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| Project | **IEEE 802.21 Media Independent Handover Services**  **IEEE 802.21d: Multicast Group Management**  **<**[**http://www.ieee802.org/21/**](http://www.ieee802.org/21/)**>** |
| Title | **Proposal for IEEE 802.21d solution regarding the eligibility of 802.21 commands for multicast sending** |
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| Re: | IEEE 802.21d TG |
| Authors: | Daniel Corujo (ITAv), Carlos Guimarães (ITAv), Antonio de la Oliva (UC3M), |
| Abstract | This contribution provides a solution for the IEEE 802.21d |
| Purpose | Task Group Discussion and Acceptance |
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**Annex XXXX – Multicast Signaling Eligibility**

This section defines which messages from the different IEEE 802.21-defines SAPs are eligible for multicast. Under scope of the IEEE 802.21d group management extensions, IEEE 802.21 messages can be sent towards a group of nodes, using as destination a group MIHF ID. All subscribed nodes will receive messages sent towards that group MIHF ID. However, previous to the IEEE 802.21d extensions, the available messages were designed to target single nodes. As such, some messages lose their validity, or intended meaning, when used in a multicast manner. This table identifies which messages, from the different 802.21 SAPs, are eligible for multicast.

Generic rules:

1. Events are not able to be sent in a multicast way. Typically scenarios consider groups as having not only a PoS but many MNs as well. As such, if a MN sends an event towards a group MIHF ID, not only the PoS will receive it, but also all MNs in that group. This can raise a series of exploitation and other issues that need to be prevented.
2. Commands in the form of MIH\_MN\_\* cannot be sent in a multicast way. These messages are sent from the MN and thus suffer from the same constraints as in a)
3. The MIH\_TP\_Data messages cannot be sent in a multicast way, because they relate to a transaction status between a peer and a network. Thus, this information is not worthwhile to be disseminated towards a group.

There are some situations that need to be considered:

1. Different nodes can join a group at different times and different opportunities. So, some messages, and their multicast capability, need to be considered by the possible recipients. An example would be the PoS being able to collect different MIH\_Register.request messages sent towards the same group, at different points in time.
2. Different commands, especially the Link commands, need to have identified a target LINK\_ID. Under a groupcast context, when such messages are sent towards a group, it is not possible to send them towards a specific LINK\_ID (since group recipients will reject such ID). As such, a GENERIC LINK ID mechanism is required.

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| **Primitive** | **Service Category** | **Defined in** | **Multicast Eligibility** |
| **MIH\_LINK\_SAP Primitives** | | | |
| Link\_Detected | Event | 7.3.1 | No |
| Link\_Up | Event | 7.3.2 | No |
| Link\_Down | Event | 7.3.3 | No |
| Link\_Parameters\_Report | Event | 7.3.4 | No |
| Link\_Going\_Down | Event | 7.3.5 | No |
| Link\_Handover\_Imminent | Event | 7.3.6 | No |
| Link\_Handover\_Complete | Event | 7.3.7 | No |
| Link\_PDU\_Transmit\_Status | Event | 7.3.8 | No |
| Link\_Capability\_Discover | Command | 7.3.9 | No |
| Link\_Event\_Subscribe | Command | 7.3.10 | No |
| Link\_Event\_Unsubscribe | Command | 7.3.11 | No |
| Link\_Get\_Parameters | Command | 7.3.12 | No |
| Link\_Configure\_Thresholds | Command | 7.3.13 | No |
| Link\_Action | Command | 7.3.14 | No |
| **MIH\_NET\_SAP Primitives** | | | |
| MIH\_TP\_Data | Network Communication | 7.5.1 | No |
| **MIH\_SAP Primitives** | | | |
| MIH\_Capability\_Discover | Service Management | 7.4.1 | Yes |
| MIH\_Register | Service Management | 7.4.2 | Yes |
| MIH\_DeRegister | Service Management | 7.4.3 | Yes |
| MIH\_Event\_Subscribe | Service Management | 7.4.4 | Yes |
| MIH\_Event\_Unsubscribe | Service Management | 7.4.5 | Yes |
| MIH\_Link\_Detected | Event | 7.4.6 | No |
| MIH\_Link\_Up | Event | 7.4.7 | No |
| MIH\_Link\_Down | Event | 7.4.8 | No |
| MIH\_Link\_Parameters\_Report | Event | 7.4.9 | No |
| MIH\_Link\_Going\_Down | Event | 7.4.10 | No |
| MIH\_Link\_Handover\_Imminent | Event | 7.4.11 | No |
| MIH\_Link\_Handover\_Complete | Event | 7.4.12 | No |
| MIH\_Link\_PDU\_Transmit\_Status | Event | 7.4.13 | No |
| MIH\_Link\_Get\_Parameters | Command | 7.4.14 | Yes |
| MIH\_Link\_Configure\_Thresholds | Command | 7.4.15 | Yes |
| MIH\_Link\_Actions | Command | 7.4.16 | Yes |
| MIH\_Net\_HO\_Candidate\_Query | Command | 7.4.17 | Yes |
| MIH\_MN\_HO\_Candidate\_Query | Command | 7.4.18 | No |
| MIH\_N2N\_HO\_Query\_Resources | Command | 7.4.19 | Yes |
| MIH\_MN\_HO\_Commit | Command | 7.4.20 | No |
| MIH\_Net\_HO\_Commit | Command | 7.4.21 | Yes |
| MIH\_N2N\_HO\_Commit | Command | 7.4.22 | Yes |
| MIH\_MN\_HO\_Complete | Command | 7.4.23 | No |
| MIH\_N2N\_HO\_Complete | Command | 7.4.24 | Yes |
| MIH\_Get\_Information | Command | 7.4.25 | No |
| MIH\_Push\_Information | Command | 7.4.26 | Yes |