IEEE P802.11
Wireless LANs

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| Some 11ak EtherType Frame Encoding Text |
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Abstract

This document is a skeleton with a small amount of tentative text concerning Ethertype frame encoding for a P802.11ak draft based on Draft P802.11REVmc\_D2.3.

**Editor’s notes**

The editor’s notes do not form a part of this standard. They will be removed before publication. Please do not comment on editor’s notes in any ballot on the draft, as these comments would have no effect on the published standard.

***Editor’s Note: Editor’s Notes in the body of the standard appear like this. They will be removed before*** ***publication. They indicate some item of work that will be addressed prior to publication.***

***This text is based on 802.11REV-mc D2.3 and will need to be revised in light of 802.11 amendments adopted after that draft but before P802.11ak.***

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NOTE — The editing instructions contained in this amendment define how to merge the material contained therein into the existing base standard and its amendments to form the comprehensive standard.

The editing instructions are shown in ***bold italic***. Four editing instructions are used: ***change***, ***delete***, ***insert***, and ***replace***. Change is used to make corrections in existing text or tables. The editing instructions specify the location of the change and describe what is being changed by using ~~strike through~~ (to remove old material) and underscore (to add new material). ***Delete*** removes existing material. ***Insert*** adds new material without disturbing the existing material. Insertions may require renumbering. If so, renumbering instructions are given in the editing instruction. ***Replace*** is used to make changes in figures or equations by removing the existing figure or equation and replacing it with a new one. Editorial notes will not be carried over into future editions because the changes will be incorporated into the base standard.

# Overview

# Normative references

***Insert the following reference (maintaining alphabetic order):***

IEEE Std 802.1Qbz™-tbd, Virtual Bridged Local Area Networks — Amendment: Enhancements to Bridging of 802.11 Media

# Definitions, acronyms, and abbreviations

## Definitions

## Definitions specific to IEEE 802.11

***Insert the following definition (maintaining alphabetical order):***

**General link (GLK):** Communication between two stations (STAs) over the wireless medium that can be used as a link in the middle of an IEEE Std. 802.1Q conformant network.

## Abbreviations and acronyms

***Insert the following acronym definition (maintaining alphabetical order):***

GLK General Link

# General Description

## General description of the architecture

## How wireless local area networks (WLANs) are different

## Components of the IEEE Std 802.11 architecture

***Note: Something probably needs to be in Clause 4 about General Link, probably within Clause 4.3, but I haven’t figured out just what it should say or where it should go.***

### 4.3.12 STA transmission of Data frames outside the context of a BSS

Note: I am told that users of this service are anxious to save every bit they can. Thus it seems likely they sill want to use 802.11ak (Ethertype) formatted data frames.

## Logical service interfaces

## Overview of the services

## Multiple logical address spaces

## Differences among ESS, PBSS, and IBSS LANs

## Differences between ESS and MBSS LANs

## Reference model

## IEEE Std 802.11 and IEEE Std 802.1X-2010

## Generic advertisement service (GAS)

# MAC service definition

## Overview of MAC services

### Data service

Note: In 802.11, the priority for an MSPU sent by a QoS STA is encoded into the TID (TID 0 to 7) or into a TSPEC referenced by the TID (TID 8 to 15). If a frame is tagged, should the TID default to the priority in the tag with some facility for mapping or the like?

Change the first sentence of 5.1.1.2 as follows:

The QoS facility supports eight priority values, referred to as UPs . The values a UP may take are the integer values from 0 to 7 and are identical to the IEEE Std 802.1Q priority values for GLK STAs and to the IEEE Std 802.1D priority ~~tags~~ values for non-GLK STAs.

Note: Or should we just give up on 802.1D priorities above?

### Security services

### MSDU ordering

### MSDU format

Note: Further changes are expected to be required here based on new specification of LLC PDUs by 802.1.

***Change Clause 5.1.4 as follows:***

~~This standard is part of the IEEE 802 family of LAN standards, and as such~~ All GLK STA MSDUs are EtherType encoded as specified in IEEE Std 802-2001 and all non-GLK STA MSDUs are LLC PDUs as defined in ISO/IEC 8802-2: 1998. In order to achieve interoperability between non-GLK STAs and networks using EtherType encoding, implementers are recommended to apply the procedures described in ISO/IEC Technical Report 11802-5:1997(E) (previously known as IEEE Std 802.1H-1997 [B21]), along with a selective translation table (STT) that handles a few specific network protocols, with specific attention to the operations required when passing MSDUs to or from LANs or operating system components that use the Ethernet frame format. Note that such translations might be required in a STA.

### MAC data service architecture

## MAC data service specification

Note: Should Drop Eligibility be added to the service primitive interfaces?

# Layer management

# PHY service specification

# Frame formats

## Genral requirements

## MAC frame formats

## Format of individual frame types

## Management and Extension frame body components

### Fields that are not elements

### Elements

***Add the following clause as a new subsection and add the specified element to the table in 8.4.2.1:***

#### 8.4.2.X GLK Capabilities element

The presence of the GLK Capabilities element in a Beacon, Probe, Probe Response, Associate, Association Response, Re-Associate, Reassociation Reponse, Mesh Peering Open, or Mesh Peering Confirm indicates that the transmitting STA is a GLK STA (and therefore uses the EtherType encoded MSDU format) and indicates by non-zero bits in the flag octet whether or not that STA is an AP and what additional GLK capabilities it may have if any. If the STA is a GLK AP, the SSID is also provided.

Element ID Length Flags SSID

Octets: 1 1 1 0-32

 **Figure 8-tbd**

The Element ID and Length fields are defined in 8.4.2.1.

The Length field for this element holds a value between 1 and 33.

The Flag bits are as show in Figure 8-tbd+1.

GLK AP Reserved

Bits: 1 7

 **Figure 8-tbd+1**

 B0 B1 B7

The GLK AP bit indicates that the sending STA is an AP and the SSID sub-element has the same meaning as specified in clause 8.4.2.2. If the GLK AP bit is zero, then the sending STA is a non-AP GLK STA, the Length field should be 1, and the SSID sub-element shall be ignored.

### Information Subelements

### Access network query protocol (ANQP) elements

## Fields used in Management and Extension frame bodies and Control frames

## Action frame format details

## Aggregate MPDU (A-MPDU)

# MAC sublayer functional description

## Introduction

## MAC architecture

## DCF

## PCF

## Fragmentation

## Defragmentation

## Multirate support

## MSDU transmission restrictions

## HT Control field operation

## Control Wrapper operation

## A-MSDU operation

## A-MPDU operation

## PPDU duration constraintDMG A-PPCU operation

## DMG A-PPDU operation

## LDPC operation

## STBC operation

## Short GI operation

## Greenfield operation

## Operation across regulatory domains

## HCF

## Mesh coordination function (MCF)

## Block acknowledgement (block ack)

## No Acknowledgement (No Ack)

## Protection mechanisms

## MAC frame processing

## Reverse direction protocol

## PSMP Operation

## Sounding PPDUs

## Link adaptation

## Transmit beamforming

## Antenna selection (ASEL)

## Null data packet (NDP) sounding

## Mesh forwarding framework

## DMG channel access

## DMG AP or PCP clustering

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## DMG block ack with flow control

## DMG link adaptation

## DMG dynamic tone pairing (DTP)

## DMG relay operation

# MLME

# Security

# Fast BSS transition

# MLME Mesh procedures

# Frequency-Hopping spread spectrum (FHSS) PHY specification for the 2.4 GHz industrial, scientific, and medical (ISM) band

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# Extended Rat PHY (ERP) specification

# High Throughput (HT) PHY specification

# Directional multi-gigabit (DMG) PHY specification

***Insert a new top-level Clause as below.***

# General Link Principles of Operation

802.11 was originally designed with the assumption that non-AP STAs would be leaf nodes of the network. GLK STAs are extended so that a link between two GLK STAs is suitable, insofar as the basic capabilities of 802.11 wireless permit, to be used in the interior of an IEEE Std 802.1Q network.

Every STA is either a GLK STA or a non-GLK STA. Except as otherwise provide, the property of being a GLK STA is independent of what other services are offered by a STA. A GLK STA must be a QoS STA and an HT STA. GLKs advertise themselves as such and provide further information on their capabilities through the use of the GLK Capabilities Element in Beacons and other appropriate MSPDUs.

Note: Re above paragraph, perhaps only a subset of QoS and HT features are required…

A GLK AP assures that non-GLK STAs will not try to associate with it by using the wildcard SSID and advertising its actual SSID in the GLK Capaiblities Element. Should a non-GLK STA attempt to associate with a GLK AP despite this, the GLK AP will refuse the association.

Note: Re above paragraph, could a GLK AP simply omit the SSID element?

A non-AP GLK STA shall not attempt to form an infrastructure, IBSS, or PBSS association or mesh peering with any non-GLK STA.

# Annex A, Bibliography

# Annex B, Protocol Implementation Conformance Statement (PICS)

# …

# Annex P, Integration Function

***More extensive changes in Annex P will may be required.***

## P.1 Introduction

***Replace the contents of P.1 with the following:***

The purpose of this annex is to guide the implementor of a non-GLK WLAN system that includes a portal that integrates the WLAN systems with a wired LAN. This annex does not apply to GLK WLAN systems.

## P.2 Ethernet V2.0/IEEE Std 802.3 LAN integratin function

## P.3 Example

## P.4 Integration service versus bridging

# …