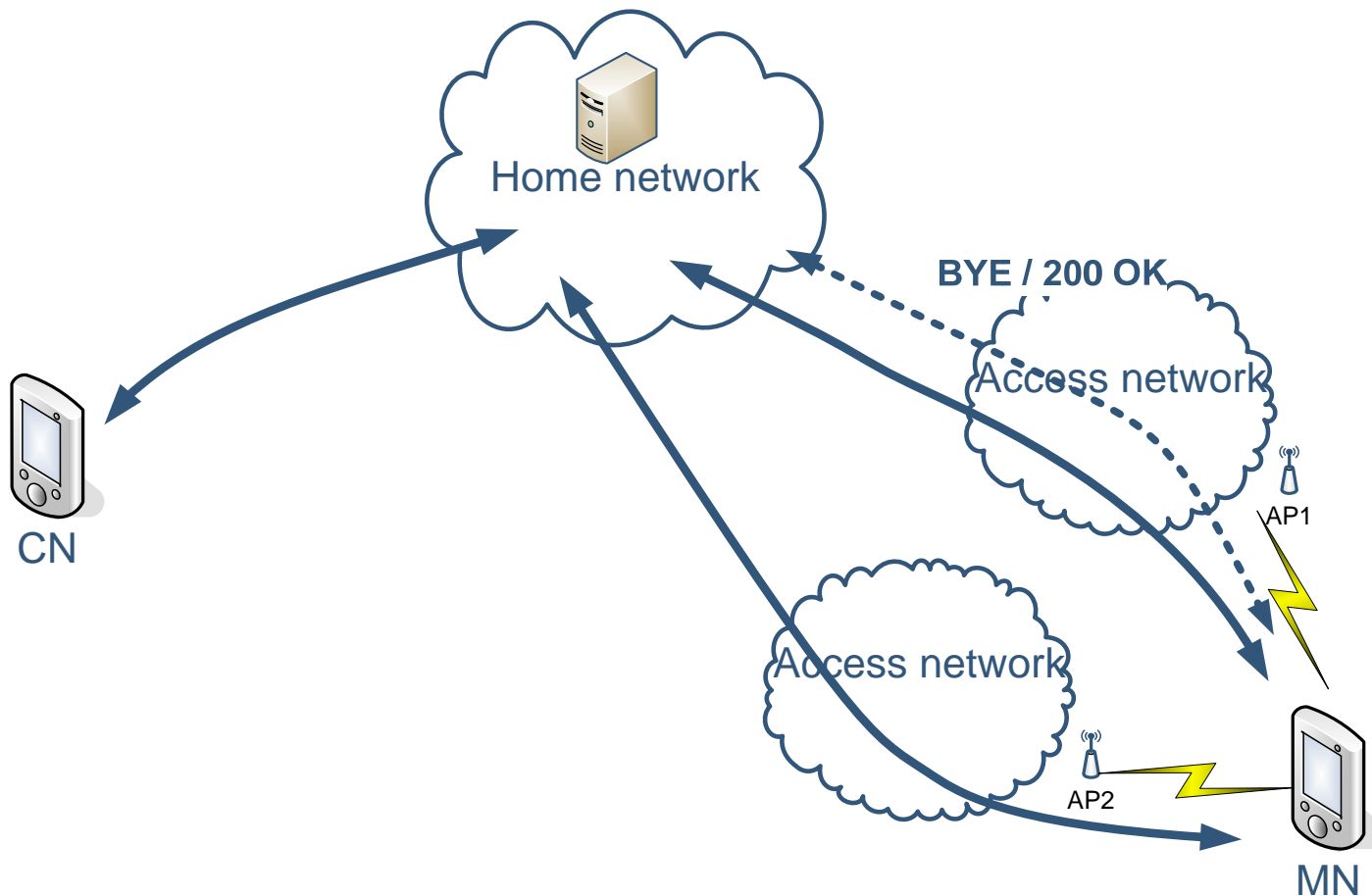
**The suggested SIP extension—the Handover Extension—will eliminate packet loss during handover.**



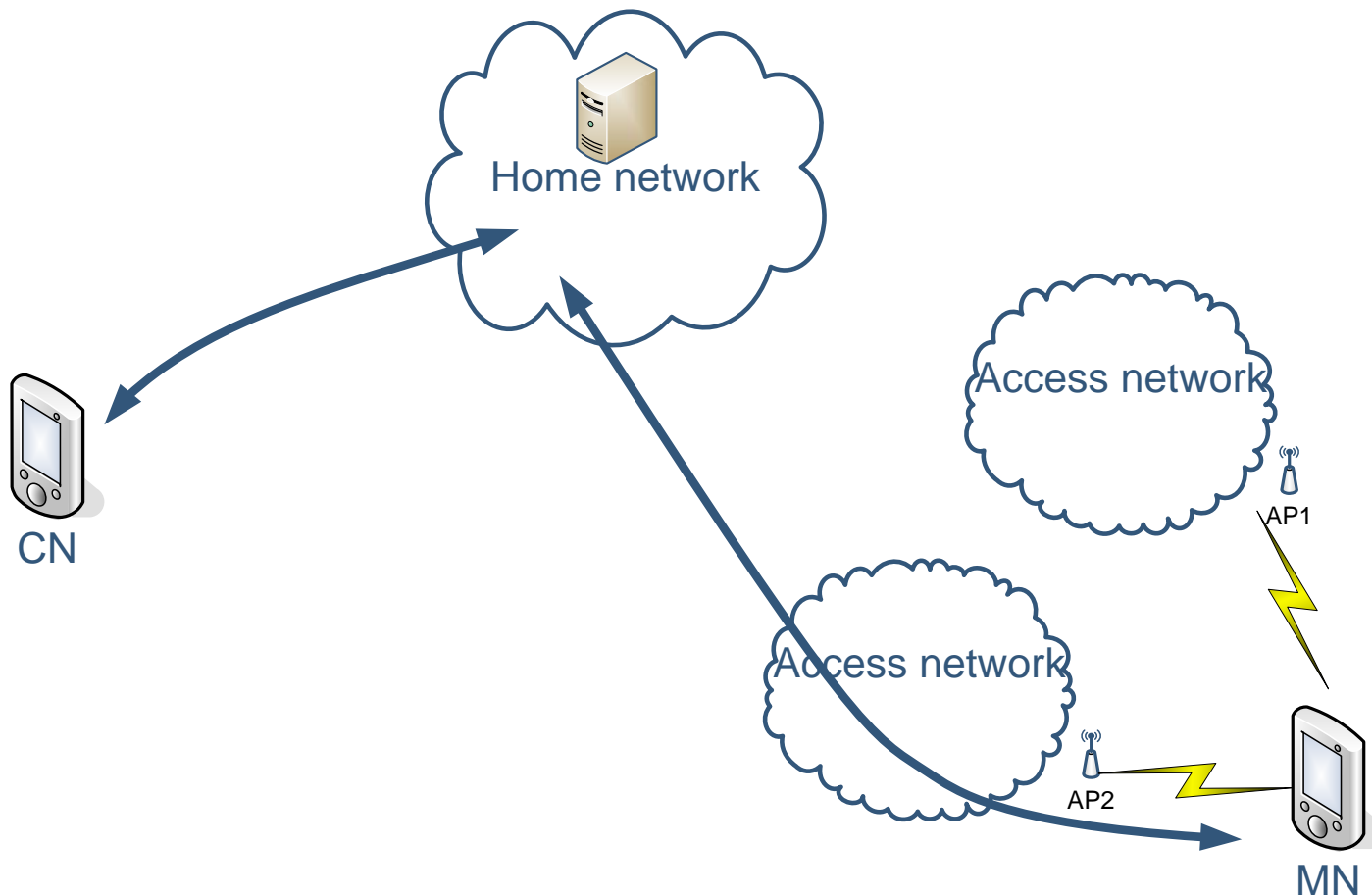
**The suggested SIP extension—the Handover Extension—will eliminate packet loss during handover.**



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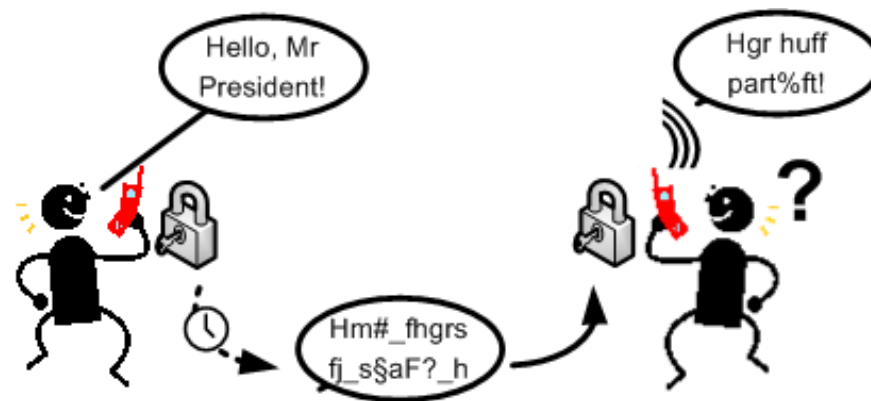


## Sample message with the SIP Handover Extension.

INVITE sip:bob@biloxi.com SIP/2.0  
Via: SIP/2.0/UDP  
pc33.atlanta.com;branch=z9hG4bK776asdhds  
Max-Forwards: 70  
To: Bob <sip:bob@biloxi.com>  
From: Alice <sip:alice@atlanta.com>;tag=1928301774  
Call-ID: a84b4c76e66710@pc33.atlanta.com  
**Handover: Call-Id=33d9f110cdb0@193.156.96.196;**  
**To-tag=5f7b910a; From-tag=as14ff55c1**  
CSeq: 314159 INVITE  
Contact: <sip:alice@pc33.atlanta.com>  
Content-Type: application/sdp  
Content-Length: 142

Summary, mobility for SCIP is an issue that must be addressed.

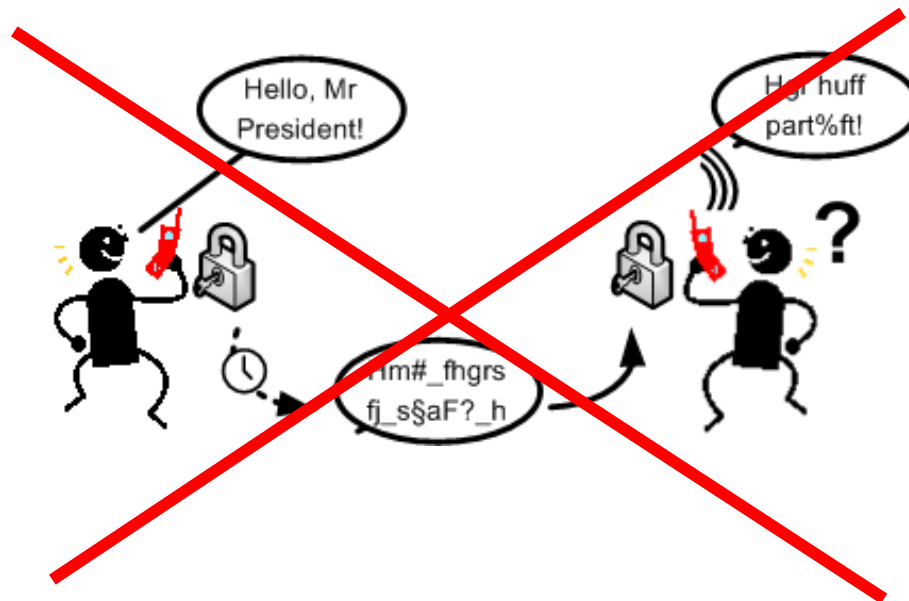
over delays can have  
e impact in SCIP due  
IC management



Summary, mobility for SCIP is an issue that must be addressed.

Handover delays can have a significant impact in SCIP due to inefficient IP management

IP Handover Extension enables seamless handover between heterogeneous networks



Summary, mobility for SCIP is an issue that must be addressed.

Handover delays can have a significant impact in SCIP due to its security management

SCIP Handover Extension enables seamless handover between heterogeneous networks

