A Modern Edge-based Design for Cellular Roaming

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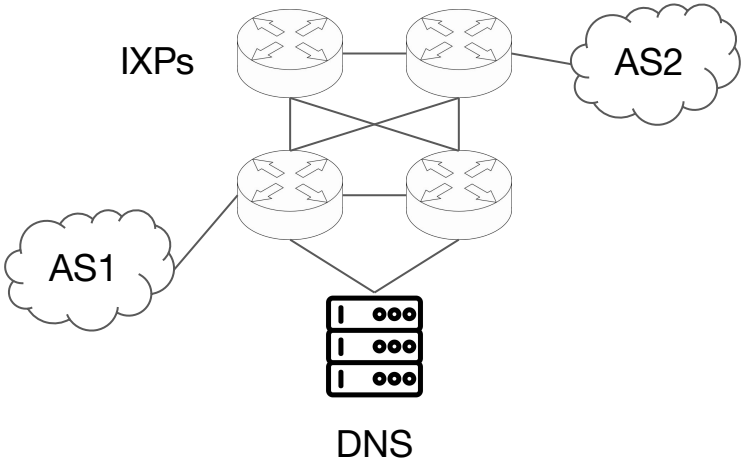
The Internet vs. Cellular: contrasting origins in the 1980s

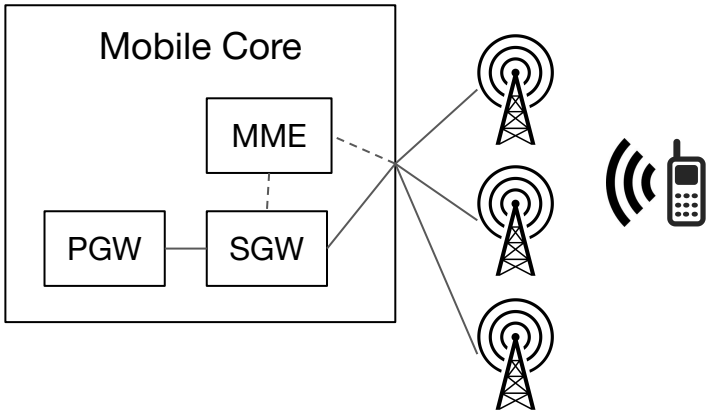
Internet

Mobile Network

The Internet vs. Cellular: leading to different architectures

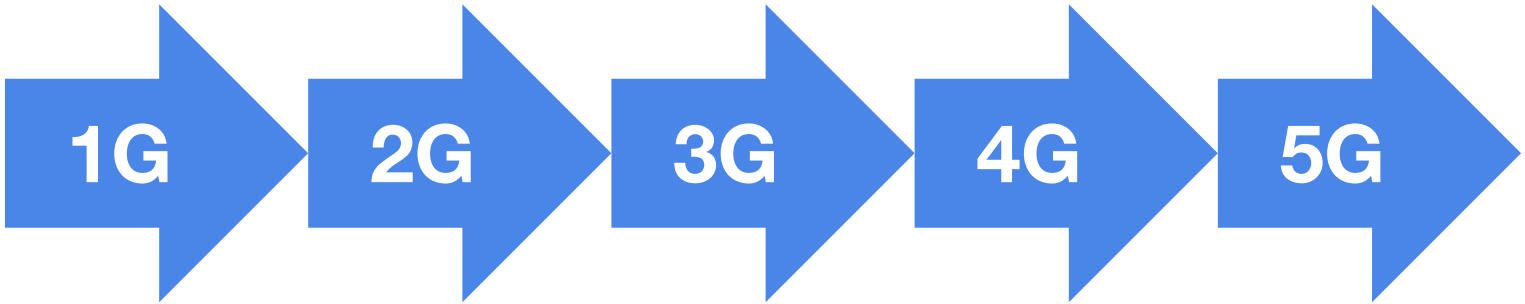


Internet

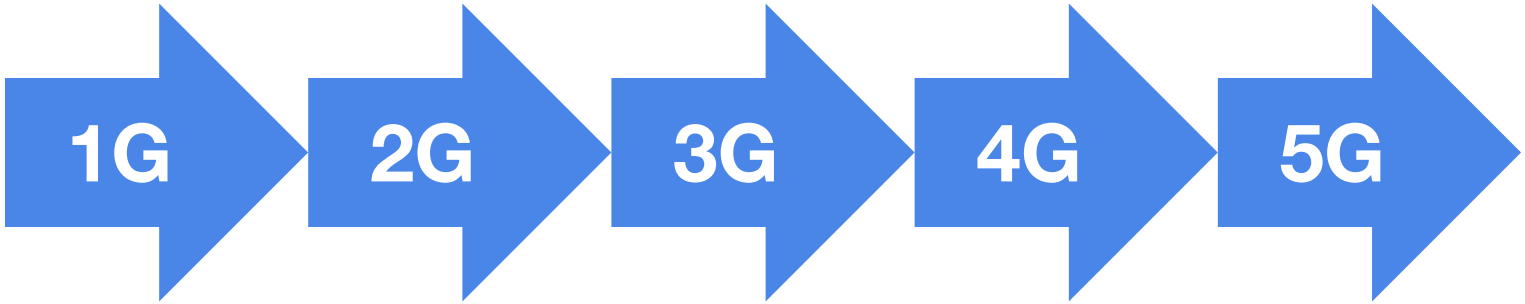


Mobile Network

The cellular network has seen an advancement in wireless



The cellular network has been converging toward the Internet

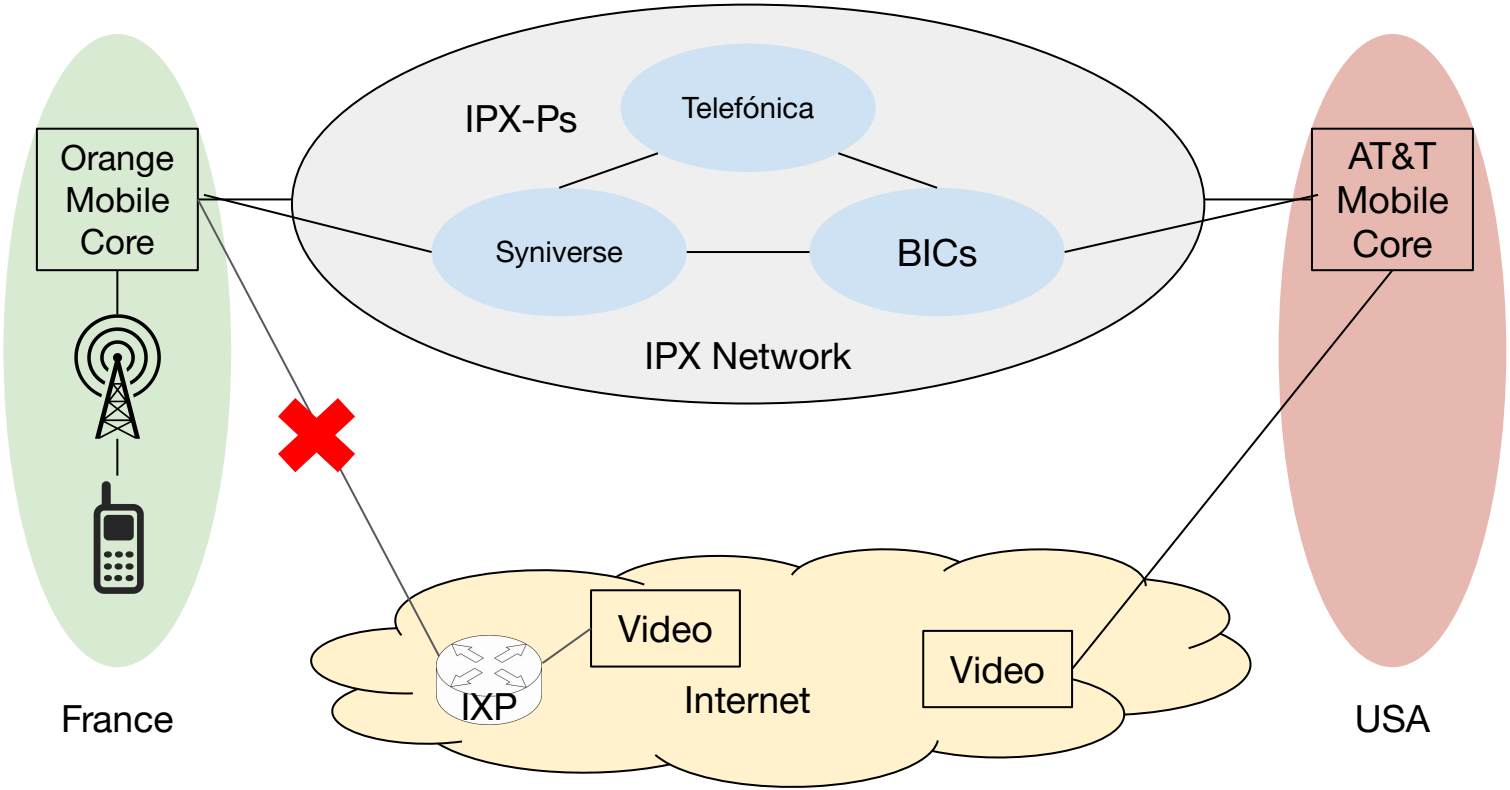


Convergence allows for efficiency and consolidation

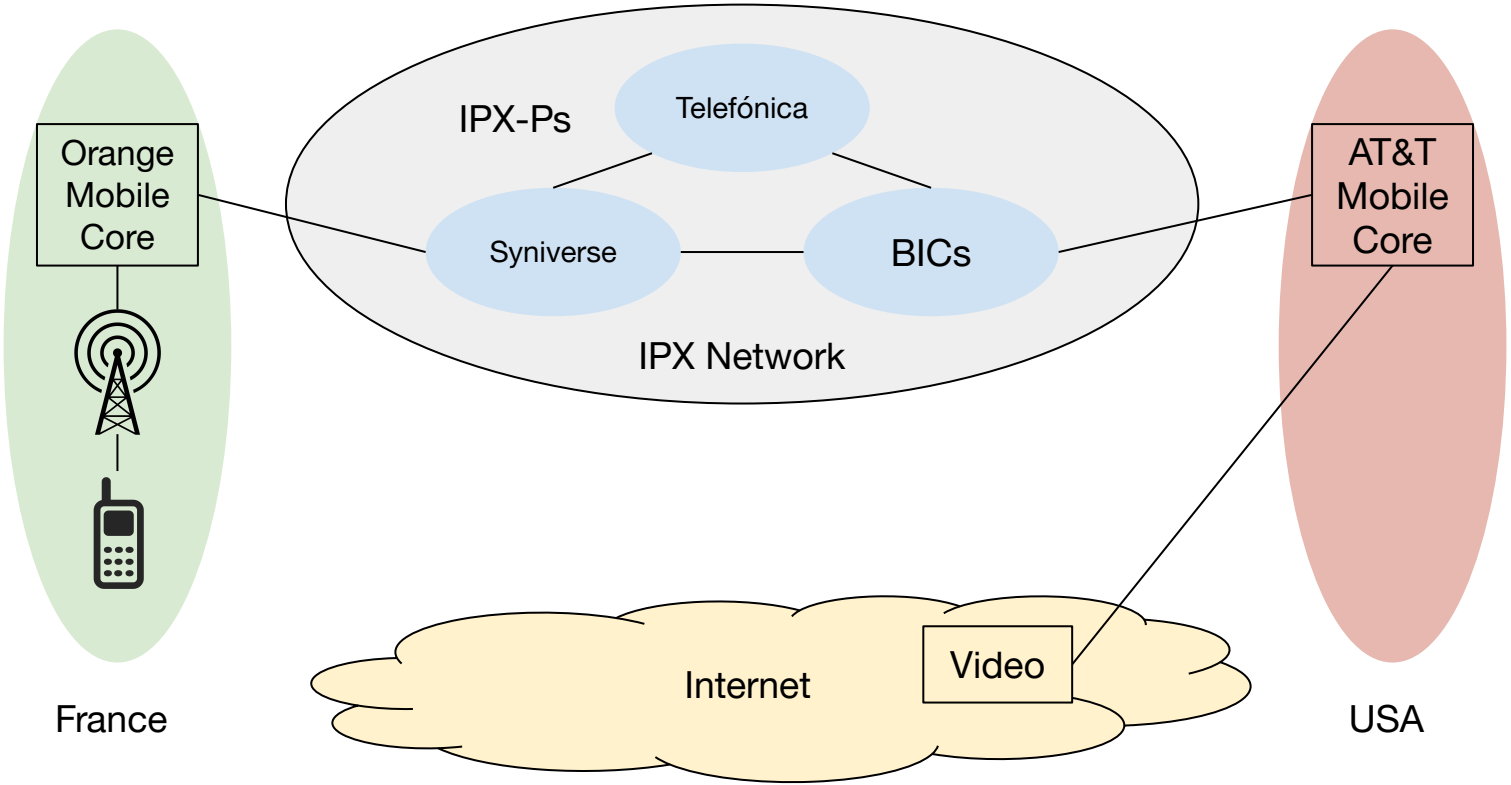
The next frontier for convergence: **roaming architecture**

We propose: **CPX**

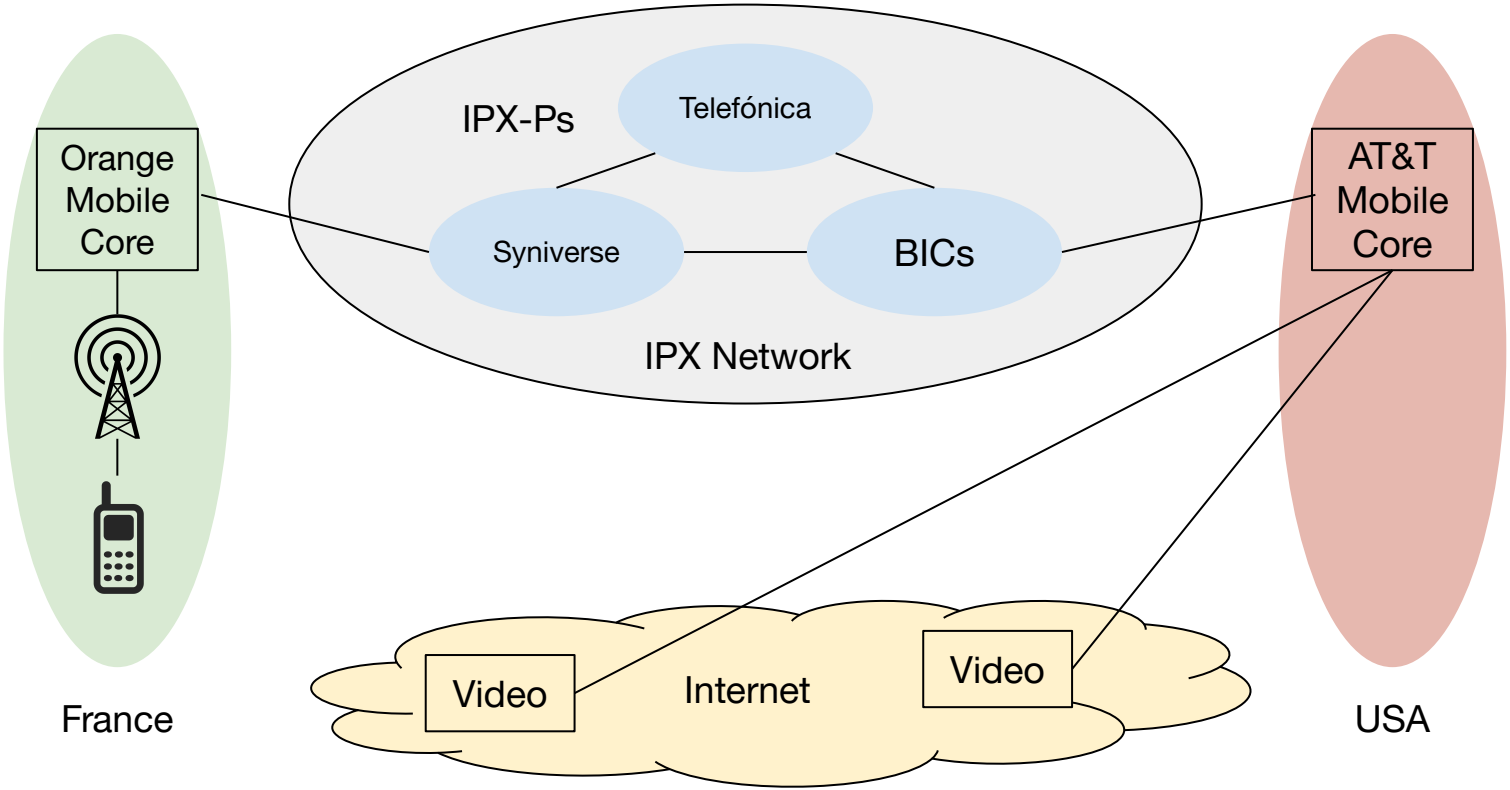
Roaming today



Roaming today **uses a separate network**



Roaming today **adds latency overheads**

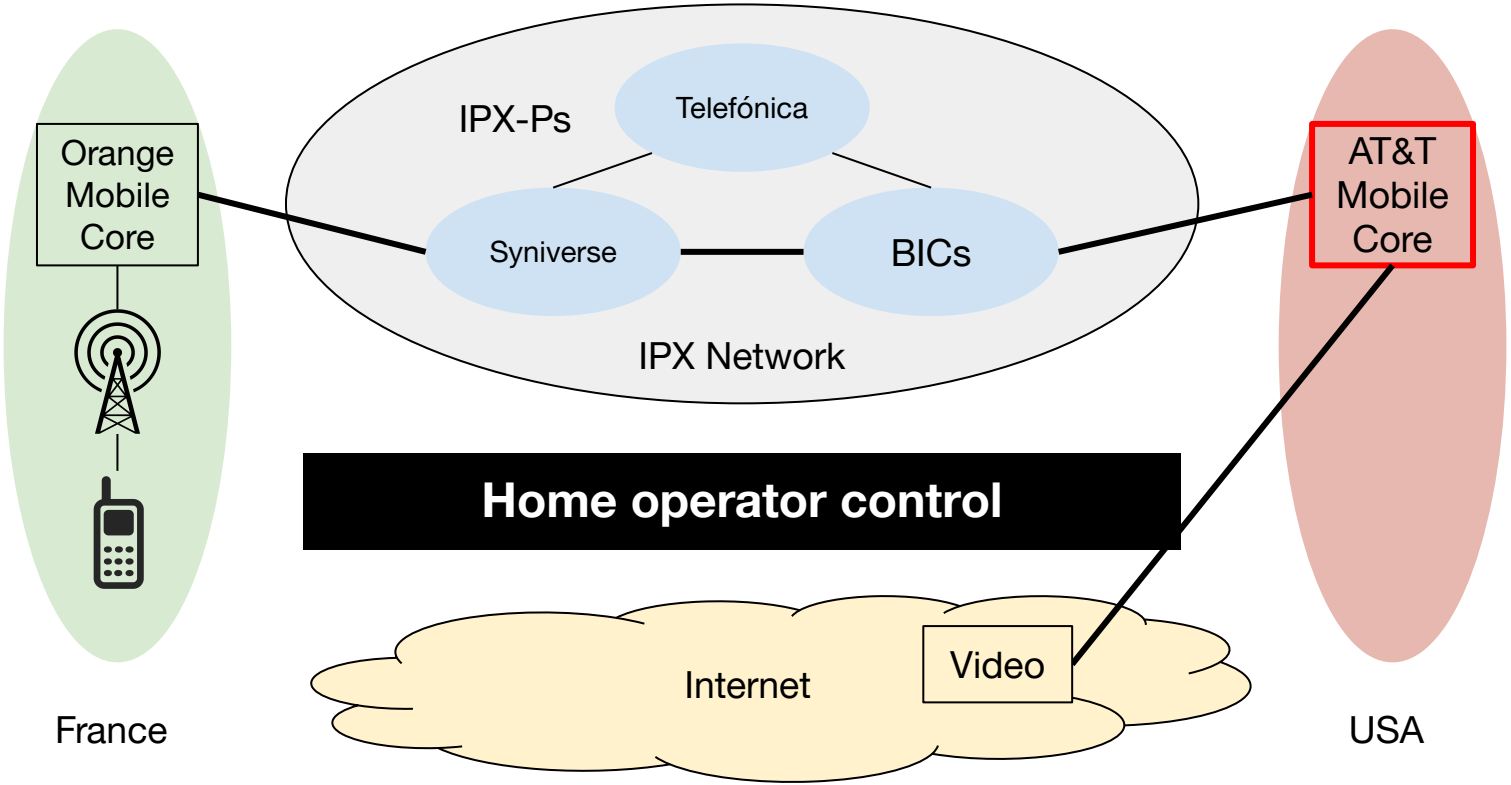


Recap: Roaming Today

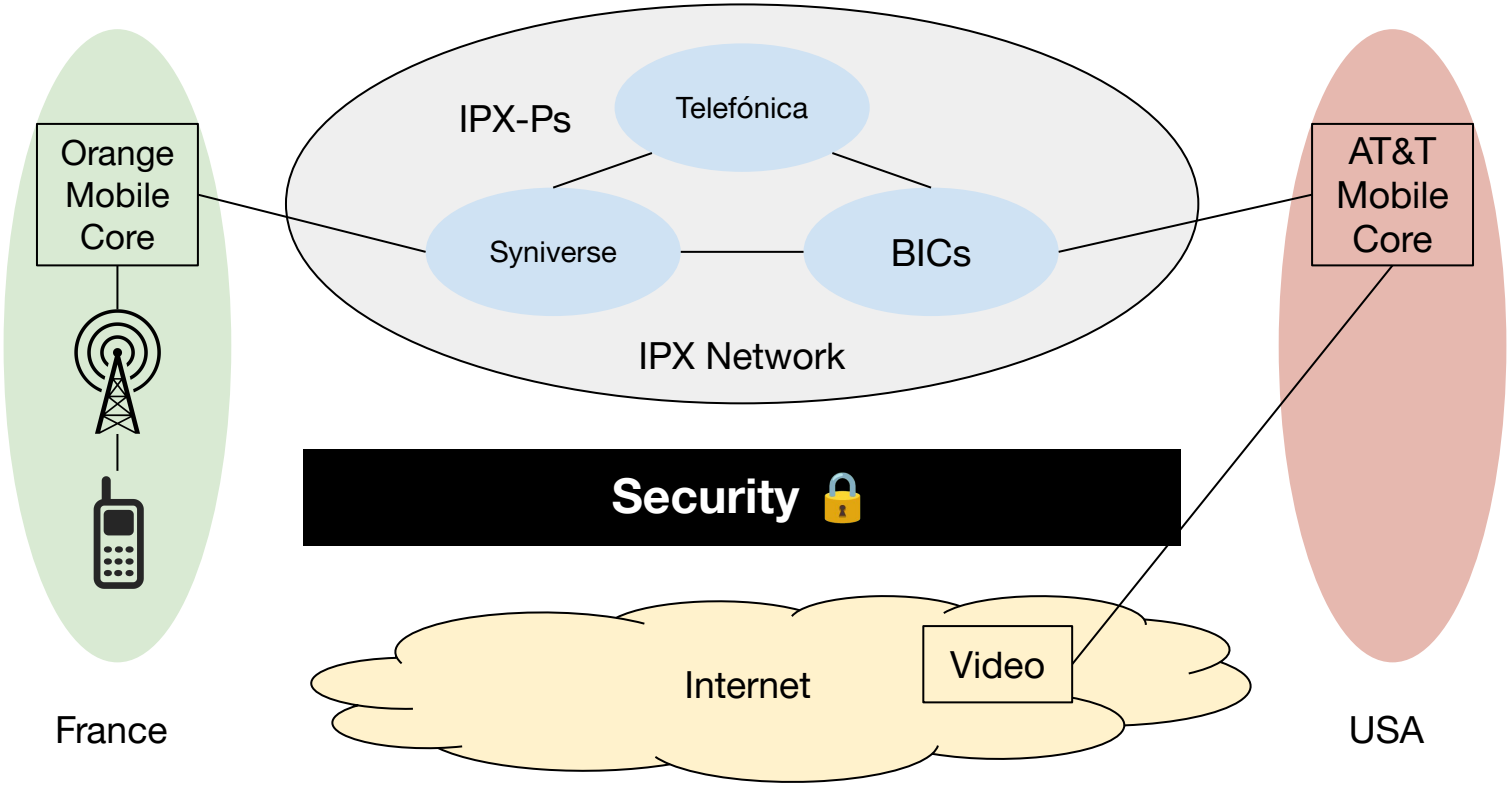
- Suffers two major drawbacks
  - Specialized and standalone
  - Suboptimal latency

- Supports four important properties

Why route through home network?



Why a separate IPX network?



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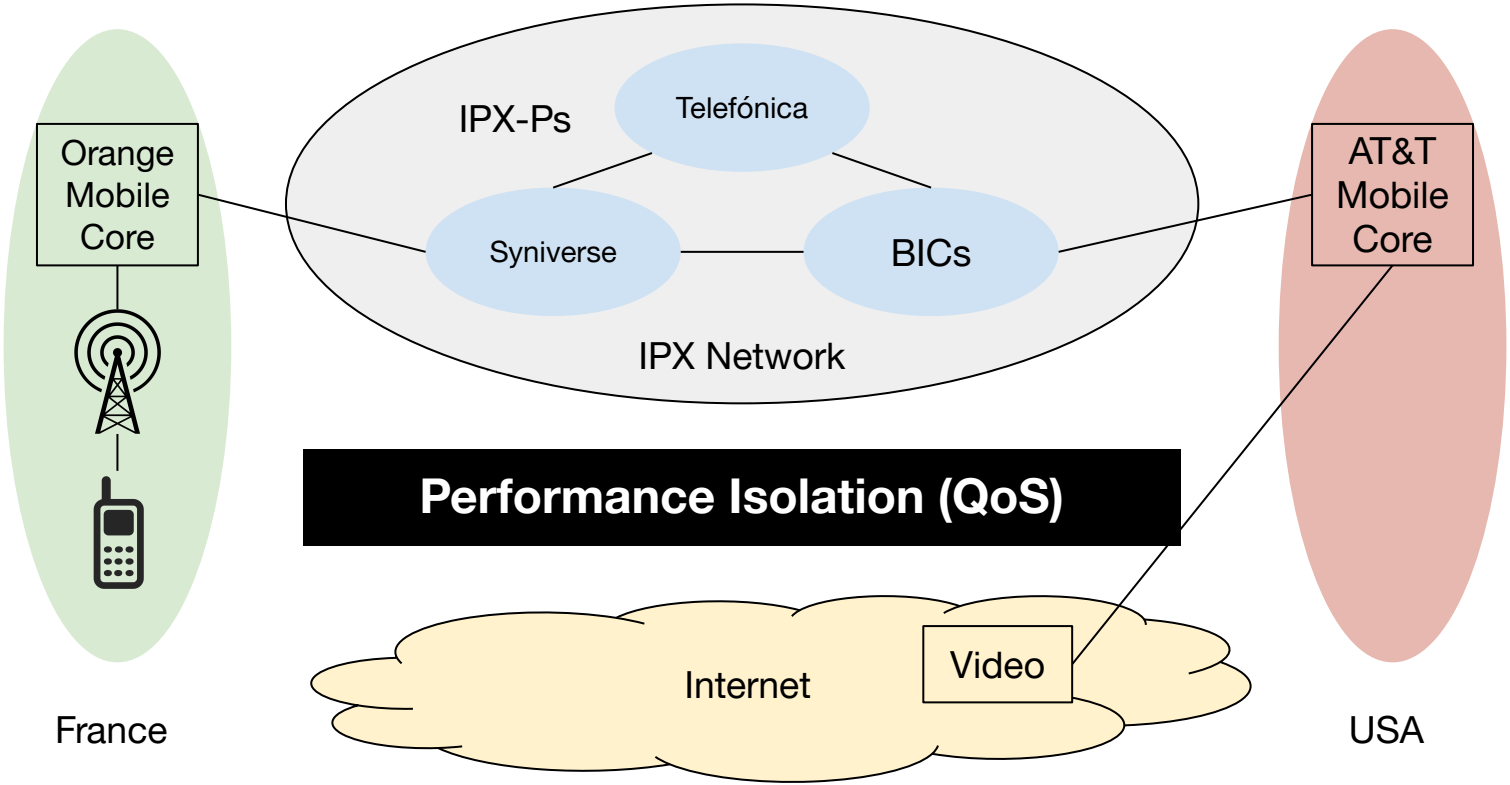

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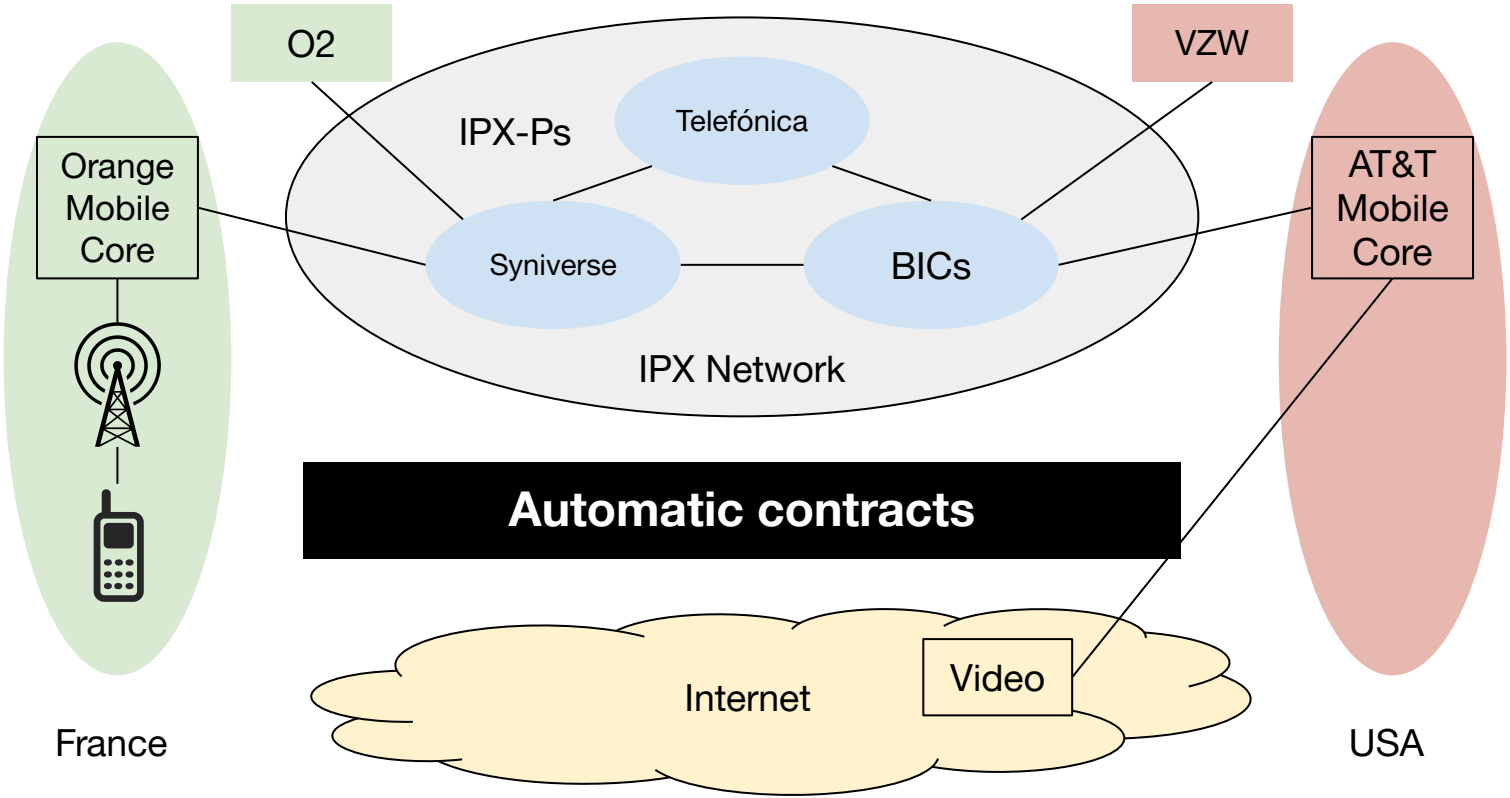


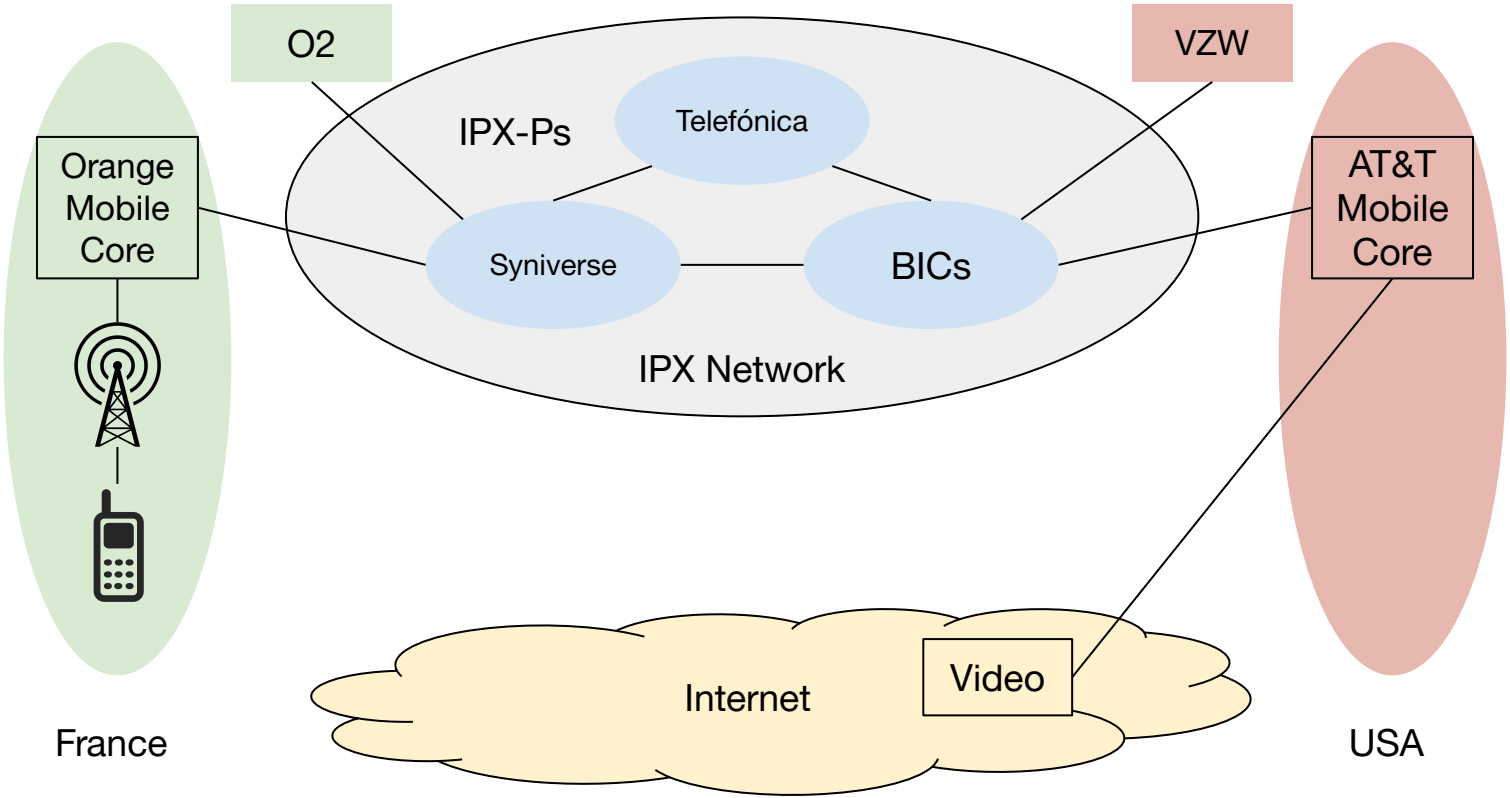
Recap: Roaming Today

- Suffers two major drawbacks
  - Specialized / standalone
  - Suboptimal latency
- Supports four important properties
  - Control
  - Security
  - Performance isolation
  - Automatic contracts

Our goal: address the drawbacks while retaining the four properties

Our solution: CPX, reuse existing Internet technologies to get a converged architecture

Roaming with **CPX**



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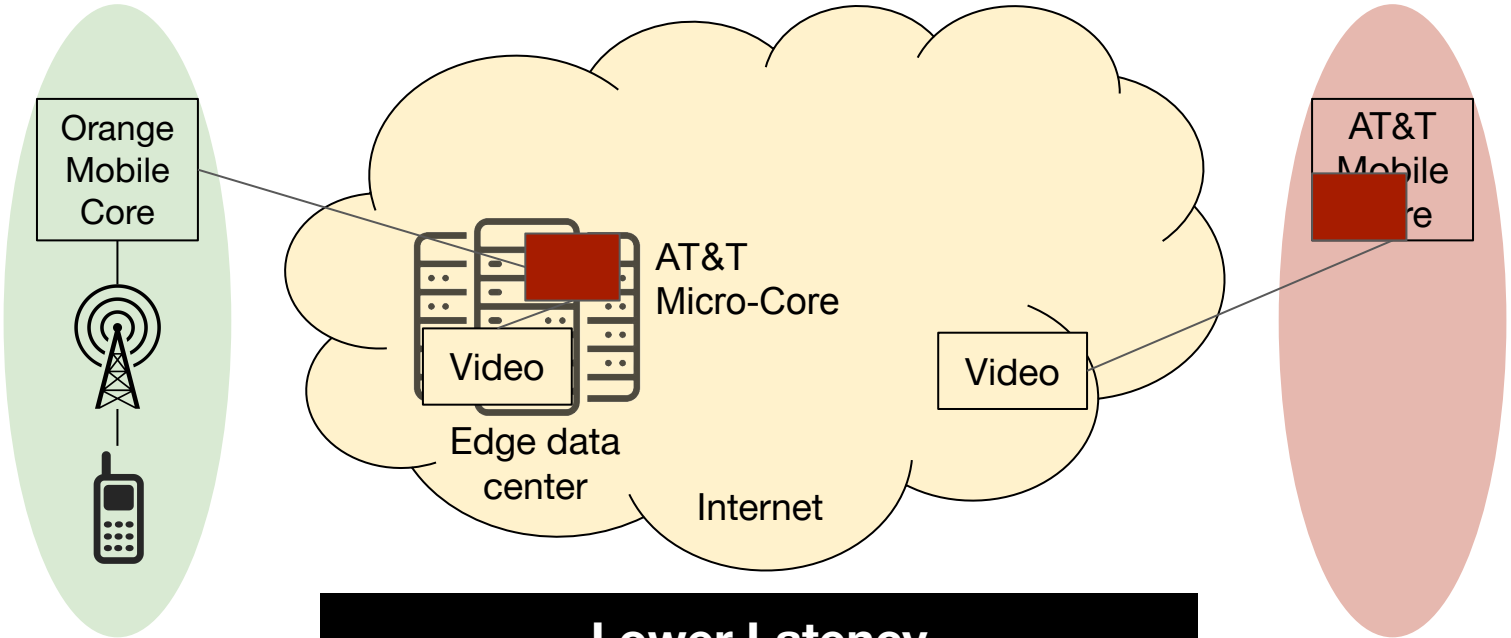
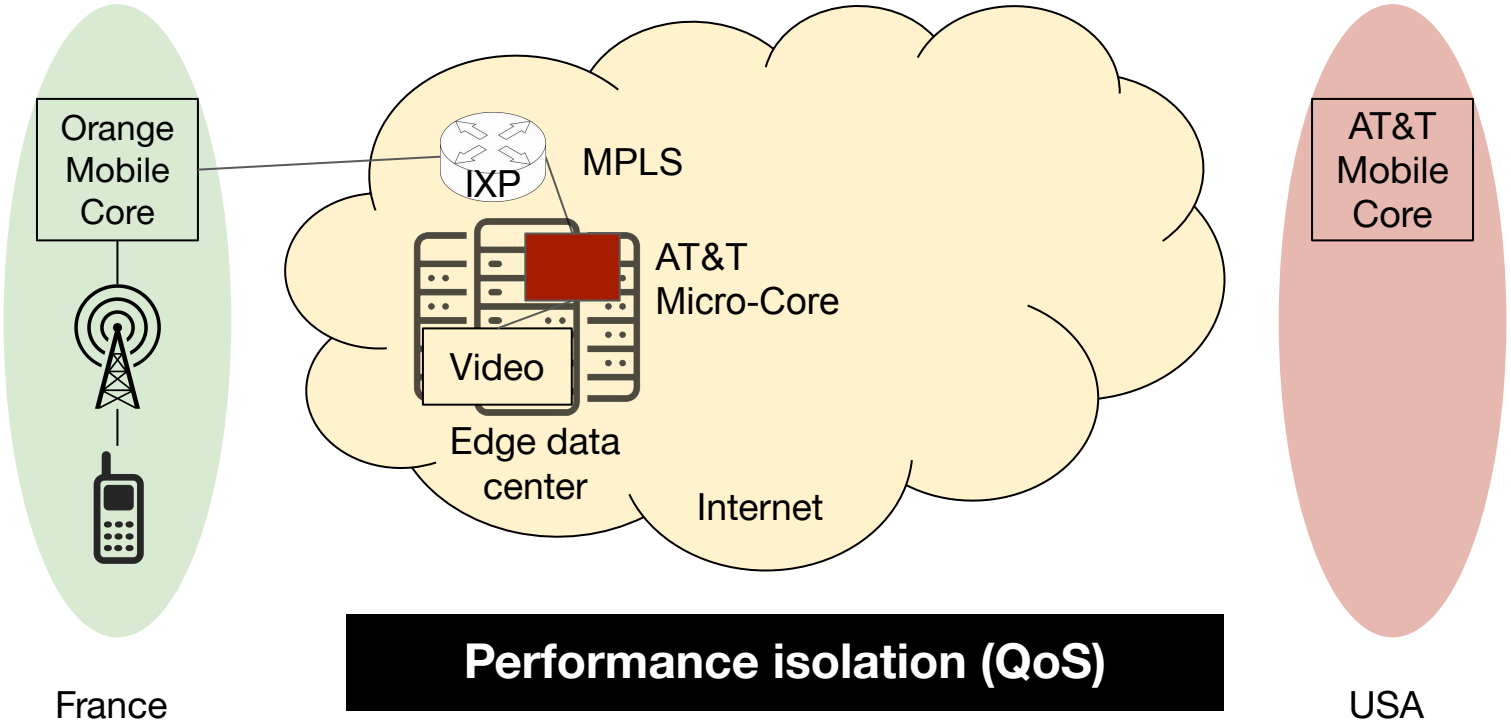


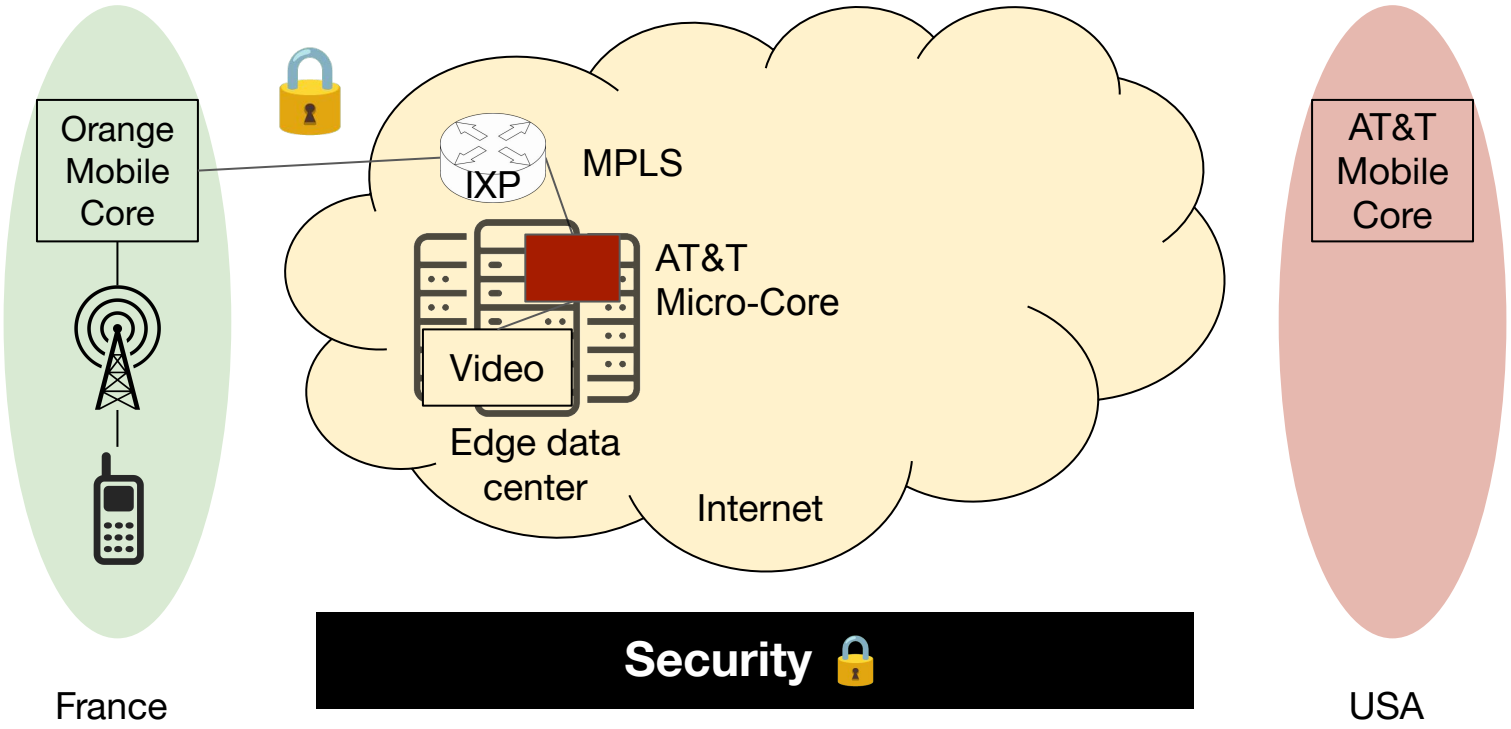
Lower Latency

Home operator control

Roaming with **CPX**



Roaming with **CPX**



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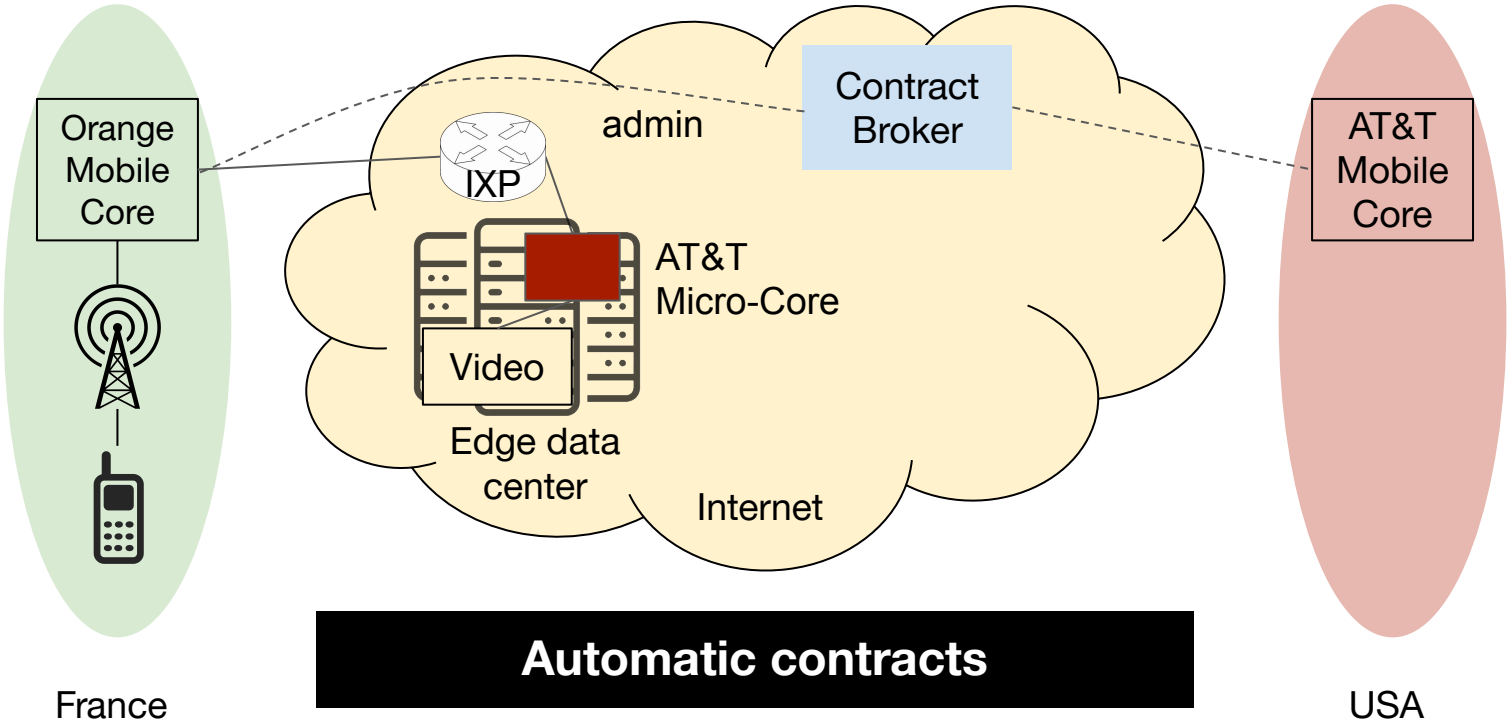

CPX: Converged roaming architecture

Challenges:

- Specialized network
- Lower latency
- Home operator control
- Performance Isolation
- Security
- Automatic contracts

Our solution:

➔ In the public Internet,

➔ At the edge (e.g., CDN),

➔ home operator runs “micro-core”.

➔ Bandwidth management (e.g., MPLS)

➔ SEPP, modern network security

➔ contract broker (e.g., IPX-P, IXP, CDNs)

Thank you!

CPX is a proposal for tackling the last frontier for converging the cellular network and the Internet.

Contact:

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