Using ENUM To Solve SIP Routing Problems

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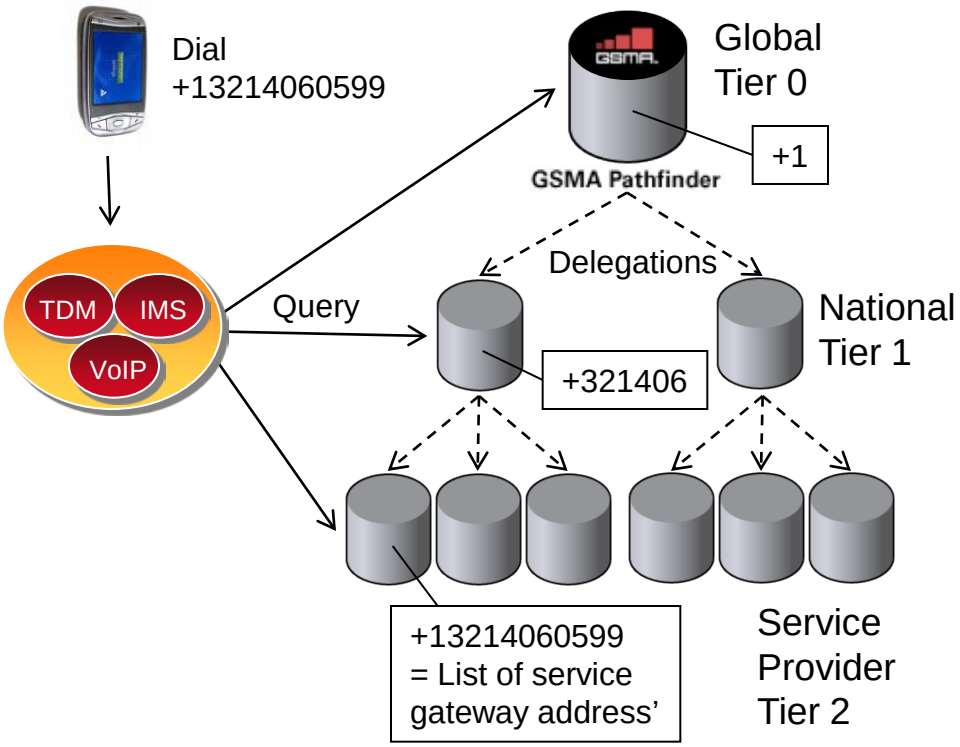
How does Carrier ENUM work?

- Tier 0
  - Discover the authoritative national Tier 1 registry
- Tier 1
  - Discover the authoritative Tier 2 registry
  - **Tier 1 is where number portability is corrected**
- Tier 2
  - Access addressing information for the subscriber/telephone number
- GSMA members requested GSMA to establish the root
  - » Root branded PathFinder
  - » Includes optional Tier 1 and 2 services designed to help ENUM adoption
  - » PathFinder is a GSMA Managed Service provided by

Logical architecture

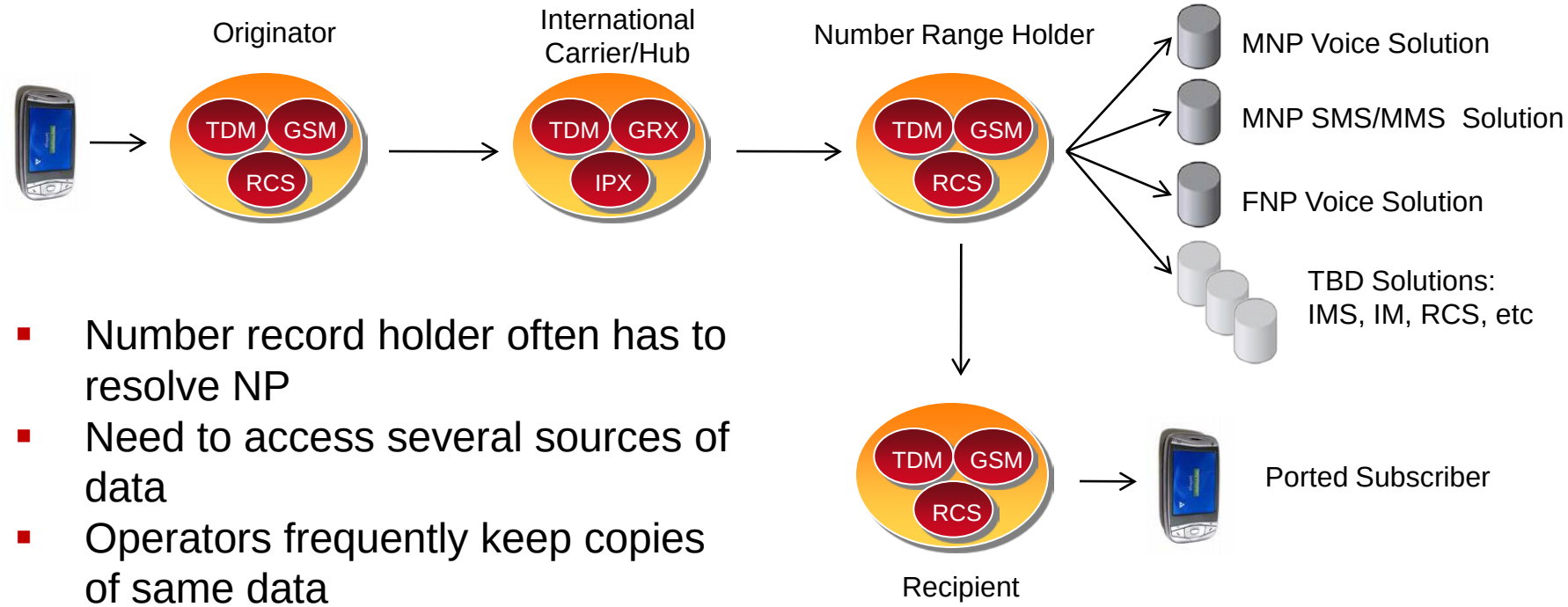


Industry defined addressing information framework

Number Portability Today

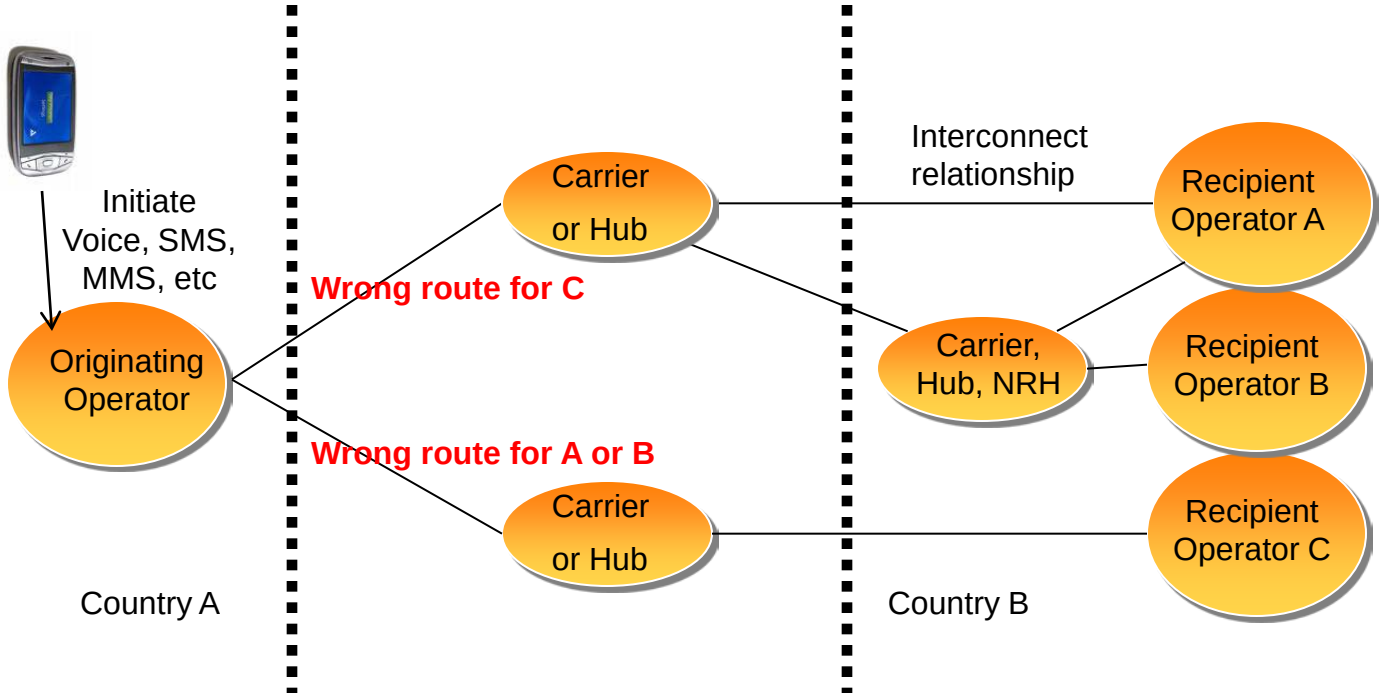
- Billions of trusted Phone Numbers
- Number Portability has been implemented in over 55 countries
- Every solution is different
- Complex and costly environment in which to deliver traffic

Global Inconsistency



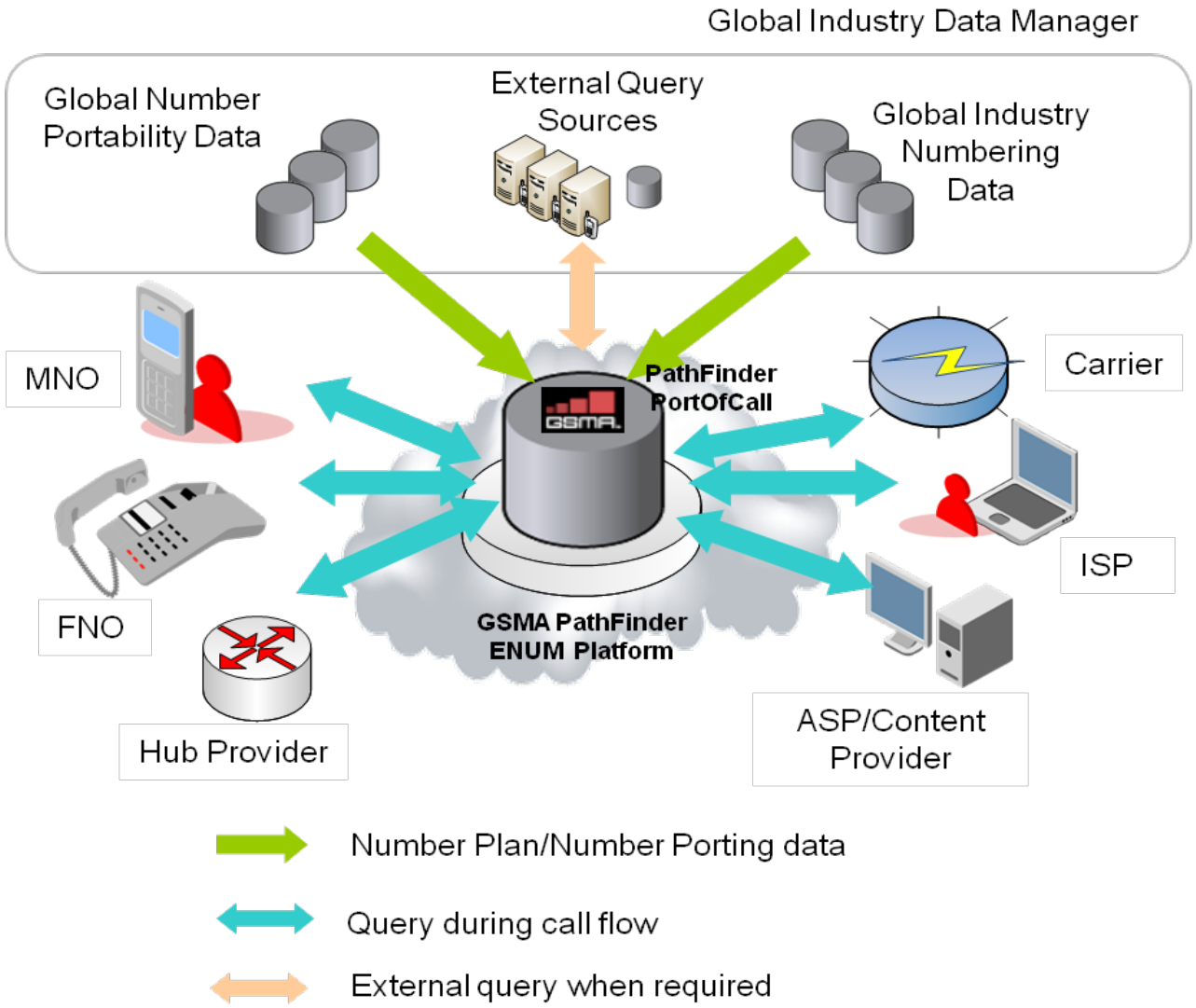
- Number record holder often has to resolve NP
- Need to access several sources of data
- Operators frequently keep copies of same data
- Every solution different
- NP solutions do not account for Next Generation/IP based services
- Reliance on NRH means that new service introductions may fail

Routing Challenges



- Carriers and Hubs are not always granted access to NP solutions
- Originators do not always know which carrier/hub to choose
- Where traffic is offered to entities who do not have the appropriate interconnect agreements, that traffic and revenue may be lost

Transition Phase – Number Portability data

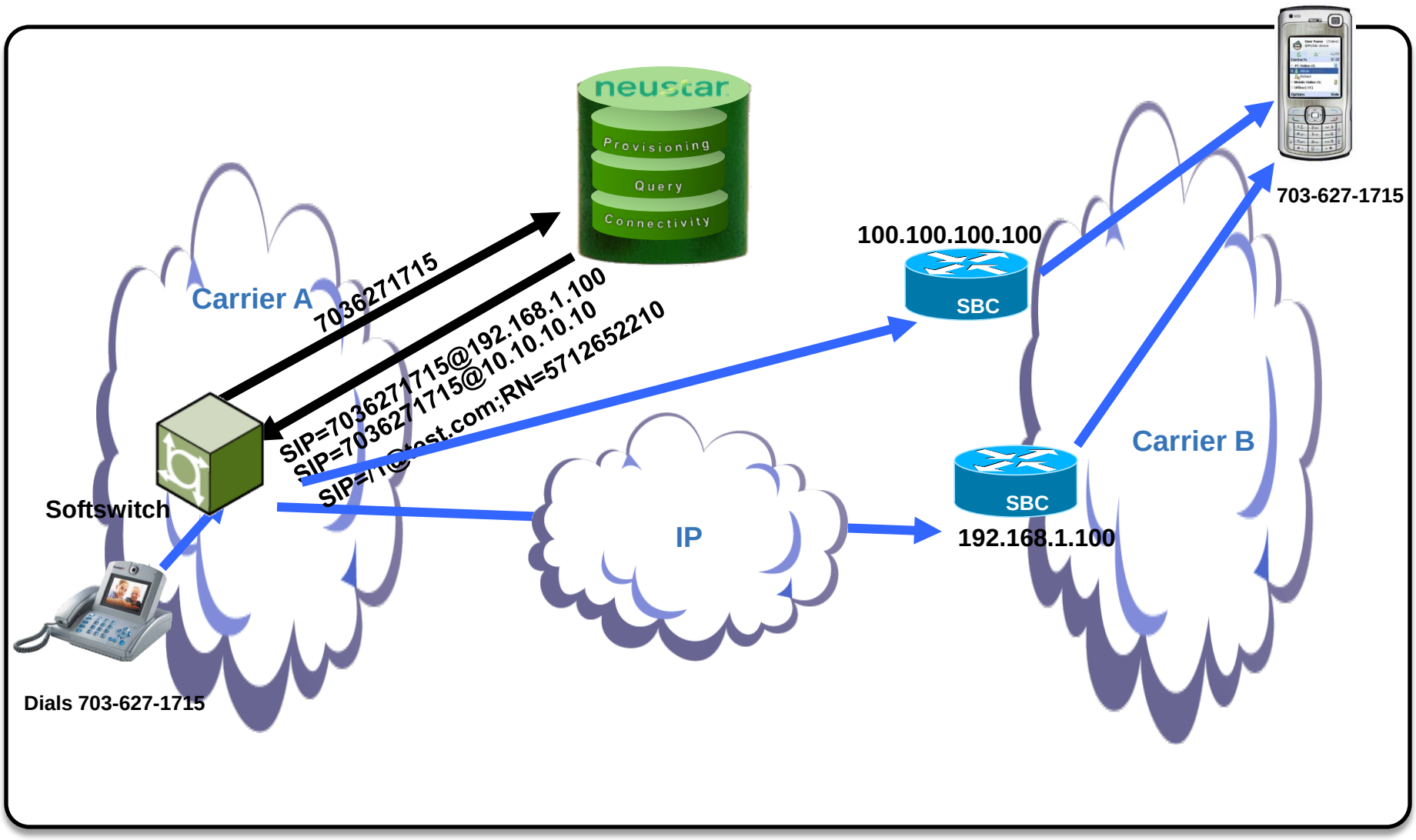


- PathFinder is connected to existing global numbering portability data sources
- Provides useful results during the transition phase when ENUM data is being populated
- Data is current and new NP data regions are rapidly added
- Seamless access to number portability addressing and network identification data

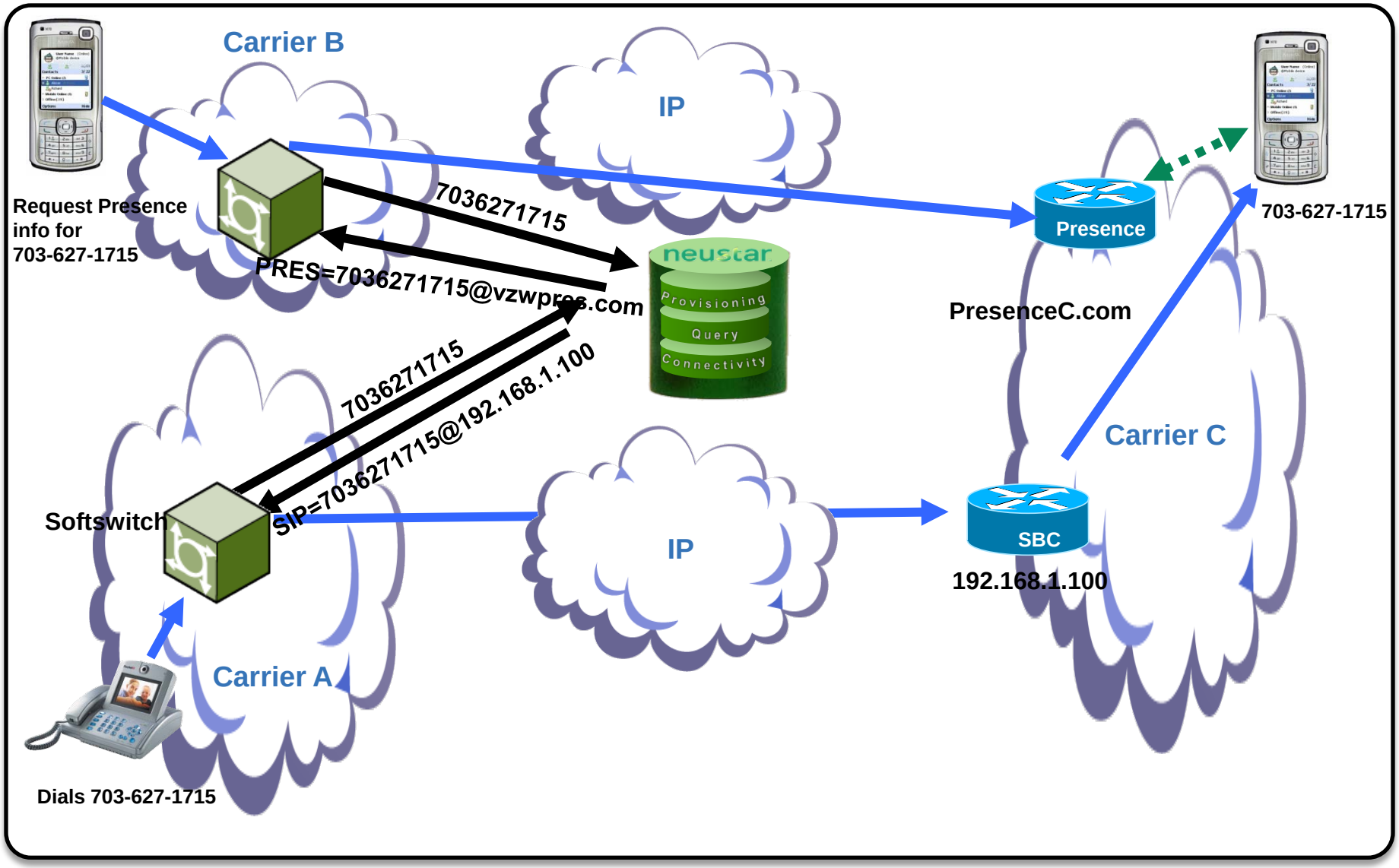
Operational Issues Discovered

- Lack of “CLASS4 IP” networks to interconnect Services Over IP
- Number Portability
- Usage of existing routing voice routing databases for Services over IP routing (SMS, MMS, Video, etc)
- Lack of single authoritative registry akin to ICANN, etc.

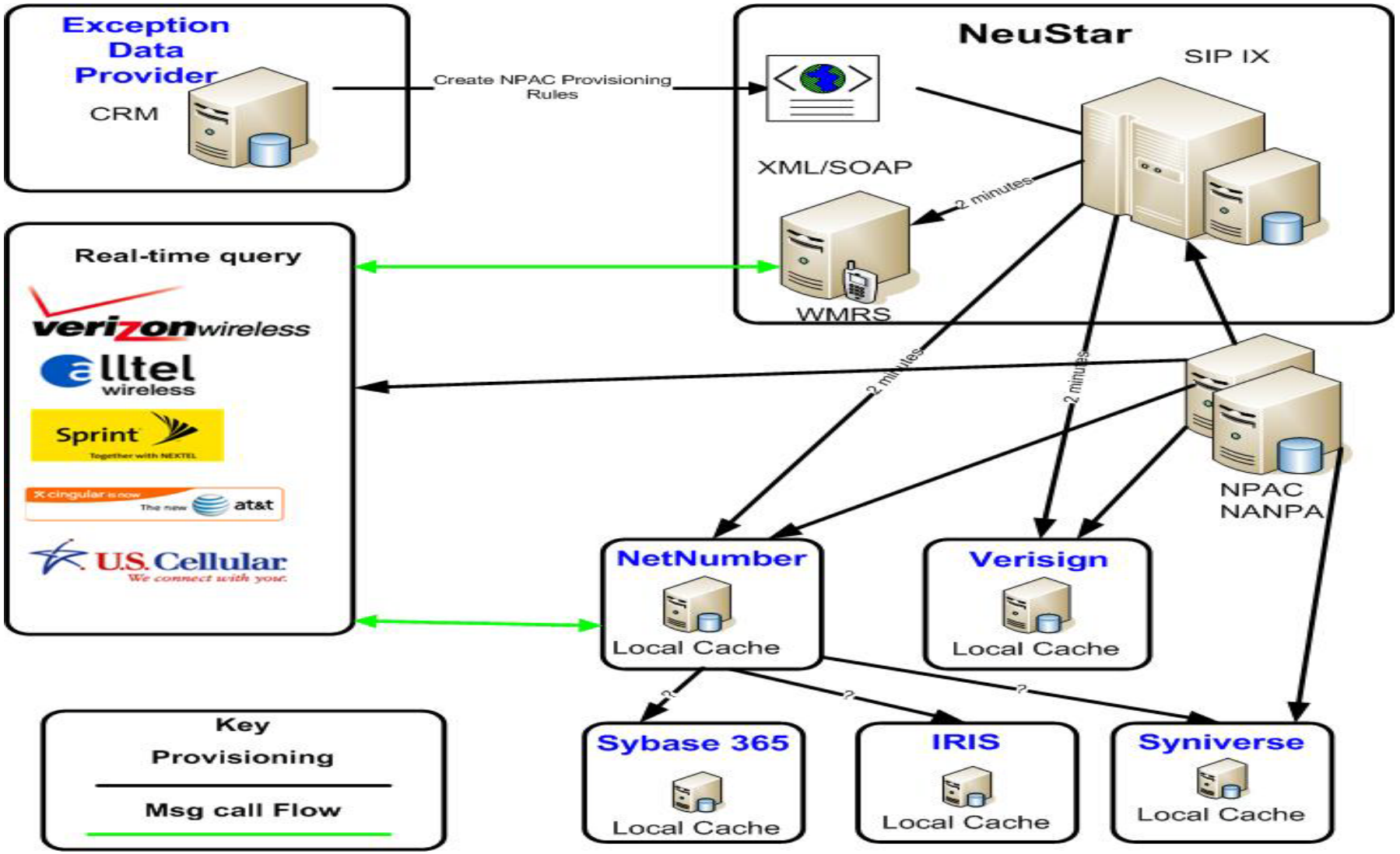
Controlling Inbound Traffic



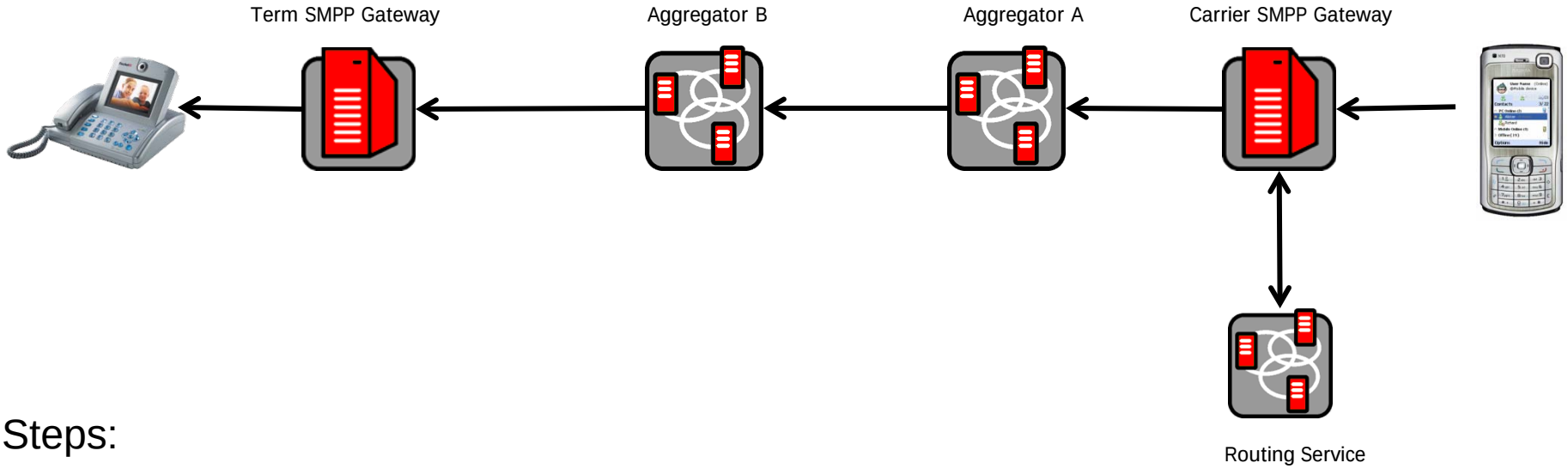
Offering Different Routes and Services to Partners



SMS to Wireline Carriers



SMS: Generic Message Flow To Wireline Carrier

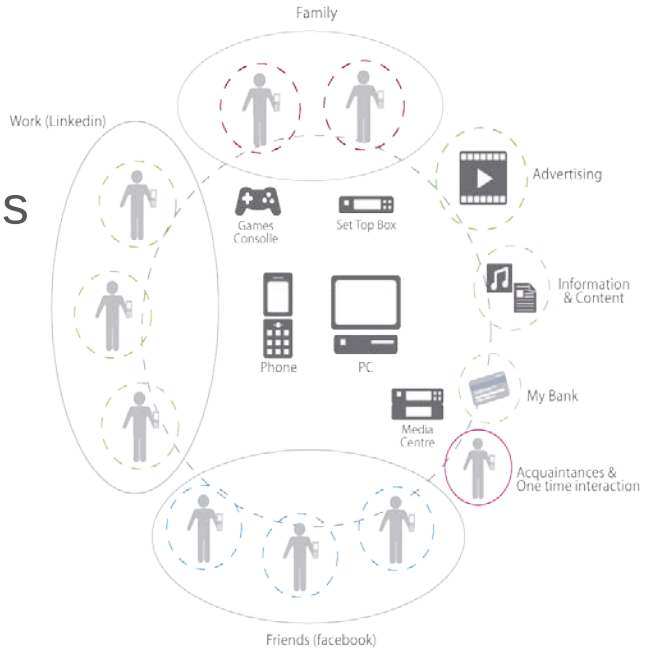


Steps:

1. Carrier SMPP Gateway forwards TN to Routing Service to determine routing information (some carriers skip this step and route directly to Aggregator A)
2. Routing Service responds with URI or SPID
3. Carrier SMPP Gateway forwards SMS to their Aggregator (A).
4. Aggregator A forwards to Aggregator B based upon routing table on which aggregator services Frontier for SMS
5. Aggregator B routes SMS to Wireline Carrier SMPP Gateway for delivery.

Summary

- GSMA Carrier ENUM, an open framework for
  - Interconnect addressing
  - Number portability
  - Applicable to current services
  - Extensible to future IP service
- Globally applicable and scalable
- PathFinder administered by the GSMA provides a trusted root for the community
- One stop shop for global NP data
- Policy ensures accuracy and security
- Complements local regulation
- Simplify and reduce costs for the industry
- Service Providers, Carriers and Hubs are beginning the adoption process now



Feasible standards based solution for IP Routing and Number Portability