Hybrid Access Network (Bonding Two Accesses)

draft-lhwxz-hybrid-access-network-architecture

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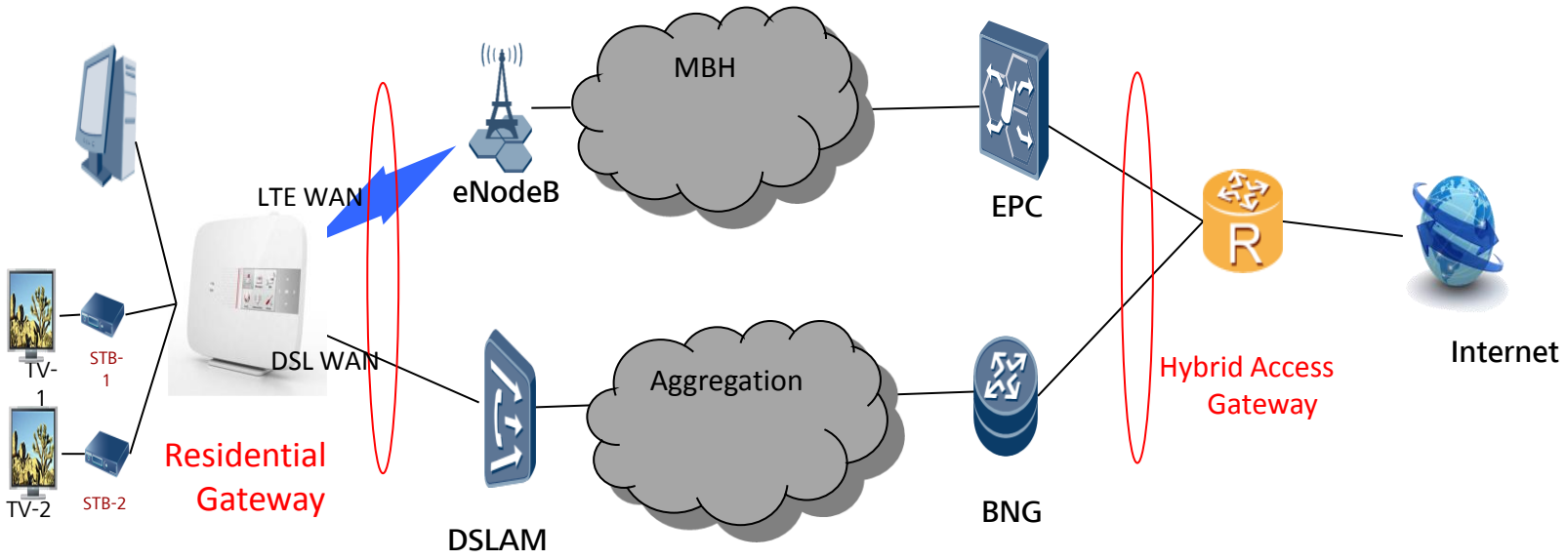
Why Hybrid Access Network is needed?

- Boarder bandwidth requirement while leveraging the existing network
- Flexible way of network deployment with decoupling the life cycle for fixed and 3GPP access
  - Boarder bandwidth requirement in fixed data traffic challenges xDSL supply
  - xDSL is difficult to upgrade and rebuild, especially in certain places
- Enhanced network reliability
- Guaranteed Service continuity
- Easy way to launch

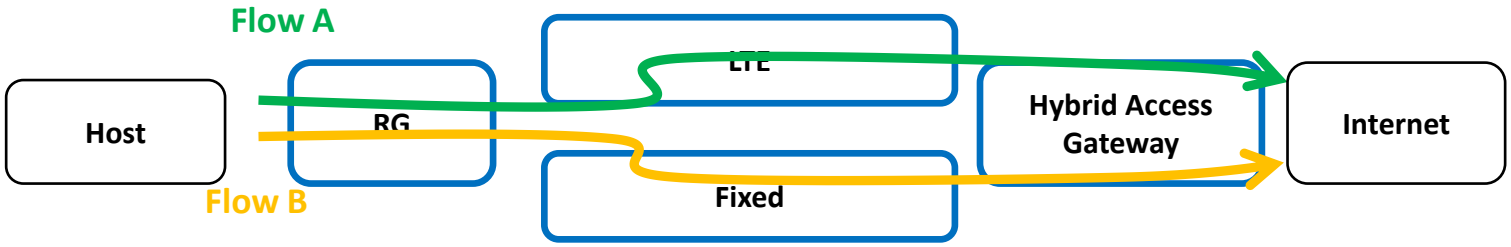
Use Cases

- Bonding different access technologies (e.g. LTE and DSL) together for the residential customers in order to get a higher bandwidth.
- The use cases of hybrid access network
  - Bandwidth on Demand
    - There are one or more access lines for residential users.
    - If the DSL line is fully occupied, bandwidth of wireless access can be added on demand.
  - Seamless Handover
    - If one access line fails, the service can still be provided without interruption.

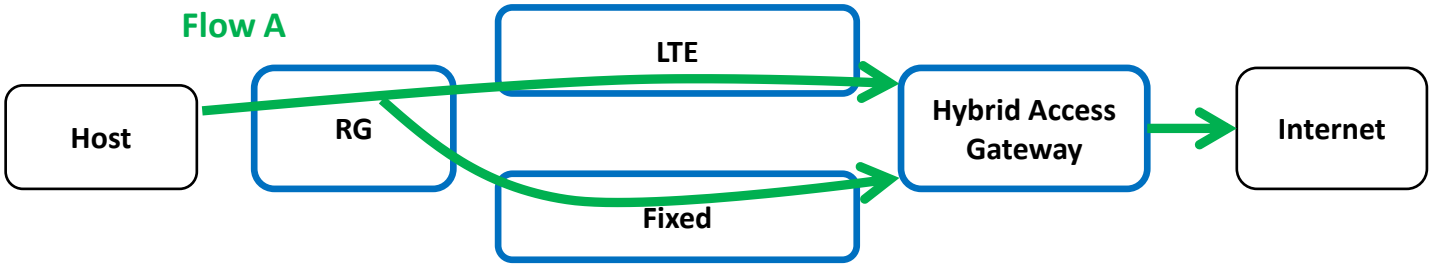
An Example of Hybrid Access Network Architecture



Traffic Distribution

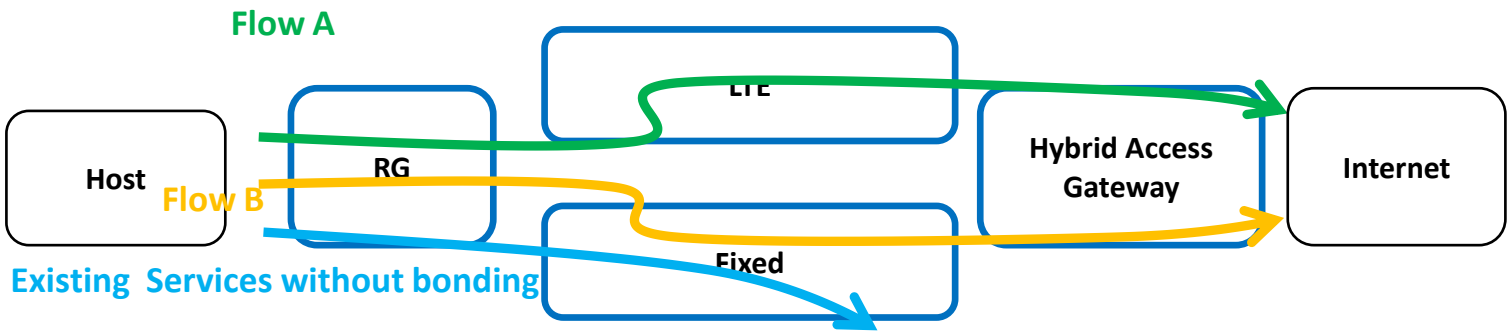


Flow-Based Distribution



Packet-Based Distribution

Traffic Distribution cont’



Backward Capabilities

What IETF Work is needed

- Mechanism to communicate traffic distribution policy to the RG and Hybrid Access GW
  - Distributed solution: control plane between RG and Hybrid Access GW
  - Centralized solution: centralized control plane
- Traffic distribution across multiple connections
  - How traffic distribution can be enforced on the RG and Hybrid Access GW based on the metrics (capacity, state, etc.) retrieval
  - Backward Capabilities: impact on the existing fixed service, for example IPTV, VoIP
- Ability to monitor E2E state of the access connections
  - The impact of difference of latency and MTU of two paths
- Others

Solutions

- MLPPP (No)
  - Layer 2 technologies
- MPTCP (No)
  - Application layer
  - Multihomed hosts rather than multihoming RG
  - Lack the mechanism on packet-based traffic
  - TCP application only
- Control Plane between RG and Hybrid Access Gateway (GRE encapsulation control packet)
  - http://tools.ietf.org/html/draft-lhwxz-gre-notifications-hybrid-access-00
  - Tunnel Management and Bond
  - Policy Negotiation
  - Traffic Overflow
- Others

Why Homenet

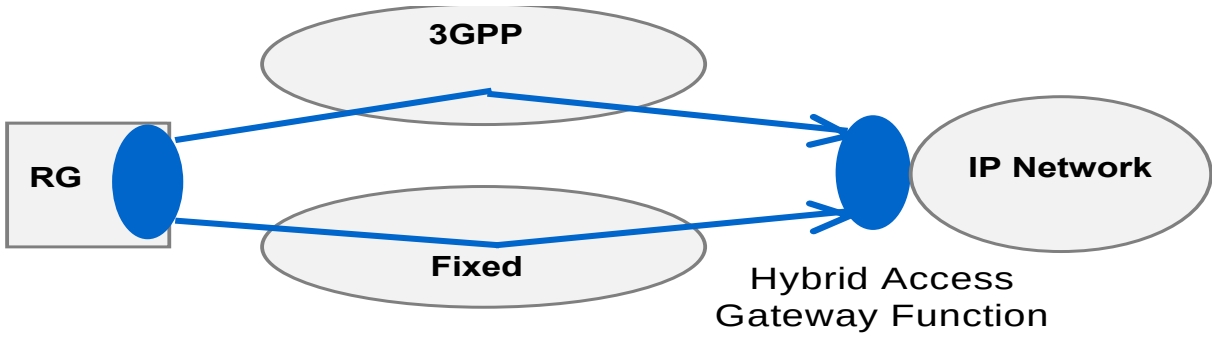
- In the scope
  - RG multihoming
  - Protocol for RG
- Out of the scope
  - Negotiation between RG and network side

Feedback

- Any comment and suggestion from Homenet WG is appreciated.
- What is suggestion for the next step?

BBF Activity

- Hybrid Access for Broadband Networks Work Text project was approved in June 2014 Q2 BBF meeting
  - 2014.546



Thank you