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| Project | **IEEE 802.21b**  **<https://mentor.ieee.org/802.21>** |
| Title | **Suggested Remedies for 802.21b: MIH\_Radio\_Get\_Capabilities** |
| DCN | 21-11-0031-01-bcst |
| Date Submitted |  |
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| Re: |  |
| Abstract | The functionality provided by MIH\_Radio\_Get\_Capabilities can be included in MIH\_Capabilities\_Discover primitive.The changes proposed here are mean to replace current MIH\_Radio\_Get\_Capabilities primitive from .21b draft v2. |
| Purpose | Proposes changes in the current draft |
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**Changes Required**

**7.4.1 MIH\_Capability\_Discover**

**7.4.1.1 MIH\_Capability\_Discover.request**

**7.4.1.1.1 Function**

This primitive is used by an MIH user to discover the capabilities of the local MIHF or a remote MIHF.

When invoking this primitive to discover the capabilities of a remote MIHF, the MIH user can optionally piggyback the capability information of its local MIHF so that the two MIHFs can mutually discover each otherí’s capabilities with a single invocation of this primitive.

**7.4.1.1.2 Semantics of service primitive**

MIH\_Capability\_Discover.request (

DestinationIdentifier,

LinkAddressList,

SupportedMihEventList,

SupportedMihCommandList,

SupportedIsQueryTypeList,

SupportedTransportList,

MBBHandoverSupport,

SupportedLinkActionsList

)

Parameters:

|  |  |  |
| --- | --- | --- |
| **Name** | **Data type** | **Description** |
| DestinationIdentifier | MIHF\_ID | This identifies the local MIHF or a remote MIHF that will be the destination of this request. |
| LinkAddressList | LIST(NET\_TYPE\_ADDR) | (Optional) A list of network type and link address pair on the local MIHF. |
| SupportedMIHEventList | MIH\_EVT\_LIST | (Optional) List of supported events on the local MIHF. |
| SupportedMIHCommandList | MIH\_CMD\_LIST | (Optional) List of supported commands on the local MIHF. |
| SupportedISQueryTypeList | MIH\_IQ\_TYPE\_LST | (Optional) List of supported MIIS query types on the local MIHF. |
| SupportedTransportList | MIH\_TRANS\_LST | (Optional) List of supported transport types on the local MIHF. |
| MBBHandoverSupport | LIST(MBB\_HO\_SUPP) | (Optional) This is used to indicate if a make before break handover is supported on the local MIHF. Break before make handover is always supported. |
| SupportedLinkActionsList | MIH\_LACT\_LIST | (Optional) List of supported link actions on the local MIHF |

**7.4.1.1.3 When generated**

This primitive is generated by an MIH user to discover the capabilities of the local MIHF or a remote MIHF.

In the case of remote discovery, this primitive contains the SupportedMihEventList,

SupportedMihCommandList, SupportedIsQueryTypeList, SupportedTransportList, and

MBBHandoverSupport parameters of the local MIHF to enable mutual discovery of each otherí’s capabilities.

**7.4.1.1.4 Effect on receipt**

If the destination of the request is the local MIHF itself, the local MIHF responds with

MIH\_Capability\_Discover.confirm. If the destination of the request is a remote MIHF, the local MIHF shall generate a corresponding MIH\_Capability\_Discover request message to the remote MIHF if it does not have the capability information of the remote MIHF.

**7.4.1.2 MIH\_Capability\_Discover.indication**

**7.4.1.2.1 Function**

This primitive is used by an MIHF to notify an MIH user on the receipt of an MIH\_Capability\_Discover request message from a peer MIHF.

**7.4.1.2.2 Semantics of service primitive**

MIH\_Capability\_Discover.indication (

SourceIdentifier,

LinkAddressList,

SupportedMihEventList,

SupportedMihCommandList,

SupportedIsQueryTypeList,

SupportedTransportList,

MBBHandoverSupport,

SupportedLinkActionsList

)

Parameters:

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| --- | --- | --- |
| **Name** | **Data type** | **Description** |
| SourceIdentifier | MIHF\_ID | This identifies the invoker of this primitive, which is a remote MIHF. |
| LinkAddressList | LIST(NET\_TYPE\_ADDR) | (Optional) A list of network type and link address pair on the remote MIHF. |
| SupportedMIHEventList | MIH\_EVT\_LIST | (Optional) List of supported events on the remote MIHF. |
| SupportedMIHCommandList | MIH\_CMD\_LIST | (Optional) List of supported commands on the remote MIHF. |
| SupportedISQueryTypeList | MIH\_IQ\_TYPE\_LST | (Optional) List of supported MIIS query types on the remote MIHF. |
| SupportedTransportList | MIH\_TRANS\_LST | (Optional) List of supported transport types on the remote MIHF. |
| MBBHandoverSupport | LIST(MBB\_HO\_SUPP) | (Optional) This is used to indicate if a make before break handover is supported on the remote MIHF. Break before make handover is always supported. |
| SupportedLinkActionsList | MIH\_LACT\_LIST | (Optional) List of supported link actions on the remote MIHF |

**7.4.1.2.3 When generated**

This primitive is used by an MIHF to notify an MIH user when an MIH\_Capability\_Discover request message is received. This primitive is optional since the MIHF can immediately return an MIH\_Capability\_Discover response message without generating this primitive to the MIH user.

**7.4.1.2.4 Effect on receipt**

The MIH user responds with an MIH\_Capability\_Discover.response primitive when an indication is received.

**7.4.1.3 MIH\_Capability\_Discover.response**

**7.4.1.3.1 Function**

This primitive is used by an MIH user to convey the locally supported MIH capabilities to the MIH user that invoked the MIH\_Capability\_Discover request.

**7.4.1.3.2 Semantics of Service primitive**

MIH\_Capability\_Discover.response(

DestinationIdentifier,

Status,

LinkAddressList,

SupportedMihEventList,

SupportedMihCommandList,

SupportedIsQueryTypeList,

SupportedTransportList,

MBBHandoverSupport,

SupportedLinkActionsList

)

Parameters:

|  |  |  |
| --- | --- | --- |
| **Name** | **Data type** | **Description** |
| DestinationIdentifier | MIHF\_ID | This identifies the remote MIHF that will be the destination of this response. |
| Status | STATUS | Status of operation. |
| LinkAddressList | LIST(NET\_TYPE\_ADDR) | (Optional) A list of network type and link address pair on local MIHF |
| SupportedMIHEventList | MIH\_EVT\_LIST | (Optional) List of supported events on local MIHF. |
| SupportedMIHCommandList | MIH\_CMD\_LIST | (Optional) List of supported commands on local MIHF. |
| SupportedISQueryTypeList | MIH\_IQ\_TYPE\_LST | (Optional) List of supported MIIS query types on local MIHF. |
| SupportedTransportList | MIH\_TRANS\_LST | (Optional) List of supported transport types on local MIHF. |
| MBBHandoverSupport | LIST(MBB\_HO\_SUPP) | (Optional) This is used to indicate if a make before break handover is supported on local MIHF. Break before make handover is always supported. |
| SupportedLinkActionsList | MIH\_LACT\_LIST | (Optional) List of supported link actions on local MIHF |

**7.4.1.3.3 When generated**

This primitive is generated by an MIH user as a response to a received MIH\_Capability\_Discover.indication primitive.

**7.4.1.3.4 Effect on receipt**

Upon receiving this primitive, the MIHF shall generate and send the corresponding MIH\_Capability\_Discover response message to the destination MIHF.

**7.4.1.4 MIH\_Capability\_Discover.confirm**

**7.4.1.4.1 Function**

This primitive is used by the MIHF to convey the supported MIH capabilities about Event Service, Command Service, and Information Service to the MIH user that invoked the MIH\_Capability\_Discover.request.

**7.4.1.4.2 Semantics of service primitive**

MIH\_Capability\_Discover.confirm (

SourceIdentifier,

Status,

LinkAddressList,

SupportedMihEventList,

SupportedMihCommandList,

SupportedIsQueryTypeList,

SupportedTransportList,

MBBHandoverSupport,

SupportedLinkActionsList

)

Parameters:

|  |  |  |
| --- | --- | --- |
| **Name** | **Data type** | **Description** |
| SourceIdentifier | MIHF\_ID | This identifies the invoker of this primitive, which can be either the local MIHF or a remote MIHF. |
| Status | STATUS | Status of operation. |
| LinkAddressList | LIST(NET\_TYPE\_ADDR) | (Optional) A list of network type and link address pair on the MIHF identified by Source Identifier. |
| SupportedMIHEventList | MIH\_EVT\_LIST | (Optional) List of supported events on the MIHF identified by Source Identifier. |
| SupportedMIHCommandList | MIH\_CMD\_LIST | (Optional) List of supported commands on the MIHF identified by Source Identifier. |
| SupportedISQueryTypeList | MIH\_IQ\_TYPE\_LST | (Optional) List of supported MIIS query types on the MIHF identified by Source Identifier. |
| SupportedTransportList | MIH\_TRANS\_LST | (Optional) List of supported transport types on the MIHF identified by Source Identifier. |
| MBBHandoverSupport | LIST(MBB\_HO\_SUPP) | (Optional) This is used to indicate if a make before break handover is supported on the MIHF identified by Source Identifier. Break before make handover is always supported. |
| SupportedLinkActionsList | MIH\_LACT\_LIST | (Optional) List of supported link actions on the MIHF identified by Source Identifier. |

**7.4.1.4.3 When generated**

This primitive is invoked by a local MIHF to convey the results of a previous MIH\_Capability\_Discover.request primitive from an MIH user.

**7.4.1.4.4 Effect on receipt**

Upon reception of this primitive the receiving entity becomes aware of the supported MIH capabilities.

However, if Status does not indicate ì“Success,î” the recipient ignores any other returned values and, instead, performs appropriate error handling.

**8.6.1 MIH messages for service management**

**8.6.1.1 MIH\_Capability\_Discover request**

The corresponding MIH primitive of this message is defined in 7.4.1.1.

If a requesting MIHF entity knows the destination MIHF entityí’s MIHF ID, the requesting MIHF entity fills its destination MIHF ID and sends this message to the peer MIHF over the data plane, either L2 or L3.

If a requesting MIHF entity does not know the destination MIHF entityí’s MIHF ID, the requesting MIHF entity may fill its destination MIHF ID with a multicast MIHF ID to send this capability discover message.

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| **MIH Header Fields (SID=1, Opcode=1, AID=1)** |
| **Source Identifier =** sending MIHF ID  (Source MIHF ID TLV) |
| **Destination Identifier =** receiving MIHF ID  (Destination MIHF ID TLV) |
| LinkAddressList (optional)  (Link address list TLV) |
| SupportedMihEventList (optional)  (MIH event list TLV) |
| SupportedMihCommandList (optional)  (MIH command list TLV) |
| SupportedISQueryTypeList (optional)  (MIIS query type list TLV) |
| SupportedTransportList (optional)  (Transport option list TLV) |
| MBBHandoverSupport (optional)  (MBB handover support TLV) |
| SupportedLinkActionsList (optional)  (Link Actions list TLV) |

**8.6.1.2 MIH\_Capability\_Discover response**

The corresponding MIH primitive of this message is defined in 7.4.1.3. This message is sent in response to an MIH\_Capability\_Discover request message that was destined to a single or multicast MIHF ID.

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| --- |
| **MIH Header Fields (SID=1, Opcode=2, AID=1)** |
| **Source Identifier =** sending MIHF ID  (Source MIHF ID TLV) |
| **Destination Identifier =** receiving MIHF ID  (Destination MIHF ID TLV) |
| Status  (Status TLV) |
| LinkAddressList (optional)  (Link address list TLV) |
| SupportedMihEventList (optional)  (MIH event list TLV) |
| SupportedMihCommandList (optional)  (MIH command list TLV) |
| SupportedISQueryTypeList (optional)  (MIIS query type list TLV) |
| SupportedTransportList (optional)  (Transport option list TLV) |
| MBBHandoverSupport (optional)  (MBB handover support TLV) |
| SupportedLinkActionsList (optional)  (Link Actions list TLV) |

ADD TO TABLE L.2

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| --- | --- | --- |
| Link Actions list | TBD by editor | MIH\_LACT\_LIST |

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|  |  |  |
| --- | --- | --- |
| MIH\_LACT\_LIST | BITMAP(32) | A list of link actions.  Bitmap Values:  Bit 0: Reserved  Bit 1: LINK\_DISCONNECT  Bit 2: LINK\_LOW\_POWER  Bit 3: LINK\_POWER\_DOWN  Bit 4: LINK\_POWER\_UP  Bit 5: LINK\_CONFIGURE  Bit 6-31: (Reserved) |