Demonstrating Context-Aware Services in the MobilityFirst Future Internet Architecture
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Further information and references are available at:
http://mobilityfirst.winlab.rutgers.edu
http://mobilityfirst.orbit-lab.org

The Named-Object Abstraction

- Separation of names from addresses creates the Named-Object abstraction.
  - Name identifies WHAT, that translates to current location(s) (WHERE) which are used to identify HOW to perform the network action.

Context-Aware Services: Emergency Alert System

- GNRs Service Plane
  - GUID Locator Locator Type Expiry
  - MULTI U1,U2...PS GUID 10 min
  - U1 19 NA 1 day
  - PS 53a NA 1 day

Demo Goals

- Implement a framework that exploiting a real-world large-scale testbed (GENI) can provide proof of the feasibility of the service designed.
- Provide a practical demonstration of the capabilities of the MobilityFirst Future Internet Architecture and its features.

References

- MobilityFirst: A Robust and Trustworthy Mobility-Centric Architecture for the Future Internet. D. Raychaudhuri, K. Nagaraja and A. Venkataradman. MC2R October 2012
- In Network Compute Capabilities: Provide easy extensibility/upgrade options for data plane by allocating compute and storage resources in the network. ISPs can use in-network computing to provide value added services (e.g. context-aware service).
- Efficient Integrated Multicast: Named-Object Multicast (NOMA) solution which relies on separation of names and addresses obtained through a globally distributed Name Resolution Service
- Additional support for push based multicast without requirement of tree structure.

Demo Setup

- Multi sites with InstaGENI, some with WMIX*: Rutgers*, Wisconsin*, NYU/NYU-Poly*, Utah, NYSERNET, GPO, UIUC.
- Multipoint VLAN connects sites to enable layer-2 connectivity for non-IP MF protocol

Opportunities and Key Components

- Global Name Resolution Service: Distributed service providing Named-Object abstractions.
- In Network Compute Capabilities: Provide easy extensibility/upgrade options for data plane by allocating compute and storage resources in the network. ISPs can use in-network computing to provide value added services (e.g. context-aware service).
- Efficient Integrated Multicast: Named-Object Multicast (NOMA) solution which relies on separation of names and addresses obtained through a globally distributed Name Resolution Service
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Prototype Components

- Router: C++ modular router based implementation.
- Dynamic binding using GNR, hop-by-hop transport, and storage-aware routing.
- Provides edge connectivity to clients.
- State monitoring at edge access.

Context-Aware Services Opportunities and Key Components