To: Tony Jeffree, Chair, IEEE Registration Authority Committee (RAC)

From: Roger Marks, Chair, IEEE 802.16 WG

cc: Goeff Thompson, Floyd Backes

Subject: IEEE 802.16 registration authority requirements

Tony,

I am writing to you regarding a Registration Authority issue that has come to my attention regarding IEEE Std 802.16.

The existing base standard, IEEE 802.16-2004, makes use of a 48-bit Base Station ID, 24 bits of which are the Operator ID. This is specified in subclause 6.3.2.3.2, which says "The Base Station ID is a 48-bit long field identifying the BS. The Base Station ID shall be programmable. The most significant 24 bits shall be used as the Operator ID."

The Operator ID is also mentioned in IEEE 802.16e, an amendment approved in December 2005. Subclause 6.3.2.3.47 says that the 24-bit Operator ID is a "Unique ID assigned to the operator." Clearly, the requirement for such a unique ID number for each operator requires a specified Registration Authority to assign numbers. Unfortunately, this requirement was not foreseen during development of the existing standard.

At this stage, we would like to rectify the problem by specifying, within the existing P802.16g project, the Registration Authority assignment of the Operator ID. We believe that the scope of this project, on "Management Plane Procedures and Services," is broad enough for the topic.

~~Arguing in favor of that position, w~~We would like to explain the usage scenario. Namely, for licensed services, we expect a relatively small number of operators in a given geographic area, such as a country. In these cases, the operator would own the Operator ID and assign the remainder of the 24 bits in the Base Station ID. We need to also anticipate the possibility that 802.16 will become successful in license-exempt bands. In this case, the number of operators could be much larger. In fact, one could anticipate WLAN-like usage, with no operator at all. In these cases, the manufacturer of the base station would presumably own an Operator ID and assign it to the manufactured product, along with the extra 24 bits required for the complete Base Station ID~~. Since the use of the Base Station ID would be, in many ways, similar to the current use of EUI-48, perhaps it could reasonably be administered from the OUI pool~~.

We recognize that the RAC may wish to protect its existing OUI number pool. If 802.16 reaches a successful deployment level, we would anticipate up to 1000**0** Operator IDs in use. We might want to plan for the assignment of up to 10**0**,000 IDs, in case it were highly successful~~. Given these numbers, we do not anticipate a need for a full 24-bit pool for Operator ID assignment. Therefore, in alternative (2), we could easily share the pool with other uses.~~

At this point, we see two alternatives to support our Registration Authority needs:

(1) Operators could be asked to request an OUI from the existing OUI pool used for IEEE 802.
(2) A new number pool could be established.

~~We are open to either possibility. In general, we would prefer alternative (1) because we suspect that it would require the least time to be enabled. Arguing in favor of that position, we would like to explain the usage scenario. Namely, for licensed services, we expect a relatively small number of operators in a given geographic area, such as a country. In these cases, the operator would own the Operator ID and assign the remainder of the 24 bits in the Base Station ID. We need to also anticipate the possibility that 802.16 will become successful in license-exempt bands. In this case, the number of operators could be much larger. In fact, one could anticipate WLAN-like usage, with no operator at all. In these cases, the manufacturer of the base station would presumably own an Operator ID and assign it to the manufactured product, along with the extra 24 bits required for the complete Base Station ID. Since the use of the Base Station ID would be, in many ways, similar to the current use of EUI-48, perhaps it could reasonably be administered from the OUI pool.~~

We are open to either possibility. ~~In general, we would prefer alternative (1) because we suspect that it would require the least time to be enabled.~~ If Option (1) could be implemented sooner, we see that as an advantage. On the other hand, some users would prefer Option (2), particularly if the IEEE Registration Authority could support the allocation of multiple OUIs, in a contiguous block, to a single organization. In the case of Option (1), we request that operators be permitted to request a block of ten OUIs. Given the additional space available for 802.16 use in Option (2), we would prefer that larger contiguous blocks, of up to 100 OUIs, be available.

If the RAC can accommodate our needs under alternative (1), then we would propose to add the following draft text to P802.16g:

In 802.16-2004, page 46, paragraph 5, change as follows: 'The Base Station ID is a 48-bit long field identifying the BS. The Base Station ID shall be programmable. The most significant 24 bits shall be used as the Operator ID. This is a network management hook that can be combined with the Downlink Channel ID of the DCD message for handling edge-of-sector and edge-of-cell situations. The 24bit Operator ID shall be assigned as an Organizationally Unique Identifier (OUI) by the IEEE Registration Authority [footnote]. The IEEE Registration Authority shall be the sole authorized number space administrator for this function.'

The footnote would read: 'The IEEE Registration Authority is a committee of the IEEE Standards Association Board of Governors. General information as well as details on the allocation of Organizationally Unique Identifiers can be obtained at http://standards.ieee.org/regauth'.

Also, we would add to Clause 4 ("Abbreviations and acronyms"), 'OUI Organizationally Unique Identifier'.

Otherwise, under alternative (2), then we would propose to add similar language. However, instead of OUI, we would use the appropriate language descriptive of the alternative numbering scheme. If the number space was allocated only for 802.16 purposes, it might read:

In 802.16-2004, page 46, paragraph 5, change as follows:
'The Base Station ID is a 48-bit long field identifying the BS. The Base Station ID shall be programmable. The most significant 24 bits shall be used as the Operator ID. This is a network management hook that can be combined with the Downlink Channel ID of the DCD message for handling edge-of-sector and edge-of-cell situations. The 24-bit Operator ID shall be assigned **as an IEEE 802.16 Operator ID** by the IEEE Registration Authority [footnote]. The IEEE Registration Authority shall be the sole authorized number space administrator for this function.'

The footnote would read: 'The IEEE Registration Authority is a committee of the IEEE Standards Association Board of Governors. General information as well as details on the allocation of 802.16 Operator IDs can be obtained at http://standards.ieee.org/regauth'.

~~If the RAC chooses to set up a new number space for multiple purposes, instead of for 802.16 only, then we would need to modify the language to reflect the appropriate name of the space.~~

~~Please advise us of your recommendations. Also, we are open to sending a representative to the next RAC meeting, should that be helpful.~~

We look forward to finalizing a plan at the July 2006 RAC meeting. Based on the option to be followed, we expect to prepare suitable tutorial material for use on the Registration Authority web site.
Regards,

Roger