Project	**IEEE 802.16 Broadband Wireless Access Working Group <http://ieee802.org/16>**
Title	Enhancement to the 802.16e Global Service Class Name Encoding
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Re:	This is a contribution to IEEE 802.16e.
Abstract	This contribution describes a proposed enhancement to the 802.16e Global Service Class Name encoding.
Purpose	To improve the 802.16e global service class name encoding efficiency by reducing the name size from 6 bytes to 3 bytes.
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Enhancement to TGe Global Service Class Name Encoding

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1. Introduction

This document describes an enhancement to the TGe Global Service Class Name encoding, in order to improve the encoding efficiency by reducing the name size from 8 bytes to 4 bytes.

2. References

[16e/D5]   IEEE P802.16e/D5-2004

3. Rationale

In [16e/D5], the global service class name is defined as a 9-byte rules-based composite name, as shown in Tables 122a, 122b, and 122c. Note that all the information fields are defined unnecessarily long, e.g., uplink/downlink indicator is now 8-bit long, well it only needs 1 bit, so does the V/F flag field, paging preference, and traffic indication preference.

4. Proposed Changes

Replace line 37 page 95 to line44 page 98 by the following proposed text:

Global Service Class Name—A rules-based, composite name parsed in eight, one-byte parts information fields of format ISBRLSPTR, elements reference extensible look-up tables. Each information field placeholder must be an expressed value obtained from Table 122a, as part of the name, and may not be omitted.

Table 122a—Global Service Flow Class Name Information Field Parameters

Position	Name	Size	Value
I	Uplink/Downlink indicator	1 byte bit	0 or 1: 0=uplink; 1=downlink
S	Maximum sustained traffic rate	1 byte 6 bits	Extensible look-up Table 122b (value 0b111111 indicates TLV to follow)
T	Traffic Indication Preference	1 byte bit	0 or 1; 0=No traffic indication; 1=Traffic indication
B	Maximum traffic burst	1 byte 6 bits	Extensible look-up Table 122b (value 0b111111 indicates TLV to follow)
R	Minimum reserved traffic rate	1 byte 6 bits	Extensible look-up Table 122b (value 0b111111 indicates TLV to follow)
L	Maximum latency	1 byte 6 bits	Extensible look-up Table 122c (value 0b111111 indicates TLV to follow)
S	Fixed-length versus variable-length SDU indicator	1 byte bit	0 or 1; 0=variable length; 1=fixed length
P	Paging preference	1 byte bit	0 or 1; 0 = No paging generation 1 = Paging generation
R	Reserved	1 byte 4 bits	Shall be set to 0b0000

Global Service Flow Class Name Parameters

Uplink/Downlink indicator
This parameter identifies the defined service flow direction from the originating entity
Maximum sustained traffic rate
This parameter defines the peak information rate of the service. The rate is expressed in bits per second and pertains to the service data units (SDUs) at the input to the system. Explicitly, this parameter does not include transport, protocol, or network overhead such as MAC headers or CRCs, or non-payload session maintenance overhead like SIP, MGCP, H.323 administration, etc. This parameter does not limit the instantaneous rate of the service since this is governed by the physical attributes of the ingress port. However, at the destination network interface in the uplink direction, the service shall be policed to conform to this parameter, on the average, over time. On the network in the downlink direction, it may be assumed that the service was already policed at the ingress to the network. If this parameter is set to zero, then there is no explicitly mandated maximum rate. This field specifies only a bound, not a guarantee that

the rate is available. The algorithm for policing this parameter is left to vendor differentiation and is outside the scope of the standard.

Table 122b—Traffic Rate and Burst Values

Code (~~Hex~~ 6 bits)	Traffic Rate (b/s)	Burst Values (bits)
0b000000	No requirement	No requirement
0b000001	1200	1200
0b000010	2400	2400
0b000011	4800	4800
0b000100	9600	9600
0b000101	14400	14400
0b000110	19200	19200
0b000111	24000	24000
0b001000	26400	26400
0b001001	28000	28000
0b001010	36000	36000
0b001011	44000	44000
0b001100	48000	48000
0b001101	56000	56000
0b001110	64000	64000
0b001111	128000	128000
0b010000	192000	192000
0b010001	256000	256000
0b010010	384000	384000

0b010011	512000	512000
0b010100	768000	768000
0b010101	1024000	1024000
0b010110	1536000	1536000
0b010111	1921000	1921000
0b011000 – 0b111110	Reserved	Reserved
0b111111	TLV follows	TLV follows

Traffic Indication Preference

This parameter is a single bit indicator of an MSS's preference for the reception of Traffic Indication messages during sleep mode. When set it indicates that the BS may present Traffic Indication messages to the MSS when data SDUs bound for the MSS are present while the MSS is in Sleep Mode.

Maximum traffic burst

This parameter defines the maximum burst size that must be accommodated for the service. Since the physical speed of ingress/egress ports, any air interface, and the backhaul will in general be greater than the maximum sustained traffic rate parameter for a service, this parameter describes the maximum continuous burst the system should accommodate for the service assuming the service is not currently using any of its available resources. Maximum traffic burst set to zero shall mean no Maximum traffic burst reservation requirement.

Minimum reserved traffic rate

This parameter specifies the minimum rate, in bits per second, reserved for this Service Flow. The BS shall be able to satisfy bandwidth requests for a connection up to its Minimum Reserved Traffic Rate. If less bandwidth than its Minimum Reserved Traffic Rate is requested for a connection, the BS may reallocate the excess reserved bandwidth for other purposes. The value of this parameter is calculated excluding MAC overhead. Minimum reserved traffic set to zero shall mean no Minimum reserved traffic rate requirement.

Maximum latency

The value of this parameter specifies the maximum latency between the reception of a packet into the network gateway or boundary network interface and the forwarding of the packet to its destination interface. If defined, this parameter represents a service commitment (or admission criteria) and shall be guaranteed. A network does not have to meet this service commitment for Service Flows that exceed their DL Minimum reserved traffic rate. A value of zero for Maximum latency shall be interpreted as infinite tolerance—timing insensitive traffic.

Table 122c—Maximum latency values

Code (Hex 6 bits)	Value (ms)
0b000000	No requirement
0b000001	1

0b000010	2
0b000011	5
0b000100	10
0b000101	20
0b000110	30
0b000111	40
0b001000	50
0b001001	100
0b001010	150
0b001011	200
0b001100	500
0b001101	1000
0b001110	2000
0b001111	5000
0b010000	10000
0b010001 – 0b111110	Reserved
0b111111	TLV follows

SDU indicator

The value of this parameter specifies whether the SDUs on the Service Flow are fixed-length or variable-length.

Paging Preference

This parameter is a single bit indicator of an MSS's preference for the reception of paging advisory messages during idle mode. When set, it indicates that the BS may present Paging Advisory messages or other indicative messages to the MSS when data SDUs bound for the MSS are present while the MSS is in Idle Mode.