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| Title | Suggested Remedy for IEEE 802.21d Lb7b comments #58 | |
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| Re: | IEEE 802.21 Session #61 in Beijing | |
| Abstract |  | |
| Purpose |  | |
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**Amend the primitives for the group manipulation commands as follows**

**~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~**

1. * + 1. MIH\_MN\_Group\_Manipulate.response
          1. Function

This primitive is generated by an MIH User in a PoS to acknowledge result of an MIH\_MN\_Group\_Manipulate request from an MN.

* + - * 1. Semantics of service primitive

MIH\_MN\_Group\_Manipulate.response (

DestinationIdentifier,

TargetIdentifier,

MulticastAddress,

SubgroupRange,

UserSpecificData,

CompleteSubtree,

GroupKeyData,

GroupStatus

)

Parameters:

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| --- | --- | --- |
| Name | Data Type | Description |
| DestinationIdentifier | MIHF\_ID | Specifies the MIHF ID of the destination of the primitive. |
| TargetIdentifier | MIHF\_ID | The target MIHF group identifier for the group operation. |
| MulticastAddress | TRANSPORT\_ADDR | (Optional) Multicast address corresponding with the target group identifier. |
| SubgroupRange | SUBGROUP\_RANGE | (Optional) Subgroup to process the command.a |
| UserSpecificDatab | OCTET\_STRING | (Optional) Auxiliary data. |
| Complement Flag | COMPLEMENT\_FLAG | (Optional) Flag to indicate processing method of complete subtree data. |
| CompleteSubtree | COMPLETE\_SUBTREE | (Optional) Complete Subtree data. |
| GroupKeyData | GROUP\_KEY\_DATA | (Optional )Encrypted group key. |
| GroupStatus | GROUP\_STATUS | Status of the group operation. |

a SubgroupRange parameter shall be present for a fragmented GKB.

b The UserSpecificData parameter can be used to convey additional information such as version information of the GKB used or additional credentials.

* + - * 1. When generated

An MIH User at the PoS generates this primitive after receipt and processing of MIH\_MN\_Group\_Manipulate request. This primitive returns the status of the action asked in the request. Optionally, it may respond with the security mechanisms required by the group.

* + - * 1. Effect on receipt

MIH\_MN\_Group\_Manipulate response message is sent back to the requester.

* + 1. 1. MIH\_Net\_Group\_Manipulate.request
          1. Function

This primitive is generated by the MIH User of a PoS to manipulate group membership of one or more MN(s) or other PoS(es).

* + - * 1. Semantics of service primitive

MIH\_Net\_Group\_Manipulate.request (

DestinationIdentifier,

ResponseFlag,

GroupKeyUpdateFlag,

TargetIdentifier,

MulticastAddress,

SubgroupRange,

UserSpecificData,

CompleteSubtree,

GroupKeyData

)

Parameters:

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| --- | --- | --- |
| Name | Data Type | Description |
| DestinationIdentifier | MIHF\_ID | Specifies group MIHF-ID of the remote MIHF peers. DestinationIdentifier may be different from TargetIdentifier. |
| ResponseFlaga | RESPONSE\_FLAG | (Optional) Flag that represents whether or not a response is needed. |
| GroupKeyUpdateFlag | GROUP\_KEY\_UPDATE\_FLAG | Flag that represents whether or not a group key in GroupKeyData is updated. |
| TargetIdentifier | MIHF\_ID | The target MIHF group identifier for the group operation. |
| MulticastAddress | TRANSPORT\_ADDR | (Optional) Multicast address corresponding with the target group identifier. |
| SubgroupRange | SUBGROUP\_RANGE | (Optional) Subgroup to process the command |
| UserSpecificData | OCTET\_STRING | (Optional) Auxiliary data. |
| Complement Flag | COMPLEMENT\_FLAG | (Optional) Flag to indicate processing method of complete subtree data. |
| CompleteSubtree | COMPLETE\_SUBTREE | Complete Subtree data. |
| GroupKeyData | GROUP\_KEY\_DATA | (Optional) Encrypted group key. |

a In case the ResponseFlag parameter is not present, the MIHF should always generate a request message, and otherwise the MIHF generates either a request or an indication message, based on the ResponseFlag parameter.

* + - * 1. When generated

The MIH user generates this primitive to create, delete or modify group membership.

* + - * 1. Effect on receipt

Upon receipt of this primitive, MIHF on the PoS sends the corresponding MIH\_Net\_Group\_Manipulate indication message or MIH\_Net\_Group\_Manipulate request message to the MN(s) or other PoS(es). The ResponseFlag TLV indicates which message shall be sent.

**Amend the messages for the group manipulation commands as follows**

**~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~**

1. * + 1. MIH\_MN\_Group\_Manipulate response

The corresponding MIH primitive of this message is defined in 7.4.31.3.

This message is used by the MIHF to supply the group status of MIH node(s) identified by the Source Identifier.

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| --- |
| MIH Header Fields (SID=1, Opcode=2, AID=11 ) |
| **Source Identifier** = sending MIHF ID  (Source MIHF ID TLV) |
| **Destination Identifier** = receiving MIHF ID  (Destination MIHF ID TLV) |
| TargetIdentifier  (Group Identifier TLV) |
| SequenceNumber (conditional)ª  (Sequence Number TLV) |
| MulticastAddress (Optional)  (Multicast Address TLV) |
| SubgroupRange (Optional)  (Subgroup\_Range TLV) |
| UserSpecificData (Optional)  (Aux Data TLV) |
| ComplementFlag (Optional)  (Complement flag TLV) |
| CompleteSubtree (Optional)  (Complete Subtree TLV) |
| GroupKeyData (Optional)  (Group Key Data TLV) |
| GroupStatus  (Group Status TLV) |
| SecurityAssociationID (Optional)  (SAID TLV) |

ª This parameter is only used in the case CCM encryption method is used and the group key is not updated.

* + - 1. MIH\_Net\_Group\_Manipulate request

The corresponding MIH primitive of this message is defined in 7.4.32.1.

This message is used by the MIHF to manipulate group membership of MIH node(s) identified by the Destination Identifier.

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| --- |
| MIH Header Fields (SID=1, Opcode=1, AID=12 ) |
| **Source Identifier** = sending MIHF ID  (Source MIHF ID TLV) |
| **Destination Identifier** = receiving MIHF ID  (Destination MIHF ID TLV) |
| GroupKeyUpdateFlag  (Group Key Update Flag TLV) |
| TargetIdentifier  (Group Identifier TLV) |
| SequenceNumber (Optional)a  (Sequence Number TLV) |
| MulticastAddress (Optional)  (Multicast Address TLV) |
| SubgroupRange (Optional)  (Subgroup Range TLV) |
| UserSpecificData (Optional)  (Aux Data TLV) |
| ComplementFlag (Optional)  (Complement flag TLV) |
| CompleteSubtree  (Complete Subtree TLV) |
| GroupKeyData (Optional)  (Group Key Data TLV) |
| SecurityAssociationID (Optional)  (SAID TLV) |

a This parameter is only used in the case CCM encryption method is used and the group key is not updated.

* + - 1. MIH\_Net\_Group\_Manipulate indication

The corresponding MIH primitive of this message is defined in 7.4.32.2.

This message is used by the MIHF to manipulate group membership of MIH node(s) identified by the Destination Identifier.

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| MIH Header Fields (SID=1, Opcode=3, AID=12 ) |
| **Source Identifier** = sending MIHF ID  (Source MIHF ID TLV) |
| **Destination Identifier** = receiving MIHF ID  (Destination MIHF ID TLV) |
| TargetIdentifier  (Group Identifier TLV) |
| GroupKeyUpdateFlag  (Group Key Update Flag TLV) |
| SequenceNumber (Optional)  (Sequence Number TLV) |
| MulticastAddress (Optional)  (Multicast Address TLV) |
| SubgroupRange (Optional)  (Subgroup Range TLV) |
| UserSpecificData (Optional)  (Aux Data TLV) |
| ComplementFlag (Optional)  (Complement flag TLV) |
| CompleteSubtree  (Complete Subtree TLV) |
| GroupKeyData (Optional)  (Group Key Data TLV) |
| SecurityAssociationID (Optional)  (SAID TLV) |

**Define new data type:**

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Table F.24—Data type for security

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| Data type name | Derived from | Definition |
| COMPLEMENT\_FLAG | BOOLEAN | This indicates the complete subtree specifies a complement set of group members or not.  0 (FALSE): Complete subtree specifies a set of group members  1 (TRUE): Complete subtree specifies a complement set of group members |

**Define new TLV:**

**~~~~~~~~~~~~~~~~~~**

Table L.2 —Type values for TLV encoding

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| --- | --- | --- |
| TLV type name | TLV type value | Data Type |
| ComplementFlag | 97 | COMPLEMENT\_FLAG |

Other modification requests:

Add explanation text on Complement Flag such as DCN 0061-01.

Change processing method of the group manipulation command

* + - * 1. MIH user of a GMCS

# Modify step d)

1. Define CompleteSubtree, SubgroupRange, and ComplementFlag:
   1. If ComplementFlag = 0, the MIH User sends MIHF IDs of the group member, all Node Indices, and a threshold for fragmentation to the CreateCompleteSubtreeFragments procedure, and receive CompleteSubtree and SubGroupRange.
   2. If ComplementFlag = 1, the MIH User sends MIHF IDs of the non-group member, all Node Indices, and a threshold for fragmentation to the CreateCompleteSubtreeFragments procedure, and receive CompleteSubtree and SubGroupRange.
   3. If the CompleteSubtree is not fragmented, SubgroupRange is removed.
      * + 1. MIHF of a GMCS

# Add following step

X) If MIH\_Net\_Group\_Manipulate.request contains a ComplementFlag, the MIHF generates a ComplementFlag TLV from the ComplementFlag.

* + - 1. Procedures for group manipulation command recipients (GMCR)

# Modify step g) to support ComplemetFlag (TBD)

1. The MIHF processes the Complete Subtree TLV as described in 9.4.2.2. If the MIHF succeeds to find a matching pair of Node Indices, go to the next step. Otherwise, go to Step r).

# Add flow diagrams on the Complement Flag processing.

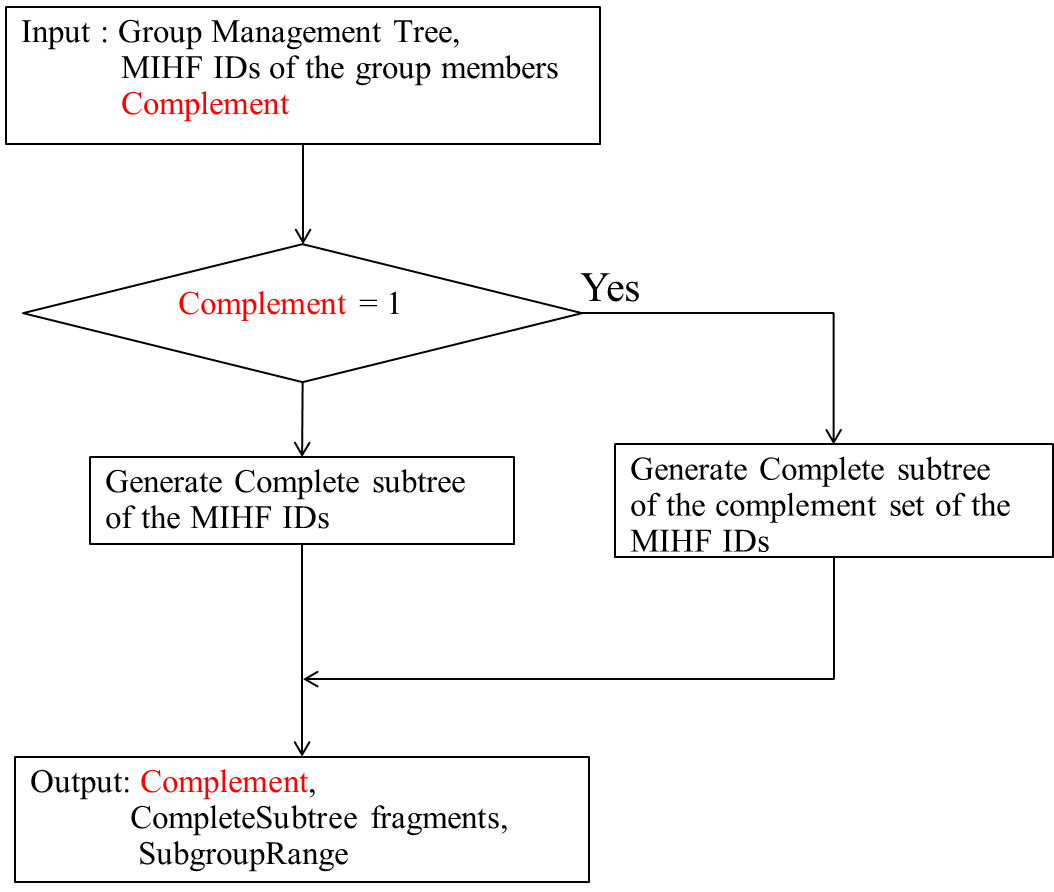
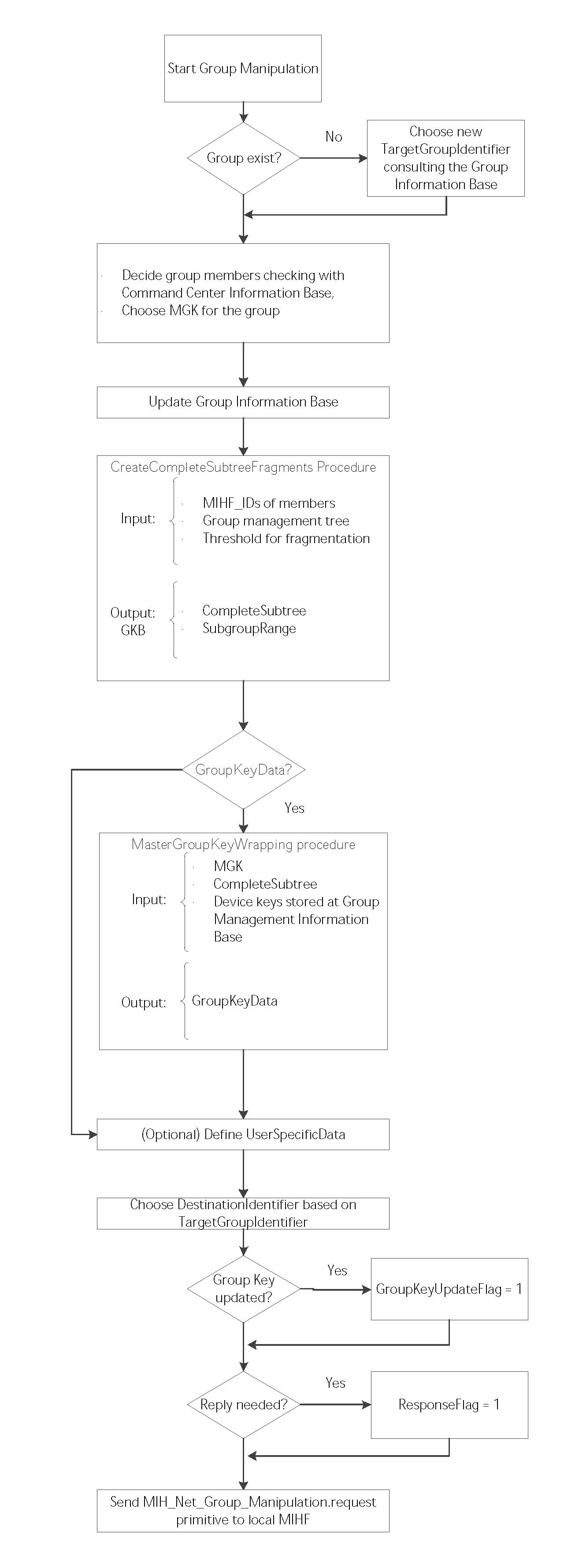


Figure X

Figure X is detail of the box of CreateCompleteSubtreeFragments Procedure in Figure 38.



Here

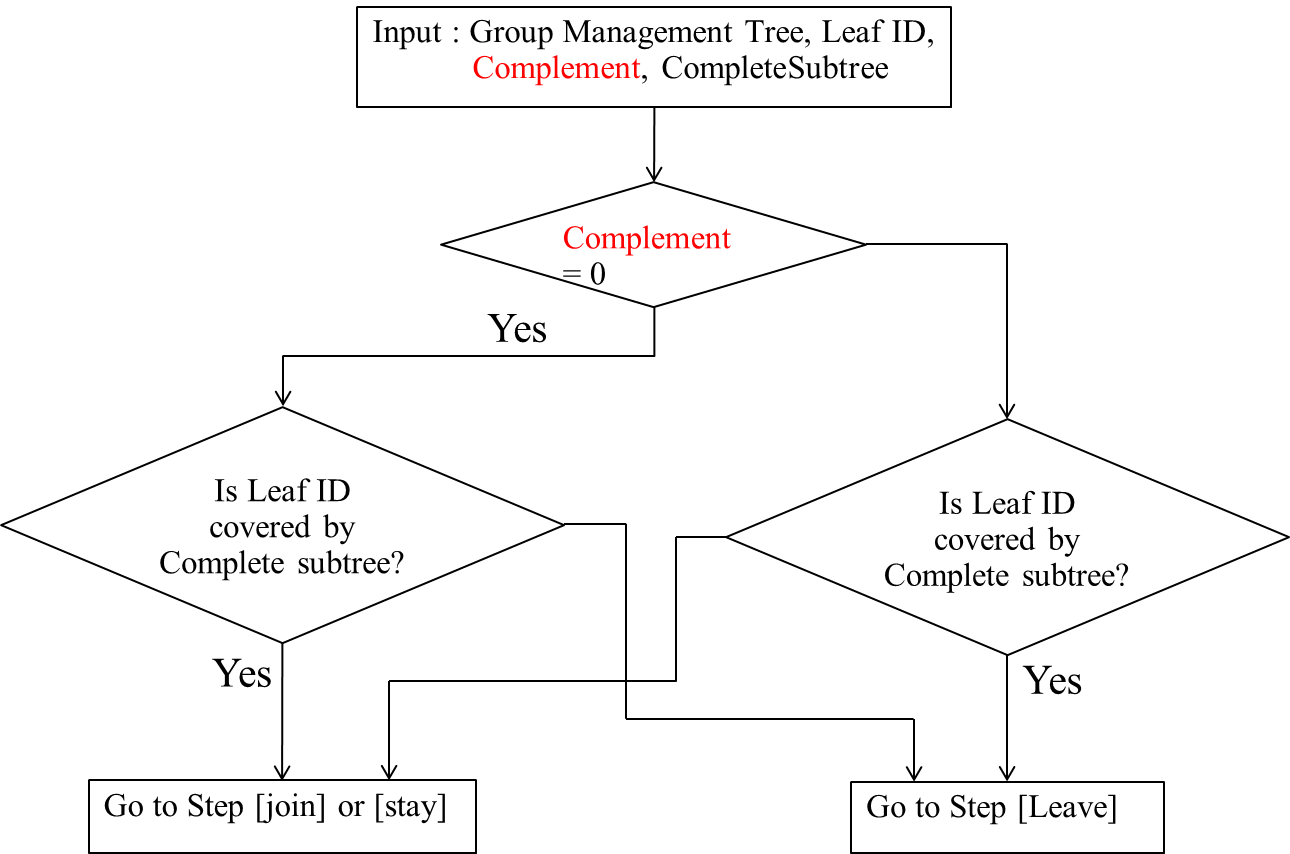


Figure Y: Flow diagram to judge a group membership from CompleteSubtree and ComplementFlag

Figure Y is detail of the box of “Matching pair of GKB indices (subclause 7.4.32.2) found?” in Figure 41.



Here