Defining a Meaning Scope for Relay Support in TGm

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Base Contribution:

None

Purpose:

For discussion in TGm

Notice:

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Defining a Meaningful Scope for Relay Support in TGm

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About this presentation

- Goal of this presentation
  - An attempt to persuade TGm to define a scope for relay support <u>before</u> discussing relay contributions and text for inclusion in SDD.
  - Provide a list of attributes that are likely to be critical in discussing the scope and extent of Relay support in TGm.

- What is this presentation NOT?
  - This presentation is not an attempt to provide a solution, or push/exclude any specific relay feature in the SDD.

Facts and Concerns about "Relay Support" in TGm

Facts about Relay

- Relay is clearly within the scope of TGm.
    - TGm SRD Section 8.1.
- Relay support, if defined thoughtfully, can serve as a distinctive and value-adding feature for TGm.
- The TGm SRD is quite shallow on specifics of relay support.
    - Absence of performance requirements data.
    - Boundaries or limitations concerning relay support are not identified/specified in the SRD.
- The impact of including relay is not limited to a single layer or a small part of the specification.
    - Key architectural blocks including the frame structure, system architecture and protocol stack are effected when incorporating relay support.

Concerns about Relay

- Impact on Schedule
  - There is a concern that incorporation of relay feature may incur delays.
    - Absence of a well defined and *a priori* agreed scope generally leads to an inconsistent handling of input proposals and repetitive discussions.
    - Relay affects several layers including the frame structure. A lack of clear scope may stall discussions.
- Impact on System and Protocol architecture
  - Relay affects architecture. It may prove difficult to finalize the architecture documents without clearly defining the scope of relay support.
- Impact on the Amendment Size
  - Absence of adequate discussion on scope may lead to an overwhelming number of input contributions and feature combinations.
- Impact on costs and complexity
  - TGm is likely to be driven by product considerations. There is a concern that relay will increase the cost and complexity of products. Definition of a scope helps to judge whether these concerns are valid or not.

Motivation for Defining a scope for Relay:

Limiting the options in a sensible and meaningful way

The real problem: Plethora of Options

- Mobility modes
  - Fixed, Mobile, Nomadic
- Hop depth
  - 2-hop, multi-hop
- Topology
  - Tree, mesh
- Control Info Transmission (Preamble, FCH, MAPs)
  - Transparent RS, Non-Transparent RS.

- Scheduling (who composes MAPs?)
  - Centralized, Distributed
- Security models
  - (1) BS-MS (Centralized), (2) BS-Access_RS and Access_RS-MS (Distributed)
- Sleep/Idle mode control
  - Centralized, Distributed
- …

An ill-defined scope and lack of clear agreement is likely to generate a lot of different options.

How to go about defining the scope?

Make choices for the attributes listed next.

Relay Attributes and Corresponding Options

Relay Attribute	16j	Proposed Options to choose from
Number of Hops	≥ 2 hops	(a) Limit to 2-hops. (b) ≥ 2 hops.
Topology of Infrastructure Stations	Tree	(a) Tree. (b) Mesh.
MS relaying data for another MS	Out of Scope	(a) Disallow. (b) Support as optional.
Transparent and Non-Transparent RS	Both	(a) Non-Transparent RS only. (b) Support both.
Centralized and/or Distributed scheduling	Both	(a) Distributed Scheduling only. (b) Support both.
Centralized and/or Distributed Control	Centralized	(a) Centralized control only. (b) Support both.
Fixed RS and/or Mobile RS	All	(a) Fixed RS only. (b) Support both.
Centralized and/or Distributed security	Both	(a) Centralized security model only (b) Support Both.
Cooperative Relay	Supported	(a) Disallow (b) Support as optional.
RS-awareness[§] in MS	Out of Scope	(1) Disallow. (2) Support as optional.

[§] RS/BS detection, Routing decisions, RS-aware collaborative MIMO, etc.

Concluding Remarks and the Next Step

Summary

- Relay support is within the scope of TGm.
- TGm SRD is shallow on the specifics of relay support.
- Unlike features such as MIMO, Relay feature impacts all layers – also the Frame Structure!
- Absence of a well defined scope is likely to impact the schedule and the possible combinations of relay related options in TGm .

Recommendation

Foster agreement on the scope of Relay
prior to
discussing relay related contributions in TGm.

Proposal for the Next Step

- How to create consensus in TGm around Relay Issue?
  - Step 1
    - Form an ad-hoc group in the Jan session.
      - The mandate of the ad-hoc group is to discuss the scope of relay in TGm.
    - The ad-hoc group to produce a well-defined deliverable
      - A possible deliverable could be a single table containing key relay attributes and a corresponding range of sensible options. (Consider using Slide 10 as a basis).
    - Insert the aforementioned Table in the SDD
      - A new column titled "TGm Scope" is added, but the entries are left blank.
      - The entries in this column will reflect the decision of TGm for each attribute.
  - Step 2
    - Reach agreement on what goes in the "TGm scope" column of the SDD table through harmonization and/or voting.
  - Step 3
    - Invite proposals on relay conforming to the above scope.