Start Group Manipulation

Group exist?

- Add/remove members,
- Obtain Device Key, Leaf number of each member
- Obtain MGK

Choose new TargetGroupIdentifier

Update the Group Management Database

Generate GKB:
- Device Keys
- Leaf Numbers
- MGK

Output:
- GKB
- CompleteSubtree
- GroupKeyData
- (Optional) SubgroupRange
- (Optional) VerifyGroupCode

(Optional) Add UserSpecificData

Choose DestinationIdentifier based on TargetGroupIdentifier

Group Key updated?  Yes  No

ResponseFlag = 1

Reply needed?  Yes  No

GroupKeyUpdateFlag = 1

Send MIH_Net_Group_Manipulation.request primitive to local MIHF
Receive MIH\_Net\_Group\_Manipulation\_request

Generate the following TLVs based on the MIH\_Net\_Group\_Manipulation\_request:
- Source MIHF ID TLV
- Destination MIHF ID TLV
- (Optional) SubgroupRange TLV
- (Optional) Verify Group Key TLV
- (Optional) Aux Data TLV
- Complete Subtree TLV
- Group Key Data TLV

Yes

MulticastAddress present?

Is the Multicast Address belonging to TargetIdentifier in the Multicast Address Database?

No

Generate Multicast Address TLV

Obtain Multicast Address associated to TargetIdentifier from external entity or mechanism (out of scope)

No

Update Multicast Address Database with Multicast Address and TargetIdentifier

Obtain MGK from GKB (CompleteSubtree and GroupKeyData) and Device Key, denote this MGK as MGK\(_1\)

Obtain from Multicast Address Database the MGK\(_2\) and SAID of group, denote this MGK as MGK\(_2\)

Yes

MGK\(_1\)==MGK\(_2\)

Generate new SAID; Update Multicast Address Database with new SAID and MGK

Generate Signature TLV

Yes

ResponseFlag=1?

Send MIH\_Net\_Group\_Manipulate request

Send MIH\_Net\_Group\_Manipulate indication
Reception of MIH_Manipulate message

1. Find associated multicast address, stop listening to it.
2. Discard the row associated to TargetIdentifier from Group Database.

Yes

TargetIdentifier registered in Group Database?

No

Group Key Obtained?

Yes

Process Complete Subtree TLV and Group Key Data TLV

- Obtain Group Key

Group Key Data TLV Exists?

No

Mismatch pair of GKB indices (subclause 9.4.2.2) found?

Yes

SubgroupRange TLV present?

Yes

Own Leaf number is present on SubgroupRange?

No

Is payload encrypted?

Yes

- Obtain corresponding decryption key from Group Database (indexed by DestinationIdentifier)
- Decrypt payload

Payload correctly decrypted?

Yes

Destination Identifier == MIHF Group ID in Data Base

Destination Identifier == MIHF Broadcast ID

Destination Identifier == local MIHF ID

Yes

Signature TLV Verification success?

Send MIH_Net_Group_Manipulation.indication to MIH_User with GroupStatus=Unchanged successful.

No

TargetIdentifier registered in Group Database?

Yes

Obtain Source Identifier from message and associated verification key from Group Database.

Silently discard the message.