ANCP for Wireless Environments

draft-floreani-ancp-wireless-00.txt

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Scope of Proposal

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details extending ANCP to suit smart adaptive wireless modems, which need to tell routers current link speeds for QoS/shaping. This is primarily intended for satellite communications ISPs with hubs and fanout – but point-to-point radio modems have exactly the same need.

Phases

1. Adapt ANCP by adding a "wireless" class allowing ANCP to be used between routers and satellite/wireless hubs in an identical manner to that used by DSLAMs today.

2. Adapt ANCP to be applicable to user-side operations, allowing us to apply the same traffic shaping in the reverse direction from modem (terminal) to hub.

3. Use the previous adaptation to allow the adoption of ANCP in point-to-point wireless environments, such as meshed satellite modems, or point-to-point terrestrial modems.

ANCP for wireless, phase 1

- Satellite ISPs are moving towards offering fully converged services.

- The 'line rate' each subscriber gets can vary due to channel conditions, which change link budgets and offered rates.

- They desire per-user traffic shaping, to optimise use and offer guaranteed services over the shared medium.

- There is often link asymmetry, with a small return channel (user uplink) – just like DSL.

modem   ANCP   hub   AAA
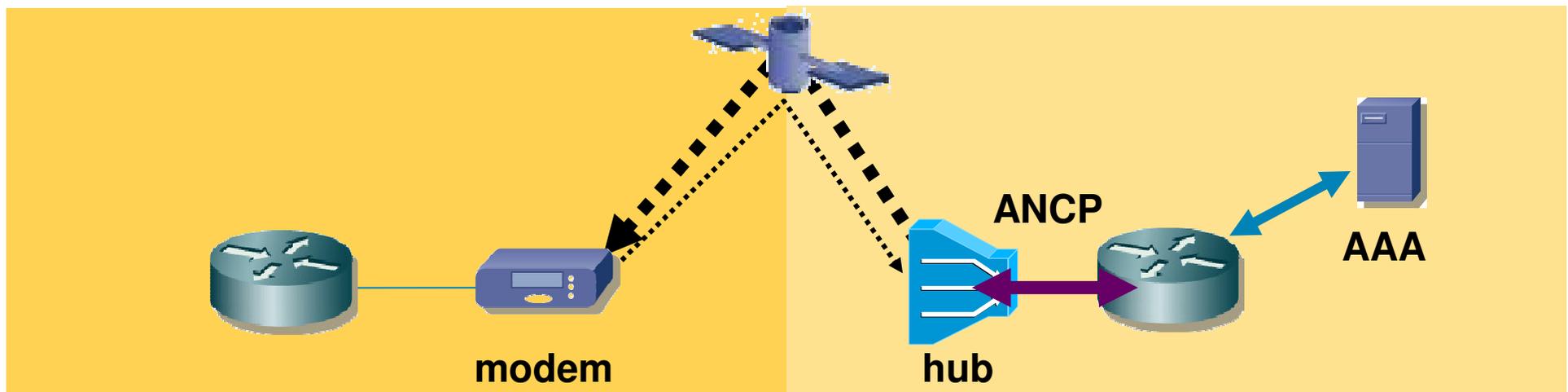
ANCP for wireless, phase 1

- This need led to **draft-floreani-ancp-wireless-00.txt**

- We see a need to create intelligent interfaces between modems and routers. ANCP is one part of the solution, but a very important one as ANCP can provide a mechanism to guarantee QoS over dynamic networks.

- ANCP can also allow some shared knowledge of link state between modem and router, now that the majority of custom modems are separate and using Ethernet ports, rather than integrated or using serial ports.

- Sending 100Mbps to a modem with a variable 64kbps-512kbps uplink is not best use of the modem – what does the modem drop? Static rate limiting on the router output interface doesn't help – much. Can be better.

ANCP for wireless, phase 2

- The return path is generally smaller than the forward path.

- In order to get converged services, we need adaptive QoS policies in routers to deal with adaptive modem operations.

- Need a 'lightweight' ANCP to communicate rates between low-end-router and low-end modem.

- Policy server would be inside router, with limited number of preconfigured policies, based on a few known modem states.

AAA

User-end ANCP

ANCP

AAA

Modem

HUB
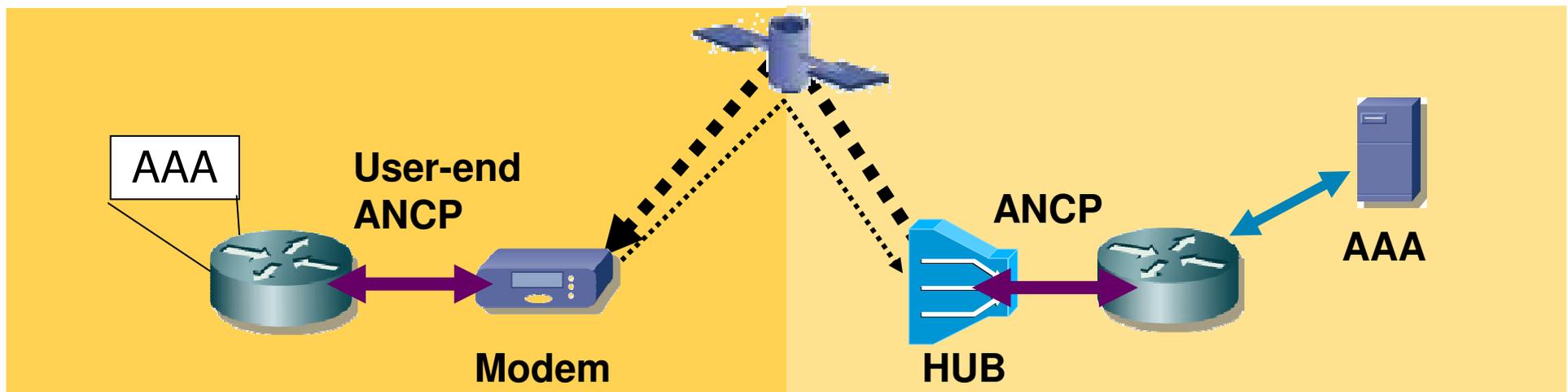
ANCP for wireless, phase 3

- Unlike DSL, there are many point-to-point or mesh wireless modem solutions. And no standard modem design!

- Two instantiations of User-end ANCP could be used to independently control the outbound traffic policies of routers in a point-to-point scenario.

- Changing channel conditions mean a dynamic environment. We suggest that ANCP be used for long-term shifts in modem performance, and other layer-2 mechanisms (e.g. ARQ persistence, power control) handle short-term changes.

AAA

User-end ANCP

modem

User-end ANCP

AAA

AAA

modem
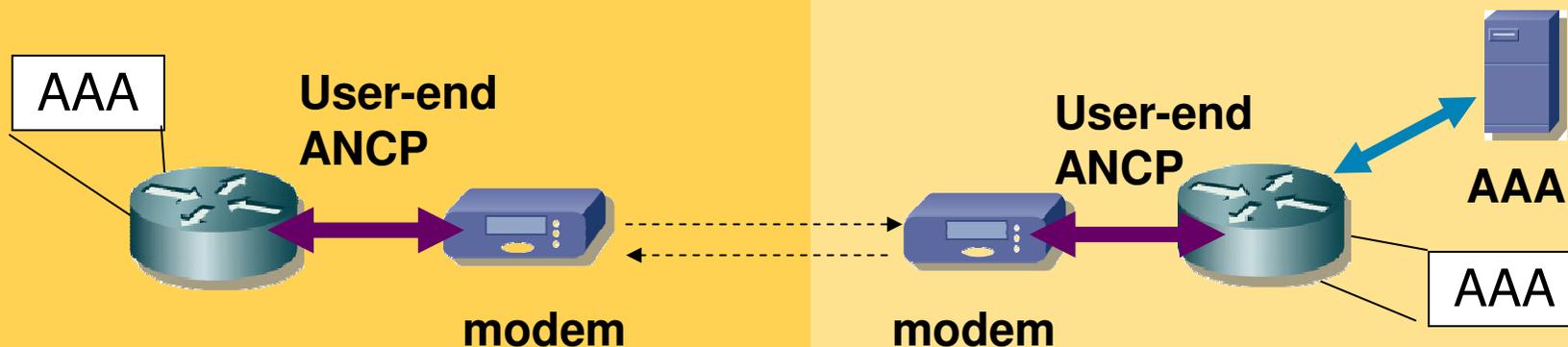
ANCP for wireless, phase 3

- Many high-level services require an adequate return path.

- TCP also needs an adequate return link for its ACKs.

- In this environment, policy decisions should be made based on both the forward and return path.

- We could rely on a modem at each end reporting Rx and Tx link capacity to its local router, or we can rely on each modem reporting its Tx speed to both endpoints, using ANCP Information Reports.
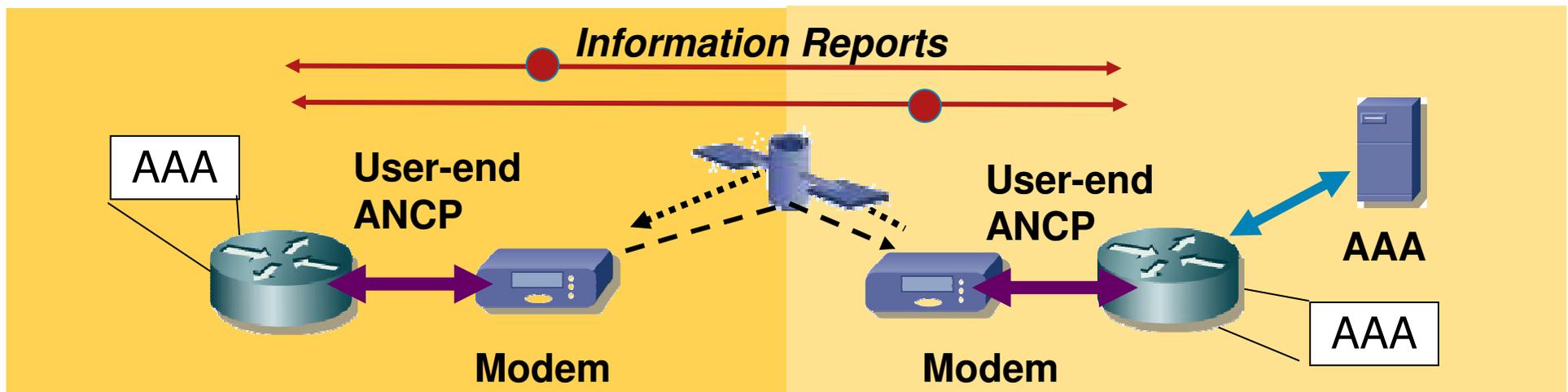
Other similarities

- Satellite and Wireless Service Providers are also planning on developing IP TV services, using IP-based set-top boxes.

- IP Multicast CAC is just as valid for wireless as DSL – perhaps even more so, as satellite bandwidth and wireless spectrum is in general more scarce than terrestrial bandwidth, with more desire to conserve it.

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Thankyou.