Proposal to Add Point-to-Point Option to IEEE 802.16™ MAC

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Venue:

IEEE 802.16 Working Group Session #26 meeting: Proposed New Concepts

Base Document:

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Purpose:

To stimulate Working Group thinking on this topic, and to prepare the groundwork for developing a point-to-point option at the next opportunity, such as during the next Revision of IEEE Standard 802.16.

Proposal to Add a Point to Point Option to IEEE 802.16

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Classical PtP

- FDD
- Fixed Symmetry
  - Origins from era of symmetric TDM services
- PHY parameters fixed
  - Function of environmental conditions (e.g., rain region)
  - Function of availability goals (e.g. 99.995%)

Result of Classic PtP

- Fixed bandwidth availability – all or 0
- Typically sized to ensure bandwidth availability
- No QoS concerns
- Worst case parameterization creates waste

Features of IEEE 802.16 that can Enhance PtP

- Adaptive PHY
  - Reduce bandwidth rather than drop link during harsh conditions
  - Typically more bandwidth than “planned” to meet availability
- Statistical multiplexing of bursty traffic
  - Requires QoS
- TDD as an option
  - Can statistically multiplex UL and DL

PtP in IEEE 802.16

- Currently trivial PtP link allowed
  - 1 SS on a channel
- PtP links have some advantages to PMP links
  - Lower delay
  - Lower overhead
    - No need for bandwidth requests

Potential Mods to IEEE 802.16 to Increase PtP Efficiency

- Have bit/field in FCH to indicate current PtP operation
- When in PtP mode, no need for BW requests
  - SS gets all UL
  - TDD split can be based on utilization
- Can still have Ranging opportunities
  - Initial link startup
  - Transition from PtP to PMP