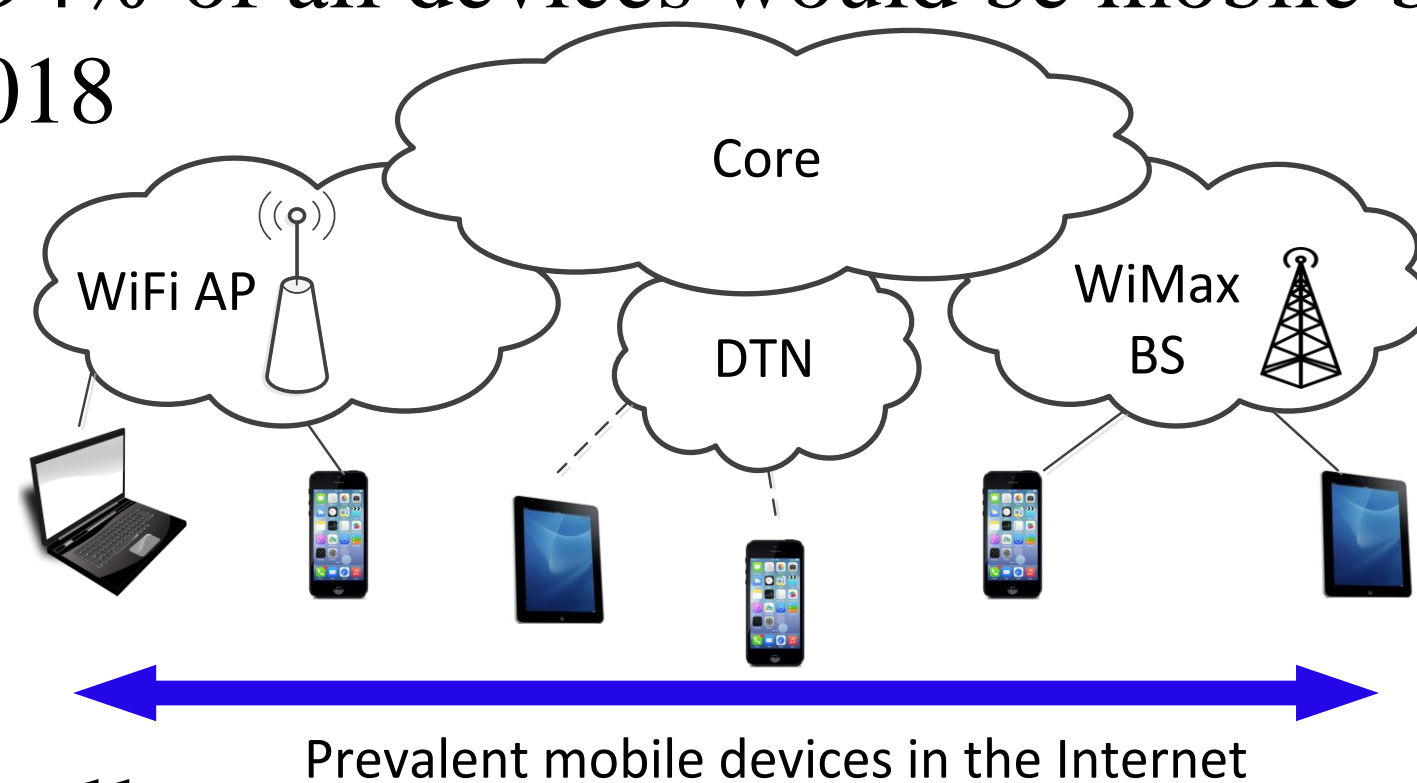


Motivation

Motivation

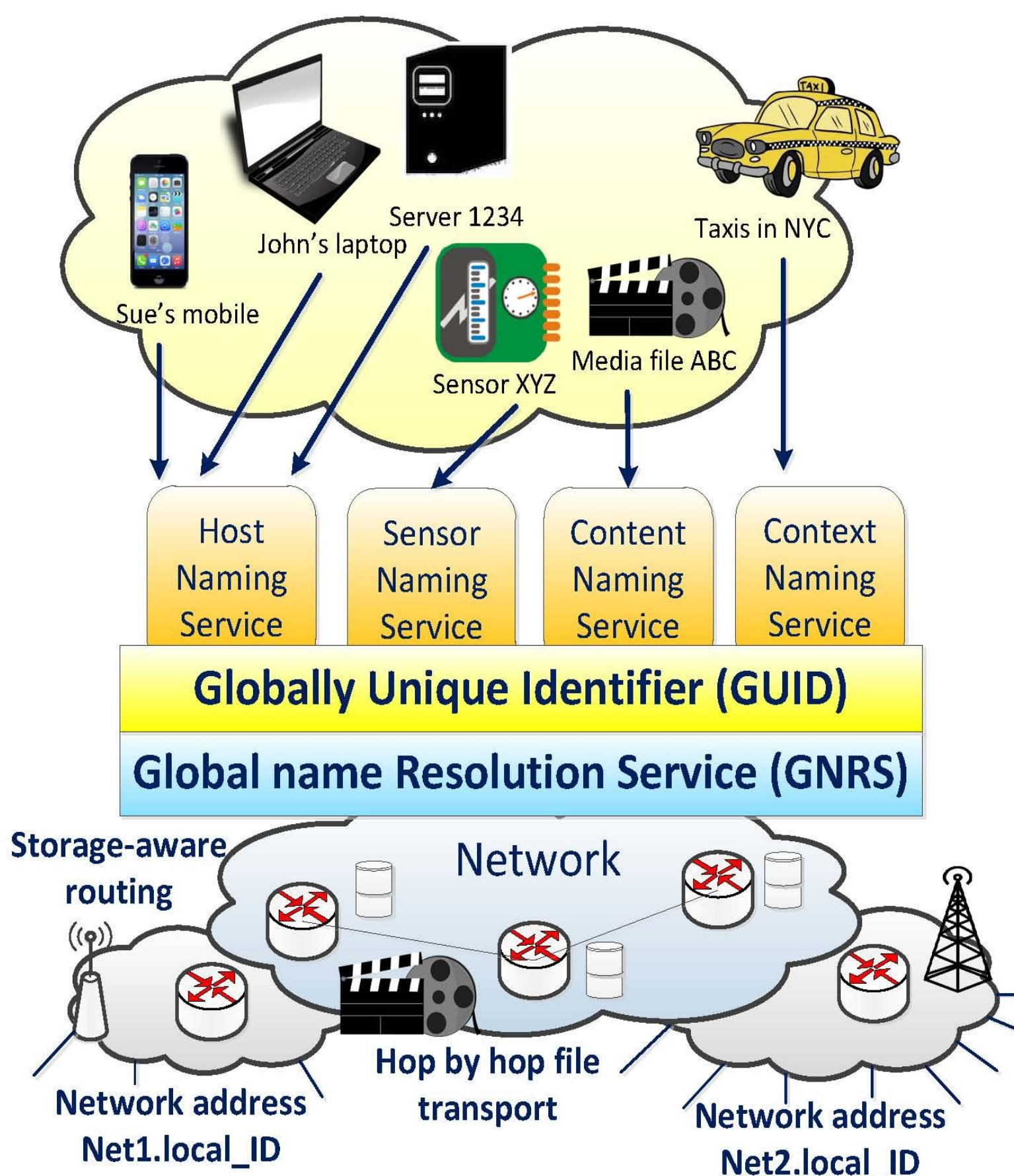
- Historic shift from PCs to mobile devices
- 94% of all devices would be mobile by 2018



Challenge

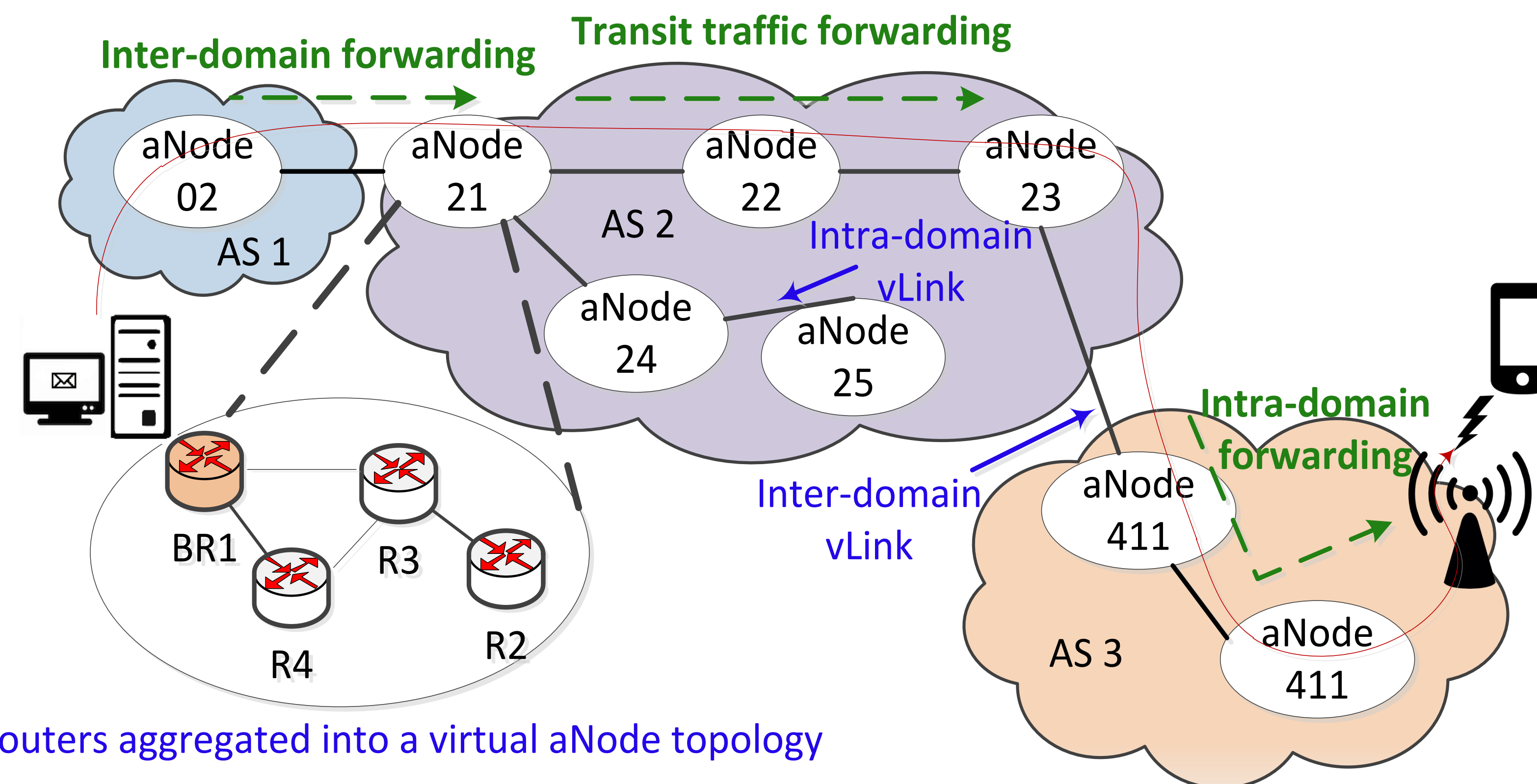
- Inter-domain routing has poor support for
 - Edge mobility
 - Dynamic AS formation
 - Multipath routing
 - Intra-domain network visibility

MobilityFirst Architecture



- Naming and dynamic resolution
- Trusted communication
- Storage-informed segmented transport, edge-aware routing

EIR Architecture



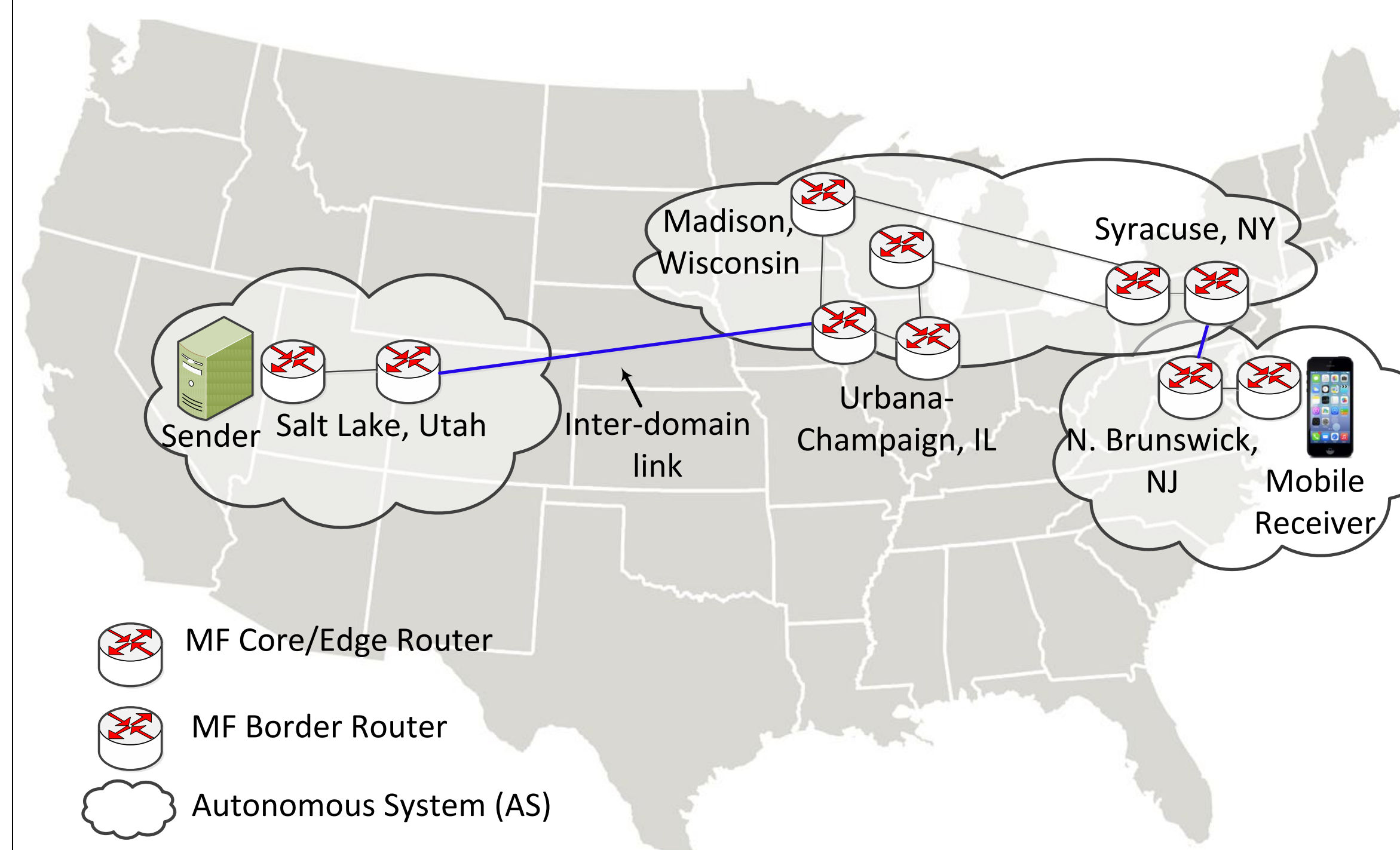
Routers aggregated into a virtual aNode topology

- EIR is a clean slate inter-domain routing framework designed to support the needs of mobile wireless access at the edge

Design Features

- Aggregation of internal topology into aggregated nodes (**aNodes**) and virtual links (**vLinks**)
- Network-wide propagation of state packets (**nSPs**) with aggregated link properties
- **Telescopic flooding** to dampen nSP induced overhead
- **Late binding** for mobility support
- Label-based **cut-through** routing for handling transit traffic
- Imposing **local policies** through path injection mechanism

Demo Scenario



- Multiple sites with InstaGENI: Rutgers, NYSERNET, Wisconsin, Urbana-Champaign and Utah. Multipoint VLAN connects sites to enable layer-2 connectivity for non-IP MF protocol
- Sender at Utah sends MF data to a mobile receiver initially at Rutgers, which is delivered across multiple domains
- Data delivery respects transit AS policies and doesn't route through specific routers in Madison
- Emulate receiver mobility, with receiver moving to NYSERNET. Data flow continues seamlessly at new location

Future Work

- In-depth study of settling times, control overhead and performance of Internet-scale topologies
- Analysis of mobile wireless use-case scenarios including dynamic mobility support and cross-domain multihoming

References

- MobilityFirst <http://mobilityfirst.winlab.rutgers.edu>
- S. Mukherjee, et al., "Edge Aware Inter-domain Routing", WINLAB Technical Report, Dec, 2014