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1. Overview

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8.1 Introduction

The MIH Function provides asynchronous and synchronous services through well defined SAPs for lower layers and upper layers. The services provided include the Event Service (ES), Command Service (CS), and Information Service (IS). Detailed description about MIH services are found in Section 5.3. MIH SAPs include the MIH upper layer SAP, which is used by the users of MIH to gain access to various MIH Function services, and MIH lower layer SAPs, which are used by MIH Function to gain access and control of a variety of media dependent lower layer resources.

The Media Independent Handover protocol defines frame formats for exchanging messages between peer MIH Function entities. These messages are based on the primitives which are part of Media Independent Event service, Media Independent Command service and Media Independent Information service. IEEE802.21 supports Media Independent Handover Function in mobile terminal, and network. The MIHF Protocol allows peer MIH Function entities to interact with each other.

8.2 MIH Protocol Transport

The table below shows the various transport options for different media types.

Table 1—Transport Options for MIH Protocol

No	Media Type	L2 Transport Description	L3 Transport Description
1	Ethernet	Data Frames	IP based
2	802.11	Data Frames, Management Frames	IP based
3	802.16	Data Frames, Management Frames	IP based
4	3GPP	Not Applicable. Requires protocol stack changes	IP based
5	3GPP2	Not Applicable. Requires protocol stack changes	IP based

8.2.1 L2 Data Frames Packet Format

The data frame packet format is described below.

Table 2—L2 Data Frame Packet Format

Preamble	SFD	Destination	Source	Length/Type	LLC	Length/Type	Data	CRC
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8.2.2 L2 Management Frame Packet Format

For 802.11 use Management frames with a new Action Category (MIH).

8.2.3 L3 Frame Packet Format

One can use a standard L3 protocol (UDP/TCP) with a well defined MIH port. A new specific L3 protocol can be defined as well. The discovery of MIH Function entities at L3 is outside of scope of the standard.

8.3 Description

The Media Independent Handover Protocol provides the following services:

[1] MIH capability discovery: MIHF in mobile terminal or MIHF in the network discovers which entity supports MIHF. Thereafter the peer MIH Functions negotiate/discover an optimum transport for communication. The MIH Function entities also discover list of supported events and commands. The MIH Function can also query the information schema for list of supported information elements.

[2] MIH remote registration: Remote MIHF in different entities can register with each other to receive Media Independent Handover Messages including remote MIES.

[3] MIH message exchange: MIHF can exchange MIH messages using MIH payload and MIH protocol over a suitable transport. As part of message exchange the peer MIH Function entities can use the MIES, MICS and MIIIS for effective handovers.

The standard describes the MIH packet format, message formats, and the procedures for MIH message exchange to facilitate handover in a media independent manner. However, handover policy and handover decision making is outside the scope of the standard. Figure 26 — shows possible MIH message delivery and its relation with other protocol layers.

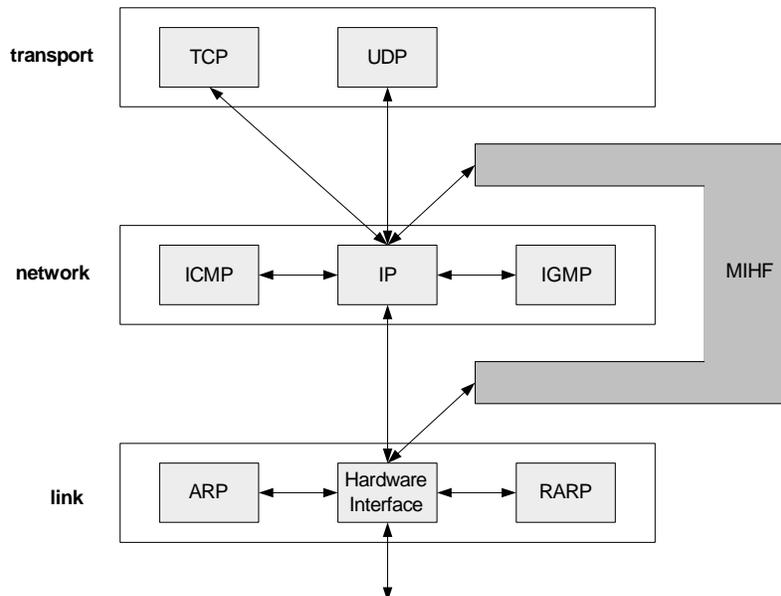
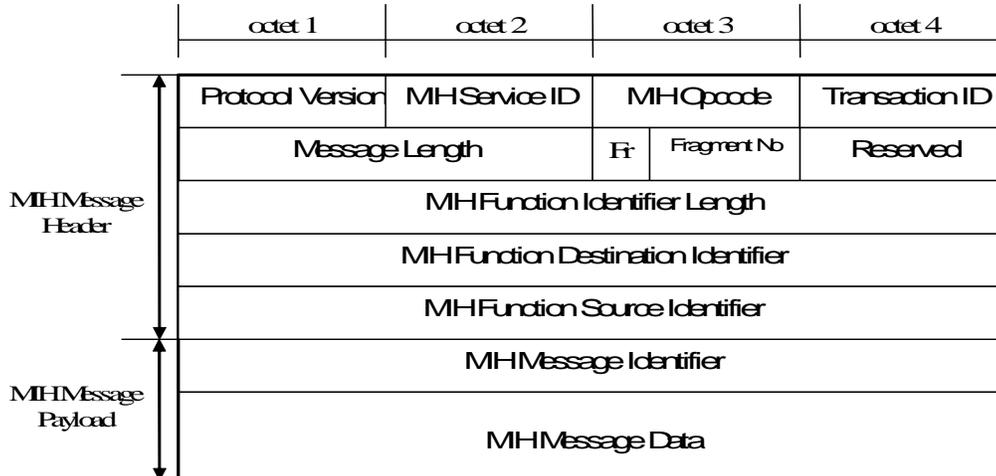


Figure 1 — MIHF interaction for Inter-MIHF MIH message exchange**8.3.1 MIH General Packet Format**

Figure 27 — describes MIH Packet format and essential details of MIH messages. MIH messages can be transported over L2 using data frames or media specific management frames. MIH messages can also be sent over L3 using a suitable L3 transport protocol.

**Figure 2 — MIH General Packet Format****Table 3—MIH Packet Format**

Name of the Field	Size	Optional/ Mandatory	Description
Protocol Version	1 octet	Mandatory	Version of the MIH protocol. Default: 0x01
MIH Service ID	1 octet	Mandatory	MIH Service Identifier 1:General Service 2: Event Service 3:Command Service 4: Information Service
MIH Opcode	1 octet	Mandatory	Operation to be performed 1: Request 2: Response 3: Indication
Transaction ID	1 octet	Mandatory	Transaction Identifier used to match requests and responses wherever applicable.

Table 3—MIH Packet Format

Fr	1 bit	Mandatory	Fragmentation flag. 1: Specifies current packet has more than 1 fragment 0: Current packet is not fragmented
Fragment No	7 bit	Mandatory	Fragment Number of this packet
Message Length	2 octets	Mandatory	Total length of whole message in bytes (header + payload)
MIH Function Identifier Length (MIHFL)	4 octets	Mandatory	Length of each of Source and Destination MIH Identifier fields
Source MIH Function Identifier	MIHFL octets	Mandatory	This is the Source MIHF identifier. This can be the L2 hardware address of the interface at the source node. This can also be IP based for L3 transports. This can also be something generated.
Destination MIH Function Identifier	MIHFL octets	Mandatory	This is the Destination MIHF identifier. This can be the L2 hardware address of the interface at the destination node. This can also be IP based for L3 transports. This can also be something generated during MIHF discovery and connectivity phase.
MIH Message ID	4 octet	Mandatory	Actual MIH Message identifier for the service identified above. e.g. Link_Going_Down Event Indication for Event Service
MIH Message Data	Variable	Mandatory	MIH Service specific data of variable length

8.3.2 MIH Function Messages

MIH Function messages are used to discover MIH Function capability in the peer MIH Function entities, register with peer MIHF entity and provide MIES, MICS and MIIS services to MIHF clients.

Table 4—MIH Function Messages

No	MIH Message Identifier	MIH Opcode	MIH Service ID
1	MIH Capability Discover	Request, Response	General Service
2	MIH Event Register	Request, Response	Event Service
3	MIH Event Deregister	Request, Response	Event Service
4	MIH Link Up	Indication	Event Service
5	MIH Link Down	Indication	Event Service

Table 4—MIH Function Messages

6	MIH Link Going Down	Indication	Event Service
7	MIH Link Detected	Indication	Event Service
8	MIH Link Parameters Change	Indication	Event Service
9	MIH Link Event Rollback	Indication	Event Service
10	MIH Link Handover Imminent	Indication	Event Service
11	MIH Link Handover Complete	Indication	Event Service
12	MIH Poll	Request, Response	Command Service
13	MIH Switch	Request, Response	Command Service
14	MIH Configure	Request, Response	Command Service
15	MIH Configure Link Thresholds	Request, Response	Command Service
16	MIH Scan	Request, Response	Command Service
17	MIH Handover Initiate	Request, Response	Command Service
18	MIH Handover Prepare	Request, Response	Command Service
19	MIH Handover Commit	Request, Response	Command Service
20	MIH Handover Complete	Request, Response	Command Service
21	MIH Network Address Information	Request, Response	Command Service
22	MIH Get Information	Request, Response	Information Service

8.4 MIH Protocol Messages

This section specifies the MIH Function payload for different MIH Function messages. The payload consists of a set of identifiers in TLV (Type, Length, Value) form. The representation of identifiers for different messages in TLV form is shown in below sections.

8.4.1 Messages for General Service Category

MIH frames for General Service category have MIH Service ID set to 1. The MIH Function payload for different messages in this service category is described below.

8.4.1.1 MIH_Capability_Discover Request

This message may contain SupportedTransportList, SupportedEventList and SupportedCommandList in the MIH message data. If a requesting MIHF entity doesn't know the MIHF capable entity's addresses, requesting MIHF entity fills its source addresses and broadcast this message. If a requesting MIHF entity

1 knows the address of entity but doesn't know whether the entity is MIHF capable, this message is delivered
2 to the entity in a unicast way.
3

4 8.4.1.2 MIH_Capability_Discover Response

5
6
7 This message may contain SupportedTransportList, SupportedEventList and SupportedCommandList, in the
8 MIH message data. Only MIHF capable entity can receive MIH_Capability_Discover.request. Upon
9 reception of MIH_Capability_Discover.request, MIH_Capability_Discover.response is transmitted.
10 Destination addresses are copied from the MIH_Capability_Discover.request and source addresses are filled
11 with its addresses. An entity with MIHF may also broadcast unsolicited MIH_Capability_Discover.response
12 message to advertise its MIH capability.
13
14

Name	Type (1 octet)	Length (1 octet)	Value
SupportedEventList	1	4	For each Bit location, a value of '1' indicates the MIH event is supported. Bit #0: Link Up Bit #1: Link Down Bit #2: Link Going Down Bit #3: Link Detected Bit #4: Link Parameters Change Bit #5: Link Event Rollback Bit #6: Link Handover Imminent Bit #7: Link Handover Complete Bit #8~31: <i>Reserved</i>
SupportedCommandList	2	4	For each Bit location, a value of '1' indicates the MIH command is supported. Bit #0: MIH Poll Bit #1: MIH Switch Bit #2: MIH Configure Bit #3: MIH Configure Link Thresholds Bit #4: MIH Scan Bit #5: MIH Handover Initiate Bit #6: MIH Handover Prepare Bit #7: MIH Handover Commit Bit #8: MIH Handover Complete Bit #9: MIH Network Address Information Bit #10~31: <i>Reserved</i>
SupportedTransportList	3	4	Octet 1 specifies the transport option for the event service. Octet 2 specifies the transport option for the command service. Octet 3 specifies the transport option for the information service. For each bit location a value of '1' indicates that the transport option is supported. Bit #0: L2 Bit #1: L3 or higher layer protocol Bit #2~7: <i>Reserved</i>

8.4.2 Messages for EventService Category

MIH frames for Event Service category have MIH Service ID set to 2. The MIH Function payload for different messages in this service category is described below.

8.4.2.1 MIH_Event_Register Request

This message is used by remote MIH Function (the registrant) to register an interest in a particular or group of event types from a particular event origination point.

Name	Type (1 octet)	Length (1 octet)	Value
RequestedEventList	4	4	For each Bit location, a value of '1' indicates the MIH event is requested to register to receive indication from the Event source. Bit #0: Link Up Bit #1: Link Down Bit #2: Link Going Down Bit #3: Link Detected Bit #4: Link Parameters Change Bit #5: Link Event Rollback Bit #6: Link Handover Imminent Bit #7: Link Handover Complete Bit #8~31: <i>Reserved</i>

8.4.2.2 MIH_Event_Register Response

The response indicates which of the event types were successfully registered.

Name	Type (1 octet)	Length (1 octet)	Value
ResponseEventList	5	4	For each Bit location, a value of '1' indicates the requested MIH event is registered correctly. Bit #0: Link Up Bit #1: Link Down Bit #2: Link Going Down Bit #3: Link Detected Bit #4: Link Parameters Change Bit #5: Link Event Rollback Bit #6: Link Handover Imminent Bit #7: Link Handover Complete Bit #8~31: <i>Reserved</i>

8.4.2.3 MIH_Event_Deregister Request

This message is sent by remote MIHF (the registrant) to deregister for a set of link layer events.

Name	Type (1 octet)	Length (1 octet)	Value

RequestedEventList	4	4	<p>For each Bit location, a value of '1' indicates the MIH event requested to de-register from the event source.</p> <p>Bit #0: Link Up Bit #1: Link Down Bit #2: Link Going Down Bit #3: Link Detected Bit #4: Link Parameters Change Bit #5: Link Event Rollback Bit #6: Link Handover Imminent Bit #7: Link Handover Complete Bit #8~31: <i>Reserved</i></p>
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8.4.2.4 MIH_Event_Deregister Response

The response indicates which of the event types were successfully deregistered.

Name	Type (1 octet)	Length (1 octet)	Value
ResponseEventList	5	4	<p>For each Bit location, a value of '1' indicates the requested MIH event is de-registered correctly.</p> <p>Bit #0: Link Up Bit #1: Link Down Bit #2: Link Going Down Bit #3: Link Detected Bit #4: Link Parameters Change Bit #5: Link Event Rollback Bit #6: Link Handover Imminent Bit #7: Link Handover Complete Bit #8~31: <i>Reserved</i></p>

8.4.2.5 MIH_Link_Up Indication

This notification is delivered from MIHF in the PoA to MIHF in the network when a layer 2 connection is successfully established with mobile terminal.

Name	Type (1 octet)	Length (1 octet)	Value
MacMobileTerminal	6	Variable	MAC Address
MacNewPoA	7	Variable	MAC Address of New PoA (AP)
MacOldAccessRouter	8	Variable	MAC Address of old Access Router (if any)
MacNewAccessRouter	9	Variable	MAC Address of new Access Router
IP_Renewal_Indicator	10	1	<p>Indicates whether the UE shall change IP address in the new PoA.</p> <p>0: Change in IP Address required 1: Change in IP Address NOT required</p>

MobilityMgmtProtocol-Support	11	1	Indicates type of Mobility Management Protocol supported by the new PoA 0: Mobile IPv4 with FA (FA-CoA) 1: Mobile IPv4 without FA (Co-located CoA) 2: Mobile IPv6 3: Mobile IPv6 with DHCPv6 4: SIP
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8.4.2.6 MIH_Link_Down Indication

This notification is delivered from MIHF in the PoA to MIHF in the network when a layer 2 connection is disconnected due to certain reason with mobile terminal.

Name	Type (1 octet)	Length (1 octet)	Value
MacMobileTerminal	6	Variable	MAC Address
MacNewPoA	7	Variable	MAC Address of New PoA (AP)
MacOldAccessRouter	8	Variable	MAC Address of old Access Router (if any)
ReasonCode	12	1	Reason for why the link went down 0: RC_EXPLICIT_DISCONNECT (1: RC_PACKET_TIMEOUT 2: RC_FAIL_NORESOURCE 3: 127: <i>Reserved</i> 128~255: RC_VENDOR_SPECIFIC

Note: Meaning of Reason code presented above is as following

[1] RC_EXPLICIT_DISCONNECT: The link is down because of explicit disconnect procedures initiated either by client or network

[2] RC_PACKET_TIMEOUT: The link is down because no acknowledgements were received for transmitted packets within the specified time limit.

[3] RC_FAIL_NORESOURCE: The link is down because there were no resources to maintain the connection

[4] RC_VENDOR_SPECIFIC: Vendor Specific reason code.

8.4.2.7 MIH_Link_Going_Down Indication

This message is transmitted to the remote MIHF when a layer 2 connectivity is expected (predicted) to go down (Link_Down) within a certain time interval.

Name	Type (1 octet)	Length (1 octet)	Value
MacMobileTerminal	6	Variable	MAC Address

MacNewPoA	7	Variable	MAC Address of New PoA (AP)
MacOldAccessRouter	8	Variable	MAC Address of old Access Router
MacNewAccessRouter	9	Variable	MAC Address of new Access Router
TimeInterval	13	2	Time Interval in which the link is expected to go down. The link connectivity is expected to be available at least for time specified by <i>TimeInterval</i> . Unit: 1ms
Confidence Level	14	1	The confidence level for link to go down within the specified time interval Expressed in percentage (0~100)
UniqueEventIdentifier	15	2	To be used in case of event rollback

8.4.2.8 MIH_Link_Detected Indication

This message is transmitted to the remote MIHF when a new link has been detected.

Name	Type (1 octet)	Length (1 octet)	Value
MacMobileTerminal	6	Variable	MAC Address
MIH Capability Flag	16	1	0: MIH Capability NOT supported 1: MIH Capability Supported
Link Identifier	17	Variable	Type of link
MacNewPoA	7	Variable	MAC Address of New PoA (AP)

8.4.2.9 MIH_Link_Parameters_Change Indication

This message indicates changes in link parameters have crossed pre-configured threshold levels.

Name	Type (1 octet)	Length (1 octet)	Value
MacMobileTerminal	6	Variable	MAC Address
MacCurrentAccessRouter	16	Variable	MAC Address of current Access Router (if any)
LinkParameterType	18	Variable	Media specific parameter types that have crossed thresholds
oldValueOfLinkParameter	19	Variable	Specify the old value of link parameter
newValueOfLinkParameter	20	Variable	Specify the new value of link parameter

8.4.2.10 MIH_Link_Event_Rollback Indication

This message is used in conjunction with Link_Going_Down. In case of Link_Going_Down if the link is no longer expected to go down in the specified time interval, the a Link_Event_Rollback message is sent to the remote Event destination.

Name	Type (1 octet)	Length (1 octet)	Value
MacMobileTerminal	6	Variable	MAC Address
UniqueEventIdentifier	15	2	To be used in case of event rollback

8.4.2.11 MIH_Link_Handover_Imminent Indication

This message indicates that a link layer handover decision has been made and it's execution is imminent.

Name	Type (1 octet)	Length (1 octet)	Value
MacMobileTerminal	6	Variable	MAC Address
MacNewPoA	7	Variable	MAC Address of New PoA (AP)
MacOldAccessRouter	8	Variable	MAC Address of old Access Router
MacNewAccessRouter	9	Variable	MAC Address of new Access Router

8.4.2.12 MIH_Link_Handover_Complete Indication

This message indicates that a link layer handover has been completed.

Name	Type (1 octet)	Length (1 octet)	Value
MacMobileTerminal	6	Variable	MAC Address
MacNewPoA	7	Variable	MAC Address of New PoA (AP)
MacOldAccessRouter	8	Variable	MAC Address of old Access Router
MacNewAccessRouter	9	Variable	MAC Address of new Access Router

8.4.3 Messages for Command Service Category

MIH frames for CommandService category have MIH Service ID set to 3. The MIH Function payload for different messages in this service category is described below.

8.4.3.1 MIH_Poll Request

This message is used to discover the status of currently available links.

Name	Type (1 octet)	Length (1 octet)	Value
PollingRequestSet	21	4	Set of identifiers for which status is requested Bit #0: Network Types Bit #1: Device Information Bit #2: Operation Mode Bit #3: Channel Identifier Bit #4: Channel Quality Bit #5: Link Speed Bit #6: Battery Level Bit #7~31: <i>Reserved</i>

8.4.3.2 MIH_Poll Response

This message is used by MIH Function to report the status of currently available links.

Name	Type (1 octet)	Length (1 octet)	Value
PollingRequestSet	21	4	Set of identifiers for which status was requested Bit #0: Network Types Bit #1: Device Information Bit #2: Operation Mode Bit #3: Channel Identifier Bit #4: Channel Quality Bit #5: Link Speed Bit #6: Battery Level Bit #7~31: <i>Reserved</i>
PollingResponsetSet	22	Variable	Status for each of the identifiers included in PollingRequestSet

8.4.3.3 MIH_Switch Request

This message is used to switch an active session from one link to another.

Name	Type (1 octet)	Length (1 octet)	Value
HandoverMode	23	1	0: Make before break 1: Break before make

NewLinkIdentifier	24	Variable	The identifier of new network to which handover needs to be initiated
OldLinkIdentifier	25	Variable	The identifier of old network from which handover needs to be initiated
OldLinkAction	26	1	Specifies the suggested action on old link once the handover to new link has been completed. Combination of below choices are possible. 0: LINK_DISCONNECT 1:LINK_LOW_POWER 2:LINK_POWER_DOWN 3:LINK_NO_ACTION 4:LINK_RESOURCE_RETAIN 5:DATA_FORWARDING_REQUEST 6:BI_CASTING_REQUEST 7:HANDOVER_CANCEL

8.4.3.4 MIH_Switch Response

This message returns the response of trying to switch an active session from one link to another.

Name	Type (1 octet)	Length (1 octet)	Value
SwitchResultCode	27	1	0: Success 1: Failure 2: Rejected

8.4.3.5 MIH_Configure Request

This message is used to configure the link and control the link behavior.

Name	Type (1 octet)	Length (1 octet)	Value
ConfigureRequestSet	28	4	Set of identifiers which can be used to configure the link Bit #0: Network Types In Use Bit #1: Operation Mode Bit #2: Transmitter Status Bit #3: Current Address Bit #4~31: <i>Reserved</i>
ConfigureReqSetParameters	29	Variable	Configuration values of different parameters

8.4.3.6 MIH_Configure Response

This message is used to configure the link and control the link behavior.

Name	Type (1 octet)	Length (1 octet)	Value
ConfigureStatus	30	1	Status of configuring different parameters. 0: Success 1: Failure 2: Rejected

8.4.3.7 MIH_Scan Request

This message is used to scan a list of PoAs for a specific link type.

Name	Type (1 octet)	Length (1 octet)	Value
ScanLinkType	31	Variable	Identifier of link for which to scan

8.4.3.8 MIH_Scan Response

This message returns the list of PoAs for a specific link type after a scan operation.

Name	Type (1 octet)	Length (1 octet)	Value
ScanLinkType	31	Variable	Identifier of link for which scan was conducted
ScanResponseSet	32	Variable	List of PoAs for the specified link type

8.4.3.9 MIH_Configure_Thresholds Request

This message is used to configure the thresholds for indications from link layer.

Name	Type (1 octet)	Length (1 octet)	Value
LinkParameter	33	2	Parameters for which link thresholds need to be set. Bit 0: Link speed Bit 1: Link bit error rate Bit 2: Link frame loss rate before retransmission Bit 3: Link signal strength Bit 4~15: Reserved
InitiateActionThreshold	34	Variable	LinkParameter specific threshold value that may cause upper layers to start "setup" type activities
RollbackActionThreshold	35	Variable	LinkParameter specific threshold value that may cause upper layers to rollback previously started setup type activities

ExecuteActionThreshold	36	Variable	LinkParameter specific threshold value that may cause upper layers to “execute” appropriate handover specific action
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8.4.3.10 MIH_Configure_Thresholds Response

This message returns the response of configuring thresholds for link indications.

Name	Type (1 octet)	Length (1 octet)	Value
ConfigureThresholdResult-Code	37	Variable	Status of configuring different thresholds. 0: Success 1: Failure 2: Rejected

8.4.3.11 MIH_Handover_Initiate Request

This message is used for communication between MIH Function on client with MIH Function on network. The function is used to communicate intent of handover initiation. The handover can be initiated either by the client or the network.

Name	Type (1 octet)	Length (1 octet)	Value
SuggestedNewLinkIdentifier	24	Variable	This is the identifier of new network to which handover needs to be initiated.
SuggestedMACNewPoAIdentifier	7	Variable	This is the preferred Point of Attachment (AP/BS) on new network
HandoverMode	23	1	The handover mode may influence the manner in which links are prepared for handover 0: Make-before_Break 1: Break-before-Make
CurrentLinkAction	26	1	Specifies suggested action on old link once handover procedures have been executed. LINK_DISCONNECT LINK_LOW_POWER LINK_POWER_DOWN LINK_NO_ACTION

8.4.3.12 MIH_Handover_Initiate Response

This message is used for communication between MIH Function on client with MIH Function on network. The function is used to communicate response of intent of handover initiation. The handover can be initiated either by the client or the network.

Name	Type (1 octet)	Length (1 octet)	Value
HandoverAck	27	1	Result of Handover Request 0: Initiate Handover 1: Abort Handover
PreferredLinkIdentifier	28	Variable	The identifier of new network to which handover needs to be initiated
PreferredPoAIdentifier	29	Variable	MAC Address of preferred PoA on new network
AbortReason	30	1	Specifies the reason for aborting the handover.

8.4.3.13 MIH_Handover_Commit Request

This message is used by MIH Function to communicate the intent to commit to a handover request to a specific link and PoA.

Name	Type (1 octet)	Length (1 octet)	Value
NewLinkIdentifier	24	Variable	The identifier of new network to which handover needs to be initiated
NewPoAMAC	7	Variable	MAC Address of preferred PoA on new network
CurrentLinkAction	26	1	Specifies the suggested action on old link once the handover to new link has been completed. Combination of below choices are possible. 0: LINK_DISCONNECT 1:LINK_LOW_POWER 2:LINK_POWER_DOWN 3:LINK_NO_ACTION 4:LINK_RESOURCE_RETAIN 5:DATA_FORWARDING_REQUEST 6:BI_CASTING_REQUEST 7:HANDOVER_CANCEL

8.4.3.14 MIH_Handover_Commit Response

This message is used by MIH Function to communicate the response of request to commit to a handover request to a specific link and PoA.

Name	Type (1 octet)	Length (1 octet)	Value
OldLinkAction	26	1	Specifies the suggested action on old link once the handover to new link has been completed. Combination of below choices are possible. 0: LINK_DISCONNECT 1:LINK_LOW_POWER 2:LINK_POWER_DOWN 3:LINK_NO_ACTION 4:LINK_RESOURCE_RETAIN 5:DATA_FORWARDING_REQUEST 6:BI_CASTING_REQUEST 7:HANDOVER_CANCEL

8.4.3.15 MIH_Handover_Complete Request

This message is used by MIH Function to communicate the status of handover operation. If the handover operation is successful the old PoA can now start forwarding packets to new PoA.

Name	Type (1 octet)	Length (1 octet)	Value
HnadoverStatus	31	1	Specifies the status of handover request. Combination of below choices are possible. 0: Success 1:Link Setup Failure 3-7: Reserved

8.4.3.16 MIH_Handover_Complete Response

This message is used by MIH Function to communicate the response to completion of handover operation. The message is basically used to communicate the preferred action to be taken w.r.t resources associated with previous connection. If the handover is successful the resources may be released.

Name	Type (1 octet)	Length (1 octet)	Value
ResourceStatus	32	1	Specifies the preferred action w.r.t resource retention request associated with previous connection. 0: Release resources 1: Retain resources

8.4.3.17 MIH_Network_Address_Information_Request

The 'MIH_Network_Address_Information.request' is delivered from one MIHF in the network to another MIHF in the network in order to discover mobile terminal's network address related information before handover. Upon reception of this message, the receiving remote MIHF can either interact with upper layer to achieve enough information or further deliver this message to the MIHF which may have enough information on this message.

Name	Type (1 octet)	Length (1 octet)	Value
MacMobileTerminal	6	Variable	MAC Address of Mobile Terminal
Home Address	33	4 or 6	Home IP address of Mobile Terminal
CoA	34	4 or 6	Care of Address of Mobile Terminal
Old FA Address / Old Access Router Address	35	4 or 6	In case of Mobile IPv4, this parameter represents "IP address of old Foreign Agent, and in case of Mobile IPv6, this parameter represents IP address of old Access Router.

8.4.3.18 MIH_Network_Address_Information_Response

This is sent as a response to MIH_Network_Address_Information.request.

Name	Type (1 octet)	Length (1 octet)	Value
MacMobileTerminal	6	Variable	MAC Address of Mobile Terminal
Home Address	33	4 or 6	Home IP address of Mobile Terminal
FA Address / Access Router Address	35	4 or 6	In case of Mobile IPv4, this parameter represents "IP address of Foreign Agent, and in case of Mobile IPv6, this parameter represents IP address of Access Router.
Network Address Information	36	Variable	In case of Mobile IPv4, Agent Advertisement is encapsulated and in case of Mobile IPv6, Router Advertisement is encapsulated.

8.4.4 Messages for Information Service Category

MIH frames for Information Service category have MIH Service ID set to 4. The MIH Function payload for different messages in this service category is described below.

8.4.4.1 MIH_Get_Information_Request

This message is used by MIH Function to retrieve value of different Information Elements.

Name	Type (1 octet)	Length (1 octet)	Value
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InfoQueryType	37	1	Specifies the different types of supported IE formats. 1: TLV 2: RDF_DATA 3: RDF_SCHEMA_URL 4: RDF_SCHEMA
InfoQueryParameters	38	Variable	List of query specific parameters

8.4.4.2 MIH_Get_Information Response

This message is used by MIH Function to retrieve value of different Information Elements.

Name	Type (1 octet)	Length (1 octet)	Value
InfoQueryType	37	1	Specifies the different types of supported IE formats. 1: TLV 2: RDF_DATA 3: RDF_SCHEMA_URL 4: RDF_SCHEMA
InfoQueryResponse	39	Variable	Includes the values of different IEs corresponding to the query request
QueryStatus	40	1	Status of the query operation 0: Success 1: Failure 2: Rejected

8.5 Protocol Flow

8.5.1 MIH Capability Discovery

The network entities and the terminals with MIHF shall discover which entity supports MIHF in order to utilize MIHF for media independent handover. MIH capability discovery can be done through media specific broadcast messages or through on demand MIH capability discovery messages.

8.5.1.1 MIH Capability Discovery through media specific broadcast messages

The network may be able to indicate to the mobile terminal if it is MIH capable by broadcasting MIH capability over the medium, e.g. beacon in 802.11 and DL-MAP in 802.16.

8.5.1.2 On Demand MIH Capability Discovery

The MIH Function in mobile terminal or in the network can discover which entity in the network or which mobile terminal supports MIH capability by using MIH capability discovery procedure. MIH capability discovery procedure consists of capability discovery handshake and capability advertisement. MIH Function capability discovery can be achieved by exchanging MIH messages, MIH_Capability_Discover request and MIH_Capability_Discover response. The MIH Function entity may also advertise its MIH capability to the neighbors by broadcasting MIH_Capability_Discover.response message. Figure 29 — shows the on demand MIH capability discovery procedure.

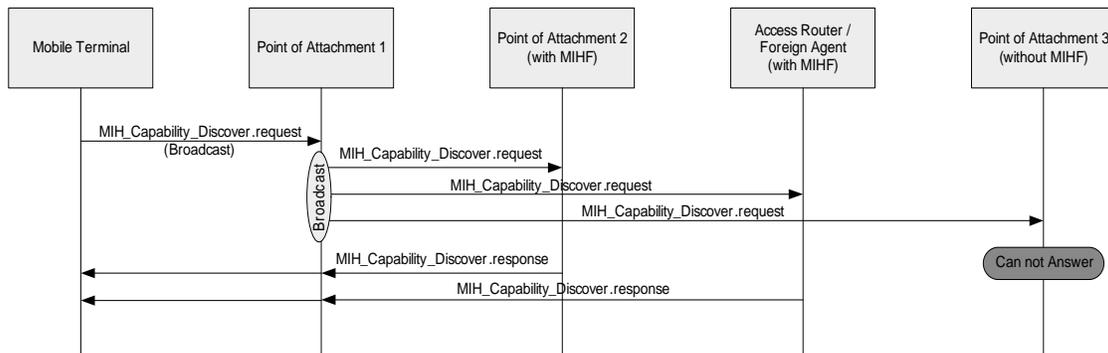


Figure 3 — On demand MIH capability discovery procedure