Project	**IEEE 802.16 Broadband Wireless Access Working Group** <http://ieee802.org/16>
Title	**Support for ARS**
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Re:	"802.16m SDD text": IEEE 802.16m-08/003r7, "CCP". Target topic: "15. Support for Multihop Relay".
Abstract	Proposes data control functions for ARS
Purpose	Review and adopt
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Support for ARS

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Introduction

The contribution proposes text for ARS section in the SDD.

Proposed text

15.4.1 MAC PDU construction

One or more tunnels may be established between the ABS and the access ARS after the network entry is performed. Each tunnel between an ARS and ABS is identified by a unique Flow ID. Connections of an AMS may be mapped to one or multiple tunnels.

The mode for constructing and forwarding MPDUs through a tunnel is called tunnel mode. In the tunnel mode, MAC PDUs that traverse a tunnel shall be encapsulated in a relay MAC PDU with the relay MAC header carrying a tunnel identifier. Multiple MAC PDUs from connections that traverse the same tunnel can be concatenated into a relay MAC PDU for transmission.

15.4.2 Addressing

15.4.3 ARQ Functions

Two ARQ modes are supported for relay - end-to-end ARQ mode and hop-by-hop ARQ mode. With end-to-end ARQ mode, ARQ is performed between an ABS and an AMS. With hop-by-hop ARQ mode, ARQ is performed between each adjacent station. Two adjacent stations could be ABS, ARS or AMS.

15.4.4 ARS Network Entry

ARS Network Entry follows the same steps as AMS network entry. However, the following additional steps are needed:

–Access station selection;

–Path creation and tunnel establishment;

–Transfer and configuration of operational parameters.

15.4.5 AMS Network Entry

AMS Network entry procedure could be distributed between ARS and ABS. ARS should handle the initial link adjustment with AMS. The remaining AMS network entry procedures such as connection establishment, authentication, registration are processed between AMS and ABS.

15.4.6 Topology Discovery

ABS discovers topology information of all the ARS and AMS connected through it during AMS or ARS initial ranging. ABS determines that the station sending initial ranging is directly accessing the ABS, or through an ARS. Based on such information as well as the knowledge of the current topology information, the ABS derives the new topology information.

15.4.7 Path Management

Path management shall be performed when there are more than one ARS between an ABS and an AMS. An ABS establishes a path between an access ARS and itself and distributes the path information to all the ARSs on the path. The ABS also changes or removes an existing path whenever required. The ABS also informs all the ARSs on a path of the AMS connection or tunnel connection that traverse over the path. If the mapping between the connection and the path is changed (e.g., when a new connection is mapped to the path), the ABS shall inform all the ARSs on the path of such change. .

15.4.8 Handover Support

ARS supports handover of an AMS to other access station. An ARS should support handover to other access station for situations when the current connection with its access station is lost or severely limited.