INVENTION DISCLOSURE

1.   **Invention Title.**

Supporting Jumbo Frames with DOCSIS 3.1 Downstream Profiles

2.   **Invention Summary.**

This invention proposes to use the "Downstream Profiles" feature within DOCSIS 3.1 as a way of allowing some devices to support Jumbo Ethernet Frames (Ethernet frames of ~9000 bytes in size), while not requiring other devices that don't support the feature to even be aware of the Jumbo Frames. It also allows Jumbo Frame support to be added to the specification at a later time, because early deployment devices will not need to be aware of these Frames.

3.   **Invention Description**.

A feature that is desired by some MSOs for DOCSIS 3.1 is support for jumbo frames (Ethernet frames greater than 2000 bytes in size, typically on order of about 9000 bytes). Due to concerns over how likely the use cases (which are related to business offerings) are to occur and potential additional cost for development, MSOs decided to make support for frames larger than 2000 bytes optional. However, recent feedback has indicated that there is a cost to the modem even to allow the feature to exist optionally, because the modem will still need to be able to receive and understand the jumbo frames (even if they end up discarding the frame because they don't support it). That has made MSOs inclined to reluctantly drop even optional support for jumbo frames.

In addition, for these same reasons, if the feature is not included at the beginning, it is believed that it will not be possible to add it later.

This invention describes a way to allow support for jumbo frames to be added later, and for devices that don't support jumbo frames to not be required to know anything about them. This is achieved by isolating jumbo frames to one or more downstream profiles (as defined in DOCSIS 3.1).

The downstream profile feature allows the CMTS to direct modems to listen to only certain profiles, and just as importantly to ignore certain profiles. As a result, a CMTS can isolate jumbo frames to one or more profiles, and only direct modems that support jumbo frames to receive those profiles. Devices that don't support jumbo frames would not be directed to receive those profiles, and therefore would not need to have any knowledge of or capability to process those jumbo frames. Further, because modems will ignore profiles not assigned to them, this feature could be added to the specification at a later date without impacting interoperability with devices built to prior versions of the spec.

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

Some commercial customers require 9000 byte jumbo frames. Typically those customers are supported via optical Ethernet services (like MEF based services over fiber). This would open the door to potentially supporting those customers with a DOCSIS 3.1 based solution where appropriate.

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

The feature leverages the downstream profiles feature in DOCSIS 3.1 in a new and unique way -- it was originally envisioned primarily for allowing different modulations (and possibly FECs) for different devices in the downstream.