

IEEE P802.15
Wireless Personal Area Networks

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Date Submitted	15 September 1999, updated 28 September 1999		
Source	[Tom Siep] [Texas Instruments] 8505 Forest Lane Dallas, TX 75243 USA	Voice:	(972) 480-6786
		Fax:	(972) 480-6552
		E-mail:	siep@ti.com
Re:	Updated version of instructions to editors who will be modifying the text that was originally the Bluetooth Specification.		
Abstract	The Bluetooth Specification 1.0 was recast into IEEE 802 format using a simple cut and paste method. That first rough-cut must be further smoothed and modified to yield a readable document that also conforms to IEEE's formalisms.		
Purpose	Document the process of changing the Bluetooth Specification into IEEE 802.15.1		
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Release	The contributor acknowledges and accepts that this contribution becomes the property of IEEE and may be made publicly available by P802.15.		

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1 Introduction

This document is a set of instructions to the editors who will be modifying the text that was originally the Bluetooth Specification. The Bluetooth Specification 1.0 was recast into IEEE 802 format using a simple cut and paste method and some minor modifications. That first rough-cut must be further smoothed and modified to yield a readable document that also conforms to IEEE's formalisms.

2 Guidelines for Modifications to the text

The text as delivered to the editors is largely unmodified. Further changes to the text shall be done only for the following reasons:

1. Regularization of Requirements
2. Changes to enhance the clarity and readability of text
3. Changes required to adopt the IEEE 802 nomenclature

The technical content of the document is not to be changed. In the case where there is a question about the technical content of the text, the editors shall place a [comment in square brackets] in the flow of the text. Such comments are appropriate when/if inconsistencies, opaqueness, or errors in fact are found.

All changes to the text issued to the editors shall use the "change indication" feature of FrameMaker. The chief editor will remove those indicators only after review by the appropriate Bluetooth reviewers.

2.1 Regularization of Requirements

2.1.1 Word Usage

A major advantage of the use of formal, precise language is the ease in identification and understanding of the specific requirements of the protocol. The words "*shall*", "*should*", "*may*", and "*option*" all have specific meanings that shall be adhered to. Note that for the purposes of this discussion the significant terms are in ***bold Italics***, the standard itself shall not have these highlighting characteristics.

The word ***shall*** is used to indicate mandatory requirements strictly to be followed in order to conform to the standard and from which no deviation is permitted (***shall*** equals ***is required to***). The use of the word ***must*** is less strong and shall not be used when stating mandatory requirements; ***must*** is only used to describe unavoidable situations.

EXAMPLE: Error messages **shall** be displayed on the bottom line of the LCD. In the event of multiple errors, the display routine **must** display the most important message, as defined...

The word **should** is used to indicate that among several possibilities one is recommended as particularly suitable. It is not required that other options are mentioned or excluded others. It is also applicable where an action is not required or that a certain course of action is preferred but not necessarily required; or that (in the negative form) a certain course of action is deprecated but not prohibited (**should** equals *is recommended that*).

EXAMPLE: In the event that an unrecoverable error occurs, the User Interface routine **should** notify the operator before shutting down the unit.

The word **may** is used to indicate a course of action permissible within the limits of the standard (**may** equals *is permitted*).

EXAMPLE: The communications device **may** elect to power down for periods of time.

The word **can** is used for statements of possibility and capability, whether material, physical, or causal (**can** equals *is able to*).

EXAMPLE: The user **can** terminate the connection at any time.

2.1.2 Extraction of Requirements

Requirements are not always obvious to the reader when reading a standard. Proper word usage can help (see 2.1.1), but IEEE 802 documents use an additional method of calling out requirements. Annex A contains, by convention, the Protocol Implementation Conformance Statement (PICS) proforma in 802 Standards. The proforma is a form to be filled in by the implementers of a physical instance of the standard. The format of the PICS is a table containing questions to be answered and/or options to be indicated. It also contains a reference in the body of the Standard where the requirement for the question originates.

Creation and maintenance of the PICS is a time-consuming and error-prone task. To aid their creation, all requirements in the text shall be in separate paragraphs and formatted using the REQUIREMENT or OPTION paragraph format type.

EXAMPLE before processing:

People's time is very important, so editorial meetings need to start on time. It would be good if they stay on-topic to insure that the needed material is covered. Meetings between editors must be either to plan work, edit the document, or review changes. Meetings are on Monday, Wednesday, or Friday only.

EXAMPLE after processing:

People's time is very important, so editorial meetings shall start on time. Meetings should stay on-topic to insure that the needed material is covered. Meetings between editors shall be either to plan work, edit the document, or review changes. Meetings are on Monday, Wednesday, or Friday only.

R1 – Meetings shall start on time

O1 – Meeting types shall be: work planning; or document editing; or change review

O2 – Meeting Days shall be Monday, or Wednesday, or Friday

Note that in the above example, only requirements and their options are summarized with special paragraph types. The reason for this is that recommendations, permitted behaviors, and unavoidable consequences are not listed in the PICS. Only testable requirements belong in the PICS

Note that for the initial editing the paragraph type has not yet been created, use the paragraph type "H,HangingIndent" and place an "R" or "O" as appropriate.

2.2 Changes to enhance clarity

2.2.1 Subclause Autonomy

Existing groups of paragraphs gathered under a numbered subheading shall be maintained as an automouns unit. Distribution of such paragraphs to multiple subclauses shall be done only with the advice and consent of the chief technical editor.

2.2.2 Subheading Text

The headings used for subclauses in the original text should be preserved whenever possible. If nomenclature or structural changes dictate that subheading text is required to be changed, the original text of the heading shall be enclosed in parentheses. This convention shall be preserved during the initial Draft review process as an aid to the reviewers who are familiar with the original document.

EXAMPLE:

8.3.1 Overview of L2CAP

Would become:

8.3.1 Overview of MAC Management (Overview of L2CAP)

2.2.3 Subclause Ordering

Clauses order should correspond to the order of the original document whenever possible. There are several instances where the Bluetooth Specification distributes a function over several clauses. A good example of this is in the Key Management aspect of Security. Clauses 4.5.x, 4.7.x, and 5.2.x have definitions of various aspects of this topic and should logically be grouped together in the final document.

2.2.4 Style Changes

Portions of the Bluetooth Specification use a “conversational tone”. The document shall be made to read as if a single individual authored it. We will adopt the more formal style of a traditional standard. For example, the following passage:

For the page hopping sequence, it is important that we can easily shift the phase forward or backward, so we need a 1-1 mapping from a counter to the hop frequencies.

Becomes:

For the page hopping sequence, it is important to easily be able to shift the phase forward or backward. A one-to-one mapping from a counter to the hop frequencies is required.

It is arguable that the second paragraph is still in need of refinement, but it is now in an acceptable form.

2.2.5 Mechanical Issues

2.2.5.1 IEEE Formats

The Bluetooth document as delivered to the editors has been converted to use the IEEE FrameMaker formats. We are required to use those formats for the document.

2.2.5.2 Additional Paragraph Formats

The IEEE publishing staff will consider additional, special formats if we can justify them. Their normal inclination will be to reject such requests unless there is a compelling reason for them. If you would like to propose an additional paragraph format, please contact the chief editor.

2.2.5.3 Cross References

During the process of converting the Bluetooth Specification to IEEE format, many cross-references were left unresolved. No attempt was made to repair these breakages. Instead, all unresolved references have been replaced with the text string <<cross reference>>. Unless the referred text now happens to reside in the FrameMaker file that you are editing, leave the references as is for at least the first pass of the document.

2.3 IEEE 802 nomenclature

There are many references in the Bluetooth document to non-IEEE constructs and entities. The substitution of Bluetooth for IEEE terms is not an exact process. For example, a few references to L2CAP belong to MAC_SAP, but most belong to MLME_SAP and MLME. Changes shall be done on a case-by-case basis.

In general use the term “frames” in place of “packets” throughout the text. Also, use “PDU” where “L2CAP/Baseband PDU” are used.

Other Bluetooth-specific terms include: LMP, BaseBand, and Radio (as it applies to the subsystem).

The following Nomenclature Conventions are to be adopted:

Bluetooth node (BT_node)

Bluetooth subsystem (BT_subsystem)

Bluetooth host (BT_host).

Bluetooth physical connectivity entity (BT_PCE)

Bluetooth logical communications entity (BT_LCE)

A *Bluetooth node* (BT_node) is a communications capable device that comprises a *Bluetooth subsystem* (BT_subsystem) residing within a *Bluetooth host* (BT_host).

The BT_subsystem further comprises a *Bluetooth physical connectivity entity* (BT_PCE) (the radio and the baseband) and a *Bluetooth logical communications entity* (BT_LCE) (the L2CAP).

The BT_PCE allows BT_nodes to connect to each other and exchange data. The BT_LCE permits multiple complementary interactive entities (other communication protocols, interactive applications and services, etc.) residing outside the BT_subsystem of BT_nodes to communicate with each other. BT_PCEs exchange data over *Bluetooth (BT_PCE) links*, or simply links.

Each complementary interactive entity in BT_nodes communicate with each other over a *Bluetooth (BT_LCE) channel*, or simply channel, which is funneled within a Bluetooth link between the connected BT_nodes.

Clauses are the highest level breakdown in an IEEE document. Example: Clause 7 covers the Medium Access Control. Subclauses are lower level breakdowns in an IEEE document. Example: Subclause 7.2 covers the Medium Access Control frame formats.

3 Updates to Illustrations

Some changes may need to be made to the text of illustrations. Editors shall not make changes to illustrations. A graphic artist, who will ensure a consistent look to the illustrations, will do that. Required changes that the editors discover should be communicated to the chief editor.

A note in the text describing the change to be made is also necessary.

4 New content

4.1 Introductions

Introductory and transitional material will need to be added to the text supplied to the editors. These additional text entries should be relatively short in length and provide the reasons why the following text exists as well as relating it to other portions of the Standard.

Several clauses distributed to the editors have nothing more than the word “text” as a placeholder for explanatory material. The required content for these paragraphs is assumed to be apparent from its context. Please contact the chief editor if this is not the case.

4.2 Illustrations

Ideas for new illustrations should be communicated to the chief editor as soon as their need is realized. Sketches and or artwork will aid the graphic artist in rendering the final illustration.

4.3 SDL and ASN.1

Graphics and text from Telelogic’s SDT 3.5 editor will be used for Annexes B and C. Specifics of their inclusion have not been finalized as of this writing.