
Project	IEEE 802.16 Broadband Wireless Access Working Group < http://ieee802.org/16 >
Title	Proposed Draft PARs for Revision and Division of IEEE Std 802.16
Date Submitted	2011-03-03
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Re:	IEEE Std 802.16 maintenance
Abstract	This contribution proposes two draft PARs that would initiate the revision of IEEE Std 802.16-2009 (as amended by IEEE 802.16h, 802.16j, and 802.16m), dividing the WirelessMAN-Advanced specification from the 802.16m amendment into a new standalone project that would lead to an independent IEEE Std 802.16M.
Purpose	To encourage the 802.16 Working Group to come to consensus during Session #72 on an approach to revise and maintain IEEE Std 802.16, dividing it into two standards that can be separately maintained.
Notice	<i>This document does not represent the agreed views of the IEEE 802.16 Working Group or any of its subgroups. It represents only the views of the participants listed in the "Source(s)" field above. It is offered as a basis for discussion. It is not binding on the contributor(s), who reserve(s) the right to add, amend or withdraw material contained herein.</i>
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Proposed Draft PARs for Revision and Division of IEEE Std 802.16

Roger Marks, WiMAX Forum

1. IEEE Std 802.16 Background

IEEE Std 802.16 was first published in 2001 as IEEE Std 802.16-2001. It was later revised as IEEE Std 802.16-2004 and then again as IEEE Std 802.16-2009 (approved 13 May 2009).

IEEE Std 802.16-2009 has been amended by IEEE Std 802.16j-2009 and IEEE Std 802.16h-2010. It is anticipated that it will be amended by IEEE Std 802.16m-2011 on 31 March 2011.

Currently, two amendment projects (P802.16n and P802.16p) are authorized to develop further amendments to IEEE Std 802.16.

2. IEEE-SA Revision Requirements

IEEE-SA requirements are specified in two sections of the IEEE-SA Standards Board Operations Manual:

9.2 Revision <<http://standards.ieee.org/develop/policies/opman/sect9.html>>

The Sponsor shall initiate revision of a standard whenever any of the material in the standard (including all amendments, corrigenda, etc.) becomes obsolete or incorrect, or if three or more amendments to a base standard exist three years after its approval or most recent reaffirmation. The Sponsor may initiate revision of a standard when new material becomes available and normal evaluation of need and feasibility indicates revision is warranted. The procedure for revising a standard is the same as for developing a new standard. A revision shall encompass the cumulative scope of the project (including all approved amendments and corrigenda).

8.1.2 Amendments and corrigenda <<http://standards.ieee.org/develop/policies/opman/sect8.html>>

Up to three amendments can be approved before the standard shall be revised, unless the base standard has been approved or reaffirmed within the past three years. In the latter case, multiple amendments may be added until the base standard is three years old or three years have elapsed since the most recent reaffirmation of the standard.

Based on these requirements, we can conclude the following:

- (a) No revision is required immediately. However, no further amendments can be approved after May 2012 unless a revision is completed first. This suggests that a revision project should be opened soon.
- (b) Revision will “roll-up” the existing amendments into the base standard, which will allow easier understanding of the content. It will also make future amendments easier to construct.
- (c) Since “the procedure for revising a standard is the same as for developing a new standard,” there is an opportunity to use the revision process to conduct maintenance updates to the content.

3. Previous 802.16 Working Group Discussions

Revision of IEEE Std 802.16 has been discussed with the WG’s Project Planning Committee (PPC). A contribution on the topic (IEEE C802.16ppc-10/0068) was presented at Session #70, suggesting

that a revision project be initiated to address problems identified with the WirelessMAN-Advanced specification. The PPC recommendation (IEEE 802.16ppc-10/0016r2) was an IEEE Std 802.16 revision PAR to initiate mid-2011.

The revision topic arose again in the PPC during Session #71. There, a suggestion was made by this author to consider a “two-book” approach in which the WirelessMAN-Advanced air interface would be split into a separate standalone standard. The PPC reported (IEEE 802.16ppc-10/0018r2) consensus on this approach. It also reported some issues to be addressed:

*There is no existing PAR template to split a standard. It would require some extra work and thought to develop the two PARs. Each of the two standards would need an identifier. Presumably, the result would be two separate standards, each with its own number. The typical approach would be to use something like “802.16.1” and “802.16.2”, but these numbers have already been used (in fact, IEEE 802.16.2 was reaffirmed in 2010). Numbers such as “802.16.5” and “802.16.6” would be unappealing and confusing.

*The existing amendment PARs (P802.16n and P802.16p) would need to be reconstructed so as to appropriately indicate an amendment to either the legacy content or the WirelessMAN-Advanced air interface. If they were to amend both standards, they would require a separate PAR for each.

4. Justification for “Two-book” Approach

There are several justifications for a “two-book” approach:

- (a) The WirelessMAN-Advanced air interface is a new air interface and is not directly tied to the legacy specifications.
- (b) The WirelessMAN-Advanced air interface is, for the most part, established as a separate clause that could be easily split.
- (c) The WirelessMAN-Advanced specification makes reference to the legacy specification. However, those reference would be equally valid if pointing to an external standard.
- (d) Both the legacy specifications and the WirelessMAN-Advanced air interface will be subject to ongoing maintenance. However, the extent and timing of the maintenance will differ. It will be easier to effectively maintain the two sets of specifications if they are separated. For example, a revision of the legacy specification may be a simple matter, with only a few changes to consider, and may be completed quickly, whereas a revision of the WirelessMAN-Advanced air interface may, in the near future, entail more comments to address. If, in the future, we wish to revise one of the two books, we need not open up the other one to revision discussions at all.
- (e) The legacy standard is incorporated externally by ITU-R in the IMT-2000 recommendations. ITU-R has agreed to incorporate the WirelessMAN-Advanced air interface in IMT-Advanced. Therefore, the ongoing maintenance of the two ITU-R recommendations (which are complex administrative management issues for the 802.16 WG) is entangled with the status of the IEEE 802.16 standards. This ongoing maintenance will be simplified if the standard is divided. Furthermore, outside organizations (ARIB and TTA) have indicated an intent to “transpose” the WirelessMAN-Advanced specification into local standards. Such transposition is simplified when they can refer to an entire publication rather than to sections of a broader standard.

5. PAR Form Proposal: One Revision and One New Standard

The discussion at Session #71 considered the “two-book” approach as leading to two new standards. However, the recommendation here is for an alternative; namely, one revision and one new standard. This means that the WirelessMAN-Advanced specification would go into a new standalone standard, while the remainder of the content (without WirelessMAN-Advanced) would become the basis of a revision of IEEE Std 802.16. This approach has several advantages:

- (a) IEEE Std 802.16, which has been alive since 2001, will continue to evolve. References to IEEE Std 802.16 will remain valid.
- (b) We need only open one new standard project, instead of two.
- (c) We need worry about the naming of only one new standard, instead of two.
- (d) The existing amendment projects, which as specified as amendments of IEEE Std 802.16, will remain valid. They will not apply as amendments to WirelessMAN-Advanced; this will require additional PARs. However, until the WG decides to develop such PARs, the projects will continue to be valid and meaningful as amendments of the legacy specifications.

6. PAR Proposal

I propose to revise and divide IEEE Std 802.16 into two standards, based on two PARs:

- (a) A P802.16 revision PAR that excludes the WirelessMAN-Advanced specification.
- (b) A P802.16M PAR for a new standard to include the WirelessMAN-Advanced specification. Note that the project number is chosen to be different from that of the IEEE 802.16m amendment, but suggestive of it as well. This could be advantageous with respect to those who refer to WirelessMAN-Advanced as “802.16m.” Such a designation scheme is not formally in keeping with NesCom guidelines. However, having researched the issue and spoken to NesCom staff, I believe that it will be acceptable. Note that IEEE 802.1 standards follow the same convention, using upper case lettering for standards and lower case for amendments. As an alternative to “P802.16M”, the Working Group could consider “P802.16A,” where the “A” could suggest the word “Advanced.” However, “M” is probably more effective in communicating the concept, and “802.16A” could be confused with the (superseded) IEEE Std 802.16a-2003.

The two specific PARs proposed are attached below.

7. Process Suggestions and Timelines

I suggest the following steps:

- (a) 14 March: At Session #72 Opening Plenary, Working Group agrees to assign PAR revision discussions to PPC and authorizes PPC to submit resulting PARs to IEEE 802 EC.
- (b) 15 March: PPC, meeting in the afternoon, discusses and agrees on PAR(s).
- (c) 16 March (noon deadline): WG submits resulting PAR(s) to IEEE 802 EC, notifying EC that the submittal is subject to the 48-hour rule per subclause 12.2 of the IEEE Project 802 LAN/MAN Standards Committee Operations Manual:

At the discretion of the IEEE 802 LMSC Chair, PARs for ordinary items (e.g., Maintenance PARs) and PAR changes essential to the orderly conduct of business (e.g., division of existing work items or name changes to harmonize with equivalent ISO JTC-

1 work items) may be placed on the Sponsor agenda if delivered to Sponsor members 48 hours in advance.

- (d) 18 March: IEEE 802 EC approves PAR(s).
- (e) 1 April (deadline): Submittal to NesCom
- (f) 6 May: NesCom approval
- (g) 16 May: initiate work at Session #73
- (h) 19 May: draft updates and/or supplements to P802.16n and P802.16p PARs, as appropriate. PARs to amend IEEE Std 802.16M would have the numbering form P802.16Ma, P802.16Mb, etc.
- (i) 21 July: 802 EC approval of any P802.16M amendment PARs.
- (j) 9 September: NesCom approval of updated P802.16n and P802.16p PARs

**P802.16**

Submitter Email: r.b.marks@ieee.org
Type of Project: Revision to IEEE Standard 802.16-2009
PAR Request Date: 18-Mar-2011
PAR Approval Date:
PAR Expiration Date:
Status: Unapproved PAR, PAR for a Revision to an existing IEEE Standard

1.1 Project Number: P802.16
1.2 Type of Document: Standard
1.3 Life Cycle: Full Use

2.1 Title: Standard for Air Interface for Broadband Wireless Access Systems

Old Title: IEEE Standard for Local and metropolitan area networks Part 16: Air Interface for Broadband Wireless Access Systems

3.1 Working Group: Broadband Wireless Access Working Group (C/LM/WG802.16)

Contact Information for Working Group Chair

Name: Roger Marks
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Phone:

Contact Information for Working Group Vice-Chair

None

3.2 Sponsoring Society and Committee: IEEE Computer Society/LAN/MAN Standards Committee (C/LM)

Contact Information for Sponsor Chair

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Phone:

Contact Information for Standards Representative

None

3.3 Joint Sponsor: IEEE Microwave Theory and Techniques Society/Standards Coordinating Committee (MTT/SCC)

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Contact Information for Standards Representative

Name: Michael Janezic
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4.1 Type of Ballot: Individual

4.2 Expected Date of submission of draft to the IEEE-SA for Initial Sponsor Ballot: 09/2011

4.3 Projected Completion Date for Submittal to RevCom: 02/2012

5.1 Approximate number of people expected to be actively involved in the development of this project: 100

5.2 Scope: This standard specifies the air interface, including the medium access control layer (MAC) and physical layer (PHY), of combined fixed and mobile point-to-multipoint broadband wireless access (BWA) systems providing multiple services. The MAC is structured to support multiple PHY specifications, each suited to a particular operational environment.

5.3 Is the completion of this standard dependent upon the completion of another standard: Yes

If yes please explain: Completion is co-contingent on IEEE Std 802.16M project, in which the WirelessMAN-Advanced air interface will be split from IEEE Std 802.16 and moved to IEEE Std 802.16M.

5.4 Purpose: This standard enables rapid worldwide deployment of innovative, cost-effective, and interoperable multivendor broadband wireless access products, facilitates competition in broadband access by providing alternatives to wireline broadband access, encourages consistent worldwide spectrum allocation, and accelerates the commercialization of broadband wireless access systems.

Old Purpose: This standard enables rapid worldwide deployment of innovative, cost-effective, and interoperable multivendor broadband wireless access products, facilitates competition in broadband access by providing alternatives to wireline broadband access, encourages consistent worldwide spectrum allocation, and accelerates the commercialization of broadband wireless access systems.

5.5 Need for the Project: Revision of the standard is required to incorporate three complex amendments (P802.16h, P802.16j, and P802.16m) and to allow the WirelessMAN-Advanced radio interface to be moved to a standalone IEEE Std 802.16M. Such a split will result in more practical maintenance of the two radio interfaces. It will also ease the ongoing activities of maintaining the ITU's IMT-Advanced recommendations, which reference WirelessMAN-Advanced, and the ITU's IMT-2000 recommendations, which reference the WirelessMAN-OFDMA air interface in the earlier revision of IEEE Std 802.16. To assure that WirelessMAN-Advanced remains specified by an IEEE 802 standard, the revision and this new standard are co-contingent.

5.6 Stakeholders for the Standard: ITU-R Working Party 5D, the WiMAX Forum, vendors developing IEEE 802.16 products, and carriers using IEEE 802.16 products.

Intellectual Property

6.1.a. Is the Sponsor aware of any copyright permissions needed for this project?: Yes

If yes please explain: IEEE Std 802.16-2009 says:

Grateful acknowledgment is made to Cable Television Laboratories for the permission to use the following source material:

Radio Frequency Interface Specification (version 1.1), part of Data-Over-Cable Service Interface Specifications, (C) Copyright 1999, Cable Television Laboratories.

Baseline Privacy Plus Interface Specification, (C) Copyright 1999, Cable Television Laboratories.

6.1.b. Is the Sponsor aware of possible registration activity related to this project?: Yes

If yes please explain: IEEE Std 802.16-2009 says:

The 24-bit Operator ID shall be assigned as an IEEE 802.16 Operator ID by the IEEE Registration Authority.

7.1 Are there other standards or projects with a similar scope?: No

7.2 Joint Development

Is it the intent to develop this document jointly with another organization?: Yes

Organization: ITU-R

Technical Committee Name: IMT Systems

Technical Committee Number: Working Party 5D

Contact Name: Roger Marks

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Email: r.b.marks@ieee.org

8.1 Additional Explanatory Notes (Item Number and Explanation):

**P802.16M**

Submitter Email: r.b.marks@ieee.org
Type of Project: New IEEE Standard
PAR Request Date: 18-Mar-2011
PAR Approval Date:
PAR Expiration Date:
Status: Unapproved PAR, PAR for a New IEEE Standard

1.1 Project Number: P802.16M
1.2 Type of Document: Standard
1.3 Life Cycle: Full Use

2.1 Title: Standard for WirelessMAN-Advanced Air Interface for Broadband Wireless Access Systems

3.1 Working Group: Broadband Wireless Access Working Group (C/LM/WG802.16)

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Contact Information for Working Group Vice-Chair

None

3.2 Sponsoring Society and Committee: IEEE Computer Society/LAN/MAN Standards Committee (C/LM)

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Contact Information for Standards Representative

None

3.3 Joint Sponsor: IEEE Microwave Theory and Techniques Society/Standards Coordinating Committee (MTT/SCC)

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4.1 Type of Ballot: Individual

4.2 Expected Date of submission of draft to the IEEE-SA for Initial Sponsor Ballot: 09/2011

4.3 Projected Completion Date for Submittal to RevCom: 02/2012

5.1 Approximate number of people expected to be actively involved in the development of this project: 100

5.2 Scope: This standard specifies the WirelessMAN-Advanced air interface, including the medium access control layer (MAC) and physical layer (PHY), of a broadband wireless access (BWA) system supporting multiple services. The WirelessMAN-Advanced air interface supports ITU's IMT-Advanced requirements.

5.3 Is the completion of this standard dependent upon the completion of another standard: Yes

If yes please explain: Completion is co-contingent on the IEEE Std 802.16 revision project initiated in 2011. In that revision, the WirelessMAN-Advanced air interface will be split from IEEE Std 802.16 and moved to IEEE Std 802.16M.

5.4 Purpose: This standard enables rapid worldwide deployment of innovative, cost-effective, and interoperable multivendor broadband wireless access products, facilitates competition in broadband access by providing alternatives to wireline broadband access, encourages consistent worldwide spectrum allocation, and accelerates the commercialization of broadband wireless access

systems. The standard serves as a basis for IMT-Advanced recommendations within the ITU.

5.5 Need for the Project: This project will extract the WirelessMAN-Advanced air interface specification from IEEE Std 802.16 (following its introduction to the standard by the amendment 802.16m-2011), moving it to the new standalone standard IEEE Std 802.16M. Such a split will result in more practical maintenance of the two radio interfaces. It will also ease the ongoing activities of maintaining the ITU's IMT-Advanced recommendations, which reference WirelessMAN-Advanced, and the ITU's IMT-2000 recommendations, which reference the WirelessMAN-OFDMA air interface in the earlier revision of IEEE Std 802.16. To assure that WirelessMAN-Advanced remains specified by an IEEE 802 standard, the revision and this new standard are co-contingent.

5.6 Stakeholders for the Standard: ITU-R, ARIB, WiMAX Forum, vendors developing IEEE 802.16 products, carriers using IEEE 802.16 products.

Intellectual Property

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If yes please explain: IEEE Std 802.16-2009 says:

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7.1 Are there other standards or projects with a similar scope?: No

7.2 Joint Development

Is it the intent to develop this document jointly with another organization?: No

8.1 Additional Explanatory Notes (Item Number and Explanation): Sections 7.3 and 7.4 were completed using the on-line PAR form; however, the content of those sections was not included when the system generated the PAR.

Regarding 7.3, it is anticipated that the participants among the WirelessMAN-Advanced Transposing Organizations (WATO) will "transpose" this standard. In particular, IEEE has signed agreements with ARIB and TTA to do so.

Note: "WirelessMAN" is an IEEE trademark.