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Re:	IEEE 802.16j-06/027: "Call for Technical Proposals regarding IEEE Project P802.16j"
Abstract	This proposal clarifies the DSx messages used over relay links.
Purpose	Discuss and adopt proposed text.
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Clarification on DSx Messages Used over Relay Links

1. Introduction

In multihop relay system, DSx messages sent over relay links are used for two other purposes – one for admission control and one for path management. These DSx messages may contain different TLVs when used for different purposes. This contribution proposes text changes to clarify the DSx message structure.

2. Specific Text Change

6.3.2.3.10 DSA-REQ message

[Modify line 24-28 on page 23 in the following way]

In multihop relay system with distributed scheduling, DSA-REQ is used for two other purposes - one for admission control and one for path management. Such DSA-REQ is only sent over relay links from MR-BS or a RS to its subordinate RS.

In ~~MR system~~ multihop relay system with distributed scheduling, ~~before admitting a service flow, the~~ MR-BS may send a DSA-REQ to all the RSs on the path to request for admission control decision. This DSA-REQ is processed by each RS on the path and forwarded to its subordinate RS ~~using the primary CID of the subordinate RS~~. The CID of the associated service flow is included in the ~~Service Flow~~ CID TLV field of the Service Flow Parameters TLV ~~in this DSA-REA message~~ and ~~could be~~ is either the transport CID for the service flow or the tunnel CID~~,~~ of the tunnel into which the service flow is mapped. The MR-BS and RS shall generate DSA-REQ in the form shown in Table 80, except that the CID used in the MAC header is the primary management CID of the RS.

[Modify line52 – 57 on page 23 as following]

In multihop relay network, a DSA-REQ is also sent by MR-BS to populate the path information to every RS on the path and/or distribute the binding information between connections and a selected path. The MR-BS shall generate DSA-REQs in the form shown in Table 38. When a RS ~~receives a DSA-REQ and its~~ that is not the last hop on the relay path receives a DSA-REQ, ~~it~~ that RS shall also generate a DSA-REQ in the form shown in Table 38 and sends ~~it~~ this DSA-REQ to the next RS on the path.

[Modify line 59 on page 23 in the following way]

The~~is~~ DSA-REQ message may contain the following TLVs:

[Add following text after line 7 on page 24]

This DSA-REQ message shall contain the following TLV:

HMAC/CMAC Tuple (see 11.1.2)

The HMAC/CMAC Tuple attribute contains a keyed message digest (to authenticate the sender). The HMAC/CMAC Tuple shall be the final attribute in the DSA message's attribute list.

6.3.2.3.11 DSA-RSP message

[Change the line 13 – 24 on page 24 as following:]

In multihop relay system with distributed scheduling, DSA-RSP is sent from a RS to the MR-BS over the relay link as the response to a DSA-REQ used for admission control or path management.

In ~~MR system~~ multihop relay system with distributed scheduling, upon receiving a DSA-REQ from its superordinate ~~neighbor~~ station to request for admission control decision, an intermediate RS or ~~.~~the access RS may reply with a DSA-RSP to MR-BS~~ using its primary management CID~~. This DSA-RSP sent over relay link follows the form shown in Table 81, ~~same structure of the DSA-RSP sent over access link~~ except that the CID used in the MAC header is the primary management CID of the RS.

This DSA-RSP message may contain the following TLV:

Service Flow Parameters (see 11.13)
The specification of the service flow that can be supported by all the RS on the path.

This DSA-RSP message shall contain the following TLV:

HMAC/CMAC Tuple (see 11.1.2)
The HMAC/CMAC Tuple attribute contains a keyed message digest (to authenticate the sender). The HMAC/CMAC Tuple shall be the final attribute in the DSA message's attribute list.

In multihop relay system with distributed scheduling, a DSA-RSP ~~is~~ may also be sent by a RS to confirm the path management operation requested in the correspondent DSA-REQ. An intermediate RS or t~~T~~he access RS ~~on the last hop on a specific path should~~ shall generate the DSA-RSP in the form shown in Table 81, except that the CID used in the MAC header is the primary management CID of the RS. ~~When a RS receives a DSA-RSP, it shall update the confirmation code and generate a DSA-RSP in the form shown in Table 81 and sends it to the prevous RS on the path.~~

This DSA-RSP message shall contain the following TLV:

HMAC/CMAC Tuple (see 11.1.2)
The HMAC/CMAC Tuple attribute contains a keyed message digest (to authenticate the sender). The HMAC/CMAC Tuple shall be the final attribute in the DSA message's attribute list.

6.3.2.3.12 DSA-ACK message

[Change the text on line 30 -35 on page 24 as following:]

In ~~MR system~~ multihop relay system with distributed scheduling, upon receiving a DSA-RSP from an access RS for the purpose of admission control, the MR-BS may send a DSA-ACK to all the RSs on the path. This DSA-ACK is processed by each intermediate RS on the path, and forwarded to its subordinate RS using the primary management CID of the subordinate RS. The CID of the associated service flow is included in the ~~Service Flow~~ CID TLV field of the Service Flow Parameters TLV ~~field in this DSA-ACK message~~ together with the admitted service flow parameter. The CID ~~could be~~ is either the transport CID for the service flow or the tunnel CID of the tunnel into which the service flow is mapped. The MR-BS and RS shall generate DSA-ACK in the form shown in Table 82, except that the CID used in the MAC header is the primary management CID of the RS.

6.3.2.3.13 DSC-REQ message

[Change line 52 – 57 on page 24 as following:]

In multihop relay system with distributed scheduling, DSC-REQ is used for two other purposes - one for admission control and one for path management. Such DSC-REQ is only sent over relay links from MR-BS or a RS to its subordinate RS.

In ~~MR system~~ multihop relay system with distributed scheduling, ~~before admitting changes to a service flow,~~ the MR-BS may send a DSC-REQ to all the RSs on the path to request for admission control decision. This DSC-REQ is processed by each RS on the path and forwarded to its subordinate RS using the primary management CID of the subordinate RS. The CID of the service flow is included in the ~~Service Flow~~ CID TLV field of the Service Flow Parameters TLV and ~~could be~~ is either the transport CID for the service flow or the tunnel CID, of the tunnel into which the service flow is mapped. The MR-BS and RS shall generate DSC-REQ in the form shown in Table 83, except that the CID used in the MAC header is the primary management CID of the RS.

[Change line 22 – 26 as following:]

In multihop relay network, a DSC-REQ is also sent by MR-BS to update the binding between CIDs to a specified path, or to distribute the updated service flow parameter for a connection that is bound to the specified path. The MR-BS shall generate DSC-REQs in the form shown in Table 41. When a RS ~~receives a DSC-REQ and it~~ that is not the last hop on the relay path receives such DSC-REQ, ~~it~~ that RS shall also generate a DSC-REQ in the form shown in Table 41 and sends this DSC-REQ ~~it~~ to the next RS on the path.

[Add the following text after line 34 on page 25]

This DSC-REQ message shall contain the following TLV:

HMAC/CMAC Tuple (see 11.1.2)

The HMAC/CMAC Tuple attribute contains a keyed message digest (to authenticate the sender). The HMAC/CMAC Tuple shall be the final attribute in the DSC message's attribute list.

6.3.2.3.14 DSC-RSP message

[Modify line 39-50 on page 25 as following:]

In ~~MR system~~ multihop relay system with distributed scheduling, upon receiving DSC-REQ from its superordinate ~~neighbor~~station for the purpose of admission control, an intermediate RS or~~.~~ the access RS may reply with a DSC-RSP to MR-BS using its primary management CID. The~~is~~ DSC-RSP sent over relay link follows ~~the same structure of DSC-RSP sent over access link~~ the form as shown in Table 84, except that the CID used in the MAC header is the primary management CID of the RS.

This DSC-RSP message may contain the following TLV:

Service Flow Parameters (see 11.13)

The specification of the service flow that can be supported by all the RS on the path.

This DSC-RSP message shall contain the following TLV:

HMAC/CMAC Tuple (see 11.1.2)

The HMAC/CMAC Tuple attribute contains a keyed message digest (to authenticate the sender). The HMAC/CMAC Tuple shall be the final attribute in the DSC message's attribute list.

In multihop relay network with distributed scheduling, a DSC-RSP ~~is~~ may also be sent by a RS to confirm the path management operation requested in the correspondent DSC-REQ. An intermediate RS or ~~T~~the access RS ~~on the last hop on a specific path should~~ shall generate the DSC-RSP in the form shown in Table 84, except that the CID used in the MAC header is the primary management CID of the RS. ~~When a RS receives a DSC-RSP, it shall update the confirmation code and generate a DSC-RSP in the form shown in Table 84 and sends it to the previous RS on the path.~~

This DSC-RSP message shall contain the following TLV:

HMAC/CMAC Tuple (see 11.1.2)

The HMAC/CMAC Tuple attribute contains a keyed message digest (to authenticate the sender). The HMAC/CMAC Tuple shall be the final attribute in the DSC message's attribute list.

6.3.2.3.15 DSC-ACK message

[Change section 6.3.2.3.15 as following:]

In ~~MR system~~ multihop relay system with distributed scheduling, upon receiving a DSC-RSP from an access RS for the purpose of admission control, the MR-BS may send a DSC-ACK to all the RSs on the path. This DSC-ACK is processed by each RS on the path and forwarded to its subordinate RS using the primary management CID of the subordinate RS. The CID of the associated service flow is included in the ~~Service Flow~~ CID TLV field of the Service Flow Parameters TLV together with the admitted service flow parameter, and ~~could be~~ is either the transport CID for the service flow or the tunnel CID, of the tunnel into which the service flow is mapped. The MR-BS and RS shall generate DSC-ACK in the form shown in Table 85, except that the CID used in the MAC header is the primary management CID of the RS.

6.3.2.3.16 DSD-REQ message

[Change line 20 -22 on page 26 as following:]

In multihop relay system with distributed scheduling, DSD-REQ is used for two other purposes - one for admission control and one for path management. Such DSD-REQ is only sent over relay links from MR-BS or a RS to its subordinate RS.

In ~~MR system~~ multihop relay system with distributed scheduling, while deleting a service flow, the MR-BS may also send a DSD-REQ to all the RSs on the path. The~~is~~ DSD-REQ message is processed by each intermediate RS and forwarded to its subordinate RS using the primary management CID of the subordinate RS. The MR-BS and RS shall generate DSD-REQ in the form shown in Table 86, except that the CID used in the MAC header is the primary management CID of the RS.

[Change line 37 - 43 on page 26 as following:]

This DSD-REQ message shall contain the following TLV:

HMAC/CMAC Tuple (see 11.1.2)

The HMAC/CMAC Tuple attribute contains a keyed message digest (to authenticate the sender). The HMAC/CMAC Tuple shall be the final attribute in the DSD message's attribute list.

In multihop relay network with distributed scheduling, a DSD-REQ is also sent by MR-BS to remove a path and/or remove the binding between connections and a selected path. The MR-BS shall generate DSD-REQs in the form shown in Table 44. When a RS ~~receives a DSD-REQ and it~~ that is not the last hop on the relay path, it shall also generate a DSD-REQ in the form shown in Table 44 and sends ~~it~~ this DSD-REQ to the next RS on the path. The MR-BS shall set the Service Flow ID field to be a non-valid SFID.

This~~e~~ DSD-REQ message may contain the following TLVs:

[Add the following text before line 51 on page 26 as following:]

This DSD-REQ message shall contain the following TLV:

HMAC/CMAC Tuple (see 11.1.2)
The HMAC/CMAC Tuple attribute contains a keyed message digest (to authenticate the sender). The HMAC/CMAC Tuple shall be the final attribute in the DSD message's attribute list.

6.3.2.3.17 DSD-RSP message

[Change line 56 – 59 on page 26 as following:]

In ~~MR system~~ multihop relay system with distributed scheduling, upon receiving DSD-REQ from MR-BS, the access RS replies with a DSD-RSP to MR-BS using its primary management CID. The~~is~~ DSD-RSP sent over relay link follows ~~the same structure of the DSD-RSP sent over access link~~ the form as shown in Table 84, except that the CID used in the MAC header is the primary management CID of the RS.

This DSD-RSP message shall contain the following TLV:

HMAC/CMAC Tuple (see 11.1.2)
The HMAC/CMAC Tuple attribute contains a keyed message digest (to authenticate the sender). The HMAC/CMAC Tuple shall be the final attribute in the DSD message's attribute list.

[Change line 1 – 5 on page 27 as following:]

In multihop relay network with distributed scheduling, a DSD-RSP ~~is~~ may also be sent by a RS to confirm the path management operation requested in the correspondent DSD-REQ. An intermediate RS or ~~T~~the access RS ~~on the last hop on a specific path should~~ shall generate the DSC-RSP in the form shown in Table 87, except that the CID used in the MAC header is the primary management CID of the RS. ~~When a RS receives a DSD-RSP, it shall update the confirmation code and generate a DSD-RSP in the form shown in Table 84 and sends it to the previous RS on the path.~~

This DSD-RSP message shall contain the following TLV:

HMAC/CMAC Tuple (see 11.1.2)
The HMAC/CMAC Tuple attribute contains a keyed message digest (to authenticate the sender). The HMAC/CMAC Tuple shall be the final attribute in the DSD message's attribute list