

INVENTION DISCLOSURE

1. **Invention Title.**

Dedicated Bandwidth Request Mechanisms for Low Latency Services

2. **Invention Summary.**

Two bandwidth request mechanisms are designed to achieve low latency using a dedicated subcarrier approach and a dedicated slot approach.

3. **Invention Description.**

a. **Describe the invention in detail.**

The two proposed bandwidth request mechanisms are designed to incur minimum network access latency using a dedicated sub-carrier (or sub-channel consisting of a group of sub-carriers) approach in a multicarrier environment and a dedicated slot approach in a time slotted environment that could be single or multicarrier. These bandwidth request mechanisms are described in Section 4.6.1 and Section 4.6.2 of the “MAC Layer Design for Efficient Multigigabit Transport over CATV Networks” portions of CableLabs provisional patent application S.N. 61/266,653 filed December 4, 2009.

b. **Why was the invention developed? What problem(s) does the invention solve? How is it better?**

In multicarrier systems, a sub-carrier or sub-channel can be dedicated to carry bandwidth requests per end station or flow providing immediate access to the network hence minimum latency. In a slotted environment a dedicated periodic slot is used to carry bandwidth request messages. Slot allocation with high periodicity result in network access with low latency. In contrast, DOCSIS request grant mechanism has unpredictable latency due to its contention based network access. These deterministic approaches enable low latency access strategies.

c. **Briefly outline the potential commercial value and customers of the invention.**

Support of low latency services is very valuable for applications that generate revenue such as telephony, gaming and business services. It leads to customer satisfaction and reduced churn.

4. **How is this invention different from existing products, processes, systems?**

DOCSIS defines UGS which is a service flow type with predetermined grant size and rate. Once a service flow of this type is set up, the CM uses the granted slots to transmit data on that particular service flow without the need to send a request. In this invention disclosure, it is proposed to have each end-station to have a dedicated slot or sub-carrier to transmit bandwidth requests. Compared to DOCSIS, this invention is not limited to a particular flow or to a predetermined grant size and rate. Not aware of other existing products, processes or systems.