IEEE P802.11
Wireless LANs

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| TGah D0.1 Comment Resolutions on MAC |
| Date: 2013-07-12 |
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Abstract:  **MAC Comment Resolutions for Clauses 9.32n.3.3**

##### CIDs for Clause 9.32n.3.3

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 164 | Bo Sun | 9.32n.3.3 | 162.6 | Detailed Relay flow control mechanism has been accepted in spec framework. The corresponding text should be provided to the spec draft. | Add specified text for Relay flow control, in accordance with current spec framework. | **Revise**Modify the specification as proposed in this document |
| 986 | Zhongding Lei | 9.32n.3.3 | 162.6 | Signaling for flow control is TBD. | need to define signaling for relay suspension/resumption | **Revise**Modify the specification as proposed in this document |
| 844 | Simone Merlin |  | 56.56 | Flow control procedure can be useful also for non relays | Extend use an in comment. | **Revise**Modify the specification as proposed in this document |

**Discussion:** In May meeting, the Relay flow control mechanism has been proposed and accepted in the spec framework. And during the discussion, the group agreed not to limit the flow control action only for Relay implementation.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **CID** | **Clause** | **Page** | **Line** | **Comment** | **Proposed Change** | **Resolution** |
| 744 | 9.32n.3.3 | 162 | 6 | Signaling for flow control is TBD. | Need to provide a simple flow control signalling | **Revised.**Modify the specification as proposed in this documen. |

***Discussion***

NDP ACK includes Duration Indication and Duration field. We can define the usage of the Duration Indication and Duration fields of NDP ACK for the Relay flow control when Relayed Frame field of NDP ACK is set to 1: Duration Indication = 1 indicates a Suspend Duration in the response NDP ACK frame by the Relay.

**Instruction to Editor: *Please add the following new subclause to TGah Draft D0.1.***

## 4.11a.3 Relay flow control

A Relay transmits a frame received from a non-AP STA to the AP with which it is associated when the destination address of the frame is not the address of a STA which is associated to the Relay. The transmission occurs either immediately (SIFS) after the Relay receives the frame or after some delay. Immediate transfers can take place at the discretion of the Relay, but can also become delayed due to channel conditions or Relay buffer conditions. If preceding transmissions experience failures, for example, frames can fill the Relay’s buffer space. To avoid a buffer overflow condition, a Relay can use flow control signaling to request that non-AP STAs stop sending frames to the Relay until a later time, for example, when adequate buffer space is available.

**Instruction to Editor: *Please add the following content to Table 8-38 (Category values) in subclause 8.4.11 Action field.***

### 8.4.1.11 Action field

**Table 8-38—Category values**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Code | Meaning | See subclause | Robust | Group addressed privacy |
| <ANA> | Flow control | 8.5.23c | Yes | No |

**Instruction to Editor: *Please add the following new subclause to TGah Draft D0.1.***

### 8.4.1.46f Suspend Duration field

The format of the Suspend Duration field is shown in Figure 8-999a (Suspend Duration field format).

**Table 8-999a—Suspend Duration field format**

|  |  |
| --- | --- |
|  | Suspend Duration Time |
| Octets: | 2 |

The Suspend Duration Time field contains a 16-bit unsigned integer that specifies the amount of time in usec that a recipient STA is required to wait before it is permitted to transmit a frame to the STA that transmitted the Suspend Duration Time field.

**Instruction to Editor: *Please insert the following new subclause 8.5.23c into TGah Draft D0.1.***

## 8.5.23c Flow Control Action frame details

### 8.5.23c.1 Flow Control Action field

The Flow Control Action field values are specified in Table 8-295ax (Flow Control Action field values).

**Table 8-295ax—Flow Control Action field values**

|  |  |
| --- | --- |
| Flow Control Action field value | Description |
| 0 | Flow Suspend |
| 1 | Flow Resume |
| 2-255 | Reserved |

### 8.5.23c.2 Flow Suspend frame format

The Flow Suspend frame is used by a STA to suspend incoming transmissions for an amount of time indicated in the Suspend Duration field. The format of the Flow Suspend frame Action field is shown in Table 8-295ax (Flow Suspend frame Action field format).

**Table 8-295ay—Flow Suspend frame Action field format**

|  |  |
| --- | --- |
| Order | Information |
| 1 | Category |
| 2 | Flow Control Action |
| 3 | Suspend Duration |

The Category field is 1 octet and is set to the value in Table 8-38 (Category values) for category Flow Control Action.

The Flow Control Action field is set to the value in Table 8-295ax (Flow Control Action field values) representing Flow Suspend.

The Suspend Duration field denotes the amount of time that receiving STAs are not allowed totransmit data frames to the STA identified by the TA field of the Flow Suspend frame.

### 8.5.23c.3 Flow Resume frame format

The Flow Resume frame is used by the STA identified by the TA field of the frame to cancel any outstanding flow suspend timethe STA had previously invoked through the transmission of a Flow Suspend frame. The format of the Flow Resume frame Action field is shown in Table 8-295ax (Flow Resume frame Action field format).

**Table 8-295az— Flow Suspend frame Action field format**

|  |  |
| --- | --- |
| Order | Information |
| 1 | Category |
| 2 | Flow Control Action |

The Category field is 1 octet and is set to the value in Table 8-38 (Category values) for category Flow Control Action.

Th Flow Control Action field is set to the value in Table 8-295ax (Flow Control Action field values) representing Flow Resume.

**Instruction to Editor: *Please make the following changes in subclause 9.32n.3.3 of TGah Draft D0.1.***

### 9.32n.3.3 Flow control ~~for relay~~

~~A Relay STA may serve as a relay to more than one non-AP STAs at any one time. Depending on channel conditions, a relay STA might not be able to access the channel due to medium busy condition and/or frames that are transmitted unsuccessfully.~~

~~As a result, frames can become buffered at the relay STA. To avoid a buffer overflow condition, a relay STA may signal to non-AP STAs to stop sending frames addressed to the relay STA until adequate space exists in its buffer to accept additional frames.~~

~~Signaling for flow control is TBD.~~

To require that receiving STAs stop transmitting data frames to itself, a STA shall transmit at least one of the following frames:

1. a Flow Suspend action frame with a unicast or broadcast address in the RA field
2. a BAT frame with the Flow Control bit in the Frame Control field set to 1
3. a TACK frame with the Flow Control bit in the Frame Control field set to 1
4. a STACK frame with the Flow Control bit in the Frame Control field set to 1
5. a NDP ACK frame with the Relayed Frame field set to 1 and the Duration Indication field set to 1 and the Duration field set to a nonzero value

The Suspend Duration field of the above Flow Suspend action frame indicates the length of time receiving STAs are not allowed to transmit Data frames to the STA identified by the TA field of the Flow Suspend action frame.

The Duration field of NDP ACK listed above indicates the length of time during which the receiving STAs are not allowed to transmit Data frames to the STA identified by the RA field of the frame that elicited the NDP ACK frame.

A STA that receives any of the following frames shall not transmit any data frames to the STA that transmitted the frame, for the amount of time indicated in the Suspend Duration field of a Flow Suspend action frame or indicated in the Duration field of a NDP ACK frame:

1. a Flow Suspend action frame with a BSSID that matches the BSSID of the BSS to which the receiving STA is associated
2. a BAT frame with the Flow Control bit of the Frame Control field set to 1
3. a TACK frame with the Flow Control bit of the Frame Control field set to 1
4. a STACK frame with the Flow Control bit of the Frame Control field set to 1.
5. a NDP ACK frame with the Relayed Frame field set to 1 and the Duration Indication field set to 1 and the Duration field set to a nonzero value

A STA may resume transmission of data frames addressed to the STA that had previously suspended tranmission after the expiration of the time indicated in the Suspend Duration field of a Flow Suspend action frame or in the Duration field of a NDP ACK frame.

A STA may send a Flow Resume action frame with a unicast or broadcast address in the RA field to cancel any outstanding Suspend Duration time for the STA identified by the TA field of the Flow Resume action frame.

A STA that receives a Flow Resume action frame with a BSSID that matches the BSSID of the BSS of which the receiving STA is a member shall cancel any remaining Suspend Duration time, and may resume transmission of data frames to the STA identified by the TA field of the Flow Resume action frame.