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’
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)
  • 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