Synchronization ISSUES- A summary

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Abstract

We summarise the comments on synchronization as a first step towards resolving them. Current statistics are Accept/C/R: 18 Defer: 48

There are associated categories on synchronization definitions en Mesh TSF

We relate to CIDs 60, 346, 347, 687, 688, 719, 720, 721, 761, 1124, 1574, 1674, 2237, 3567, 4444, 4691, 4692, 5535, 5541, 769, 906, 1575, 3898, 3565

synchronization

Relevance:

• Enhances efficiency in the mesh (MDA, PS, Beaconing)

What is synchronization: Mesh points agree on

- Procedure to maintain a common clock
- Various time reference parameters

Called a synchronization profile

• (MPs beacon "simultaneously")

See 2096

Status	proposal	685/r1
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Synchronizing States	Supporting Synchronization	Synchronized with Peer	Requesting Synchronization
Requesting	1	1	1
enabled	1	1	0
Independent	1	0	0

See: 0685r0

KEY ISSUES:

What triggers synchronization (What if more synchronising MPs establish the mesh. Is it always known which MP started the mesh? What if an unsynchronising MP starts the mesh?)

How are synchronization parameters communicated (How is the mesh DTIM period established)

What if two synchronized MPs establish a peer link

What if a "very advanced" clock enters the mesh (possibly via a "group")

Submission



Both MP 3 and 4 have all synchronization bits set to 1

What happens if they establish a link

Approach

synchronization should be

- link based
- Renegotiable

We need a directed message exchange "Request synchronization – Response synchronization" in addition to the bit "Request synchronization" in the beacon to achieve synchronization

Approach, elements

• Three bits

- Peer synchronization enabled
- Peer synchronization active (Synchronized with peer)
- Peer synchronization support required (in the process of setting up a synchronized link)

• A synchronization exchange

- Request synchronization - Response synchronization

• Additions

- Identify profile via an Id
- Resolve simultaneity via MAC address

Approach, outline



After peer link set up, the link defaults to not synchronized (null profile)

Either peer can initialise a synchronization of the link (i.e. propose to associate a synchronization profile with the link)

During the procedure, the bit "request synchronization support" is set to 1.

What triggers synchronization, and acceptance of a profile, is outside scope

However, an MP shall not maintain conflicting synchronization profiles

If an MP accepts a synchronization profile that conflicts with the profiles of other link, it shall re-synchronize these.

The null profile, not synchronized, agrees with any other profile.







Relation to 2096

- Allow "non-local" synchronization profile (useful for MDA etc.): agree on DTIM, ATIM and clock update procedure
- Define local beaconing groups
 - IBBS beaconing
 - Form local beaconing groups, being defined by different offsets: Reduce hidden terminals and enhance timing accuracy.
 - Enable local beacon group formation by including Beacon Timing of peers in Synchronization Request/Reply exchange
 - Need re-address relation with BB and connectivity report
 - How ensure (over time) that groups are local
- Alternatively: Non-local synchronization for CE scenario

Summary

- Complement the bit "Request synchronization" with a "Request Synchronization" – "Response Synchronization" exchange.
- Resolves key issues on how to propagate synchronization through a mesh
- Exactly what drives synchronization is out of scope
- Not inconsistent with 2096 and 685
- Key issue with 2096 (and DBB) how ensure (over time) that groups are local