Project	**IEEE 802.16 Broadband Wireless Access Working Group** <http://ieee802.org/16>	
Title	**ROHC updates**	
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Re:	IEEE 802.16 Working Group Letter Ballot #26b as announced in IEEE 802.16-08/006	
Abstract	Text related to ROHC needs to be improved to ensure interoperability between the BS and the SS.	
Purpose	Discuss and adopt	
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ROHC Updates

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Background

802.16Rev2/D4 is not clear on several points related to ROHC. This may create interoperability problems between an SS and a BS.

Proposed Changes

1. The MS and the BS need to negotiate capabilities during REG-REQ/RSP. The code points used when ROHC is supported need to be clarified. We suggest that ROHC not be considered to be a specific convergence sub-layer type, but rather part of the IP convergence sub-layer types. ROHC capability is negotiated during REG-REQ/RSP and use of ROHC is negotiated during service flow establishment. The MS and BS indicate CS types that they support during REG-REQ/RSP, e.g., IPv4, IPv6, Packet IP, etc.
2. The SS and BS need to negotiate the use of ROHC during service flow addition (DSA). The method used needs to be clarified. We suggest that this is negotiated by bit 7 of Request/Transmission Policy parameter in DSA-REQ/RSP.
3. The ROHC Parameter Payload TLV encoding needs to be specified.

Proposed Changes in 802.16Rev2/D4

On page 39, line 6, change paragraph as follows delete: "ROHC or"

On page 39, line 28, Section 5.2.6.1, change paragraph as follows:

ROHC (refer to RFC 3095) may be used instead of PHS to compress IP headers. The MS and the BS signal enabling of ROHC by setting bit 7 of Request/Transmission Policy (see 11.13.12) to 0. When ROHC is negotiated for a service flow, the service flow constitutes what in RFC 3095 is referred to as a ROHC channel. Two service flows cannot share a ROHC channel, and two ROHC channels cannot share the same service flow. All IP packets that are classified onto a service flow for which ROHC has been enabled shall pass through the ROHC compressor on the sender side, and the decompressor on the receiver side.

ROHC compression and decompression operation shall be performed in accordance with RFC 3095. To enable ROHC, the following two steps are required.

1. Capability negotiation during REG-REQ/RSP message exchange to determine whether ROHC is supported.
2. Indication in DSA-REQ/RSP messages to enable ROHC for the service flow.

On page 39, line 58-61, change paragraph as follows:

The CS supports SDUs ~~in two formats~~ that facilitate robust compression of IP and higher layer headers. ~~These~~ This format~~s are ROHC (RFC 3095) and~~ is ECRTP (RFC 3545) and ~~are~~ is referred to as the IP-header-compression CS PDU format~~s~~.

On page 40, lines 26-43, delete section 5.2.7.2. as follows:

~~**5.2.7.2 Compressed IP header classification rules**~~

~~The term 'ROHC channel' is defined in RFC3095 and further clarified in RFC3759. The 802.16 standard does not attempt to redefine the definition of 'ROHC Channel'. A single ROHC channel, which may have multiple ROHC contexts, shall have a one-to-one mapping to a single service Flow (SFID). Since there is a one-one mapping between a ROHC channel and an SF ID, there is no need to have any additional classifiers associated with that Service Flow. The method of associating a ROHC channel with a Service Flow is left to the implementation. One or more ROHC channels can be established for an SS. For a Service Flow mapped to a ROHC Channel, the ROHC parameters associated with the ROHC Channel shall be negotiated by including the ROHC Parameter Payload TLV (11.13.38) in the DSA-REQ/RSP messages (for a new Service Flow creation) or the DSC-REQ/RSP messages (for an existing Service Flow).~~

On page 1159, change table 575 as follows:

Type	Parameter	Type	Parameter
1	ARQ Parameters	25	Compressed CID Update Encodings
2	SS Management Support	26	Method for Allocating IP Address for the Secondary Management Connection
3	IP Management Support	27	Handover Supported Field

4	IP Version	28	System Resource Retain Timer
5	Secondary Management CID	29	HO Process Optimization MS Timer
6	The Number of Uplink TansportCID supported	30	MS Handover Retransmission Timer
7	Classification, PHS Options, SDU Encapsulation Support	31	Mobility Features Supported
8	Maximum Number of Classifiers	32	Sleep Mode Recovery Time
9	PHS Support	33	MS-PREV-IP-ADDR
10	ARQ Support	34	SKIP-ADDR-ACQUISTION
11	DSx Flow Control	35	SAID Update Encodings
12	Reserved	36	Total Number of Provisional Service Flow
13	MCA Flow Control	37	Idle Mode Timeout
14	Multicast Polling Group CID Support	38	*Reserved*
15	The Number of Downlink Trans-Port CID Supported	39	*Reserved*
16	~~*Reserved*~~ ROHC Support	40	ARQ-ACK Type
17	*Reserved*	41	MS HO Connections Parameters Process-ing Time
18	*Reserved*	42	MS HO TEK Processing Time
19	*Reserved*	43	MAC Header and Subheader Support
20	Maximum MAC Data per Frame Support	44	SN Reporting Base
21	Packing Support	45	MS timer T4
22	MAC Extended rtPS Support	46	Handover Indication Readiness Timer
23	Maximum Number of Bursts Transmitted Concurrently to the MS	47	BS Switching Timer
24	CID Update Encodings	48	Power Saving Class Capability

On page 1166, insert new section 11.7.8.11 as follows:

11.7.8.11 ROHC support

This parameter is used by the SS or BS to indicate support for ROHC.

Type	Length	Value	Scope
16	1	0 : ROHC not supported 1 : ROHC supported 2~255 : *Reserved*	REG-REQ, REG-RSP

The default value is 0 (ROHC not supported).

On page 1162, lines 5-51, modify table by marking bits 9, 11 as "Reserved".

On page 1239, lines 13-30, modify table as follows:

Type	Length	Value	Scope
[145/146].12	1	Bit 0 : Service flow shall not use broadcast BR opportunities (Uplink only) Bit 1 : Service flow shall not use multicast BR opportunities. (Uplink only) Bit 2 : The service flow shall not piggyback requests with data. (Uplink only) Bit #3 – The service flow shall not fragment data Bit #4 – The service flow shall not suppress payload headers (CS parameter) If bit #4 is set to'0' and both the SS and the BS support PHS (according to section 11.7.7.3), each SDU for this service flow shall be prefixed by a PHSI field, which may be set to 0 (see section 5.2). If bit #4 is set to '1', none of the SDUs for this service flow will have a PHSI field. Bit 5 : The service flow shall not pack multiple SDUs (or fragments) into single MAC PDUs Bit 6 : The service flow shall not include CRC in the MAC PDU. Bit 7 : ~~*Reserved*, shall be set to zero~~ The service flow shall not compress payload headers using ROHC. If bit #7 is set to'0' and both the SS and the BS support ROHC (according to section 11.7.7.4), each SDU for this service flow shall be compressed using ROHC. If bit 7 is set to '1', none of the SDUs shall be compressed.	DSA-REQ DSA-RSP DSA-ACK

Comment [e1]: I do not know how to interpret the negotiation process. Usually, in any 2-party 2-way negotiation, both parties need to enable a capability for capability to be enabled. Do both parties need to set this bit to 1 in order to suppress ROHC usage? I am equally confused about the other bits in this TLV. What is your understanding?

On page 1244, lines 9-28, modify table by marking values 10 and 12 as "Reserved".

On page 1244-1245, lines 41-8, modify table by marking values 108, 110 as "Reserved".

On page 1262, section 11.19.38, change the section as follows:

11.13.38 ROHC Parameter ~~Payload~~

~~This attribute contains the payoad used in the upper ROHC compression layer. The MAC layer does not interpret this attribute.~~ This compound parameter contains the ROHC channel parameters. All parameters pertaining to a specific ROHC channel shall be included in the same ROHC Parameter compound TLV. Refer to RFC3095, section 5.1.1, for the definition of these parameters.

Type	Length	Value	Scope
[145/146].47	*variable*	~~ROHC Parameter Payload~~ Compound	DSA-REQ, DSA-RSP DSC-REQ, DSC-RSP

On page 1262, line 28, add new section 11.13.38.1 ~ 11.13.38.5 as follows:

11.13.38.1 ROHC Max Context ID

This TLV contains the ROHC parameter MAX_CID. Both entities shall include this TLV. The negotiated value is the value set by the entity embodying the compressor.

Type	Length	Value	
[145/146].47.1	2	Nonnegative integer in the most-significant-first order.	DSA-REQ, DSA-RSP

11.13.38.2 Large Context IDs

This TLV contains the ROHC parameter LARGE_CIDS. Both entities shall include this TLV. The negotiated value is the value set by the entity embodying the compressor.

Type	Length	Value	Scope
[145/146].47.2	1	0: FALSE (Small Context ID) 1: TRUE (Large Context ID)	DSA-REQ DSA-RSP

11.13.38.3 ROHC Profiles

This TLV contains the ROHC parameter PROFILES. Both entities shall include this TLV. The negotiated value is the value set by the entity embodying the decompressor.

Type	Length	Value	Scope
[145/146].47.3	2n	A set of nonnegative integers, where each integer indicates a 16 bit profile identifier of a ROHC profile supported by the decompressor.	DSA-REQ DSA-RSP

11.13.38.4 ROHC Feedback Channel

This TLV contains the ROHC parameter FEEDBACK_FOR. The value of this parameter is an SFID. If provided, this parameter indicates to which service flow the FEEDBACK_FOR channel is mapped. Only the BS may send this TLV containing a non-zero value.

Type	Length	Value	Scope
[145/146].47.4	4	0x00 : no associated ROHC feedback Otherwise : SFID for ROHC feedback	DSA-REQ DSA-RSP DSC-REQ DSC-RSP

11.13.38.5 ROHC MRRU

This TLV contains the ROHC parameter MRRU. Both entities may include this TLV. If either entity sends a value = 0, or if this TLV is not included by the entity embodying the decompressor, then segmentation shall not apply. Otherwise, the negotiated value is the value set by the entity embodying the decompressor.

Type	Length	Value	Scope
[145/146].47.5	4	0: no segmentation Otherwise: MRRU	DSA-REQ DSA-RSP