

**IEEE P802.11  
Wireless LANs**

**MAC Enhancements PAR**

**Date:** November 11, 1999

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**IEEE STANDARDS PAR FORM**

1. Sponsor Date of Request 11 November 1999

2. Assigned Project Number (confer with staff) \_\_\_\_\_

3. PAR Approval Date (leave blank) \_\_\_\_\_

4. Project Title, Copyright Agreement and Working Group Chair for This Project

Standard [for] (Document stressing the verb "SHALL."), or

Recommended Practice for (Document stressing the verb "SHOULD.") or

Guide for (Document stressing the verb "MAY.")

**TITLE:**

[ Supplement to STANDARD [for] Information Technology-Telecommunications and information exchange between systems-Local and metropolitan area networks-Specific requirements-Part 11: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) specifications: Medium Access Method (MAC) Enhancements ]

Name of Working Group (WG) : [ 802.11 ]

Name of Official Reporter (usually the WG Chair) who MUST be an SA member as well as an IEEE/Affiliate Member: [ Vic Hayes ]

Title in WG: [ Chairperson ] IEEE/SA/Affiliate Member # [ 1550144 ]

Company: [ Lucent Technologies WCND ] Telephone: [ +31 30 609 7528 ]

Address: [ Zadelstede 1-10 ] FAX: [ +31 30 609 7556 ]

3431 JZ Nieuwegein  
City/State/Zip: [ Netherlands ]

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Name of WG Chair (if different than Reporter): [ ]

IEEE/Affiliate Memb # [ ] {Required}

Company: [ ] Telephone: [ ]

Address: [ ] FAX: [ ]

City/State/Zip: [ ] EMAIL: [ ]

Name of Sponsoring Society and Committee: [ Computer Society Project 802  
LAN/MAN Standards Committee ]

Name of Sponsoring Committee Chair: [ Jim Carlo ]

Company: [ ] Telephone: [ ]

Address: [ ] FAX: [ ]

City/State/Zip: [ ] EMAIL: [ ]

**5. Describe this project: (Choose ONE from each group below)**

a. [ ] Update an existing PAR

[ ] Yes or [X] No

If YES, project number/approval date) \_\_\_\_\_

Is this in ballot now? [ ] Yes or [ ] No

b. [ ] New Standard

[ ] Yes or [ ] No

[ ] Revision of an existing standard.

[ ] Yes standard number/year \_\_\_\_\_ or [ ] No

[X] Supplement to an existing standard

[X] Yes standard number/year 802.11

or [ ] No

c. [X] Full Use (5-year life cycle)

[ ] Trial Use (2-year life cycle)

d. Fill in target completion date for submittal to  
IEEE Standards Review Committee (RevCom).

[ July 2001 ]

**6. Scope of Proposed Project (What is being done including the  
technical boundaries of the project?)**

[ Enhance the 802.11 Medium Access Control (MAC) to improve and manage Quality of Service, provide classes of service, and enhanced security and authentication mechanisms. Consider efficiency enhancements in the areas of the Distributed Coordination Function (DCF) and Point Coordination Function (PCF) ]

**7. Purpose of Proposed Project [Why is it being done,  
including the intended user(s) and benefits to that user(s)]**

[To enhance the current 802.11 MAC to expand support for applications with Quality of Service requirements. Provide improvements in security, and in the capabilities and efficiency of the protocol. These enhancements, in combination with recent improvements in PHY capabilities from 802.11a and 802.11b, will increase overall system performance, and expand the application space for 802.11 ]

**8. Sponsor (Give full name; spell out all acronyms) Society/Committee:**

[ Computer Society - LMSC ]

**9(a.1) [NO ] Are you aware of any patents relevant to this project?**

**(If YES, attach explanation, or No)**

Since a specific technology has not yet been chosen, we are currently not able to determine if any patents apply. As we select a technology, we will follow IEEE patent procedure, including issuing calls for patents.

**9(a.2) [NO ] Are you aware of any copyrights relevant to this project?**

**(If YES, attach explanation, or No)**

NO

**9(a.3) [NO ] Are you aware of any trademarks relevant to this project?**

**(If YES, attach explanation, or No)**

NO

**9b. [NO] Are you aware of any other standards or projects with a similar scope?**

**(If YES, attach explanation, or No)**

NO

**9c. [YES ] Is this standard intended to form the basis of an international standard?**

**(Yes, or if NO, attach explanation, or Do Not Know)**

YES

**9d. [NO ] Is this project intended to focus on health, safety or environmental issues?**

**(If YES, attach explanation, or No, or Do Not Know))**

NO

**10. Proposed Coordination/Recommended Method of Coordination (Coordination is accomplished in any of the following three ways:**

**Circulation of Drafts or Liaison Membership or Common Membership.)**

US TAG JTC1 SCC

(Circulation of Drafts)

**10a. Mandatory Coordination**

SCC 10 (IEEE Dictionary)

Circulation of Drafts

IEEE Staff Editorial Review

Circulation of Drafts

SCC 14 (Quantities, Units, and Letter Symbols)

Circulation of Drafts

**10b. IEEE Coordination requested by Sponsor:**

(Use additional page if necessary). If you believe your project will require a Registration Authority, please list IEEE RAC (refer to Working Guide).

[ US TAG to JTC-1 SC6

(Circulation of Drafts)]

If coordination is not required, please attach an explanation.

**10c. Additional Coordination Requested by Others. (Leave blank. This will be completed by the Standards Staff).**

**11. Submitted by: (This MUST be the Sponsor Chair or the Sponsor's Liaison Representative to the IEEE Standards Board)**

Signature of Submitter\_\_\_\_\_

Name [ Jim Carlo (802 chair) ]  
 Title [ IEEE 802 LMSC Sponsor Chair etc. ]  
 Date [ xx-xxx-1997 ]  
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## MAC Enhancements PAR

### Scope of the Project

[Enhance the 802.11 Medium Access Control (MAC) to improve and manage Quality of Service, provide classes of service, and enhanced security and authentication mechanisms. Consider efficiency enhancements in the areas of the Distributed Coordination Function (DCF) and Point Coordination Function (PCF)]

### Five Criteria

#### 1. Broad Market Potential

A standards project authorized by IEEE Project 802 shall have a broad market potential. Specifically, it shall have the potential for:

a) Broad sets of applicability.

The proposed enhancements will further broaden the applicability of the already broad 802.11 standard.

b) Multiple vendors, numerous users.

Any vendor implementing 802.11 devices will be able to incorporate these enhancements into their devices. The enhancements will naturally add a broader vendor base since more applications will be supported by the enhanced 802.11 MAC.

c) Balanced costs (LAN versus attached stations).

There are no hardware or infrastructure costs anticipated to implement these enhancements.

#### 2. Compatibility with IEEE Standard 802

IEEE Project 802 defines a family of standards. All standards shall be in conformance with 802.1 Architecture, Management and Interworking.

All LLC and MAC standards shall be compatible with ISO/IEC 10039, MAC Service Definition at the LLC/MAC boundary. With the LLC Working Group there shall be one LLC standard, including one or more LLC protocols, with a common LLC/MAC interface.

The compatibility with IEEE 802 requirements will result from the use of 802.11 MAC, which itself was developed to be compatible with those requirements.

Within a MAC Working Group there shall be one MAC standard and one or more Physical

Layer standards with a common MAC/Physical Layer interface.

Each standard in the IEEE Project 802 family of standards shall include a definition of managed objects which are compatible with OSI systems management standards.

The enhancements will fully comply with the IEEE project 802 architecture. The enhancements are a part of, and within the existing conformant 802.11 MAC standard.

### **3. Distinct Identity**

Each IEEE Project 802 standard shall have a distinct identity. To achieve this, each authorized project shall be:

a) Substantially different from other 802 Projects

There are no other projects to enhance the 802.11 MAC over the current standard.

b) One unique solution per problem (not two solutions to a problem).

This is a single, unique project targeting enhancements to the 802.11 MAC.

c) Easy for document reader to select the relevant specification.

This work will be a supplement to the existing 802.11 standard.

### **4. Technical Feasibility**

For a project to be authorized, it shall be able to show its technical feasibility. At a minimum, the proposed project shall show:

a) Demonstrated system feasibility.

Most of the enhancement concepts have been demonstrated in non-wireless implementations, and preliminary assessments do not indicate any problems transferring the enhancements into 802.11.

b) Proven technology, reasonable testing.

Demonstrations of various components of the proposed enhancements have been implemented, proving feasibility of the technology. Testing methods and metrics have been well established for the intended applications.

c) Confidence in reliability.

Sufficient technical analysis has been presented to indicate that the enhancement concepts are reliable. (See Study Group submissions)

### **5. Economic Feasibility**

For a project to be authorized, it shall be able to show economic feasibility (so far as can reasonably be estimated), for its intended applications. At a minimum, the proposed project shall

show:

a) Known cost factors, reliable data.

There is no additional cost anticipated to implement the enhancements, compared to existing hardware.

b) Reasonable cost for performance.

The cost for performance will be, as a minimum, as in 802.11a and 802.11b.

c) Consideration of installation costs.

The existing 802.11 infrastructures will support the enhancements and new applications.

