

## **Invention Title**

Novel space- and power-efficient ONU for MDUs

## **Invention Summary**

Broadband customers increasingly start to consume video content (video, audio) either via an IP-based offering from their provider or via many of the available options for Over The Top (OTT) services. In addition, many subscribers no longer require voice service via their incumbent carrier, broadband provider or ISP, preferring to go with a mobile solution. MSOs and telcos are likely to respond by offering data-only services. In order to facilitate more effective ways to provide data-only services, we propose a new type of ONU. This so-called "Super-ONU" offers data-only services to subscribers via an integrated home networking technology.

## **Invention Description**

Broadband customers increasingly start to consume video content (video, audio) either via an IP-based offering from their provider or via many of the available options for Over The Top (OTT) services. In addition, many subscribers no longer require voice service via their incumbent carrier, broadband provider or ISP, preferring to go with a mobile solution. MSOs and telcos are likely to respond by offering data-only services. In order to facilitate more effective ways to provide data-only services, we propose a new type of ONU. This so-called "Super-ONU" offers data-only services to subscribers via an integrated home networking technology.

In the drawing below, the Super-ONU is placed in a suitable location where the in-building wiring to the individual living units is accessible, e.g., in the basement. The Super-ONU converts the data signal into a format suitable for propagation on the in-building wiring. For example, in an MDU where coax cable is available, using MoCA as the home networking technology would be a natural choice for an MSO. However, the home network is not restricted to coaxial cabling and MoCA. The Super-ONU could be implemented various models that support either MoCA, G.hn, HPNA or any other suitable home networking technology. Furthermore, coax or twisted pair could be support in different model variants.

At the subscriber's end, a home networking adapter receives the home networking signal from the Super-ONU and converts it into a type of signal with an interface directly usable by the subscriber, e.g., Ethernet via an RJ-45 jack.

On the backhaul side, the Super-ONU can be fed by dedicated fiber (Active Ethernet or another form of point-to-point - P2P - architecture) or via Passive Optical Network (PON / P2MP). A vendor may choose to offer the same type of Super-ONU with different forms of backhaul technology.

[Please note that the term ONT is used throughout this document to refer to both an ONT (Optical Network Terminal) as well as an ONU (Optical Network Unit).]

## **Invention Commercial Value/Customers**

More cost-, space- and power-effective way to provide data-only services in MDUs.

## **Invention Differences**

Existing MDU ONUs provide interfaces for the full suite of triple play services: voice (typically via RJ-11 jacks), data (typically via RJ-45 jacks) and video (typically via coax F-connector). We

are not aware of any existing ONUs that is optimized in terms of space requirements and power consumption to only offer data services with an integrated home networking technology.

Many modular MDU/MTU ONUs are implemented by simply providing a large enclosure and slots for repackaged conventional triple play ONUs.

Existing MDU ONUs serve a relatively small number of Living Units (LU), typically 4 or 8 max. The technology proposed herein can scale to accommodate tens of living units, while still retaining a reasonably compact size, manageable power consumption and associated heat dissipation.