

PRIME: MAC Layer Reference Implementation

Introduction

This document describes the structure of the software included in PRIME reference implementation. It is composed of:

- PRIME Media Simulator.
- PRIME Virtual PHY (PHYsical) Layer.
- PRIME MAC (Media Access Control) Layer Reference Implementation.
- PRIME CS (Convergence Sublayer) for test purposes.
- PRIME Test Scripts for MAC Layer Reference testing.

PRIME software provides a reference implementation that intends to be a functional interpretation of PRIME specification.

Only the PRIME MAC Layer Reference Implementation is provided with the intention of being portable to any platform, so it has been written without using any resource from a possibly non-existent underlying operating system. Other layers do make use of these features as needed as they are considered non-portable.

Code structure

The following rules have been followed:

- All source files (.c and .h) have a comment at the beginning that show at least the following information:
 - Layer: the layer it belongs to (Media/PHY/MAC/CS/Mgmt/Test).
 - Type: Platform Independent (PI) or Platform Dependent (PD).
- Each layer is implemented by one or more threads/processes.
- The main() function of each thread/process is an infinite loop, so it can be ported to platforms with no underlying operating system.
- All the routines called from these infinite loops are non-blocking and they return execution to the main loop as soon as possible.
- Some functions need to be executed at exact times (CSMA-CA).

The code presents a layered structure, the following structure is implemented:

- Each layer is comprised of:
 - Layer kernel.
 - Interface/API (Application Programming Interface) routines with upper layer.
 - Interface/API routines with lower layer.
 - Interface/API routines to Management Plane.
- The routines that serve a general purpose are put into separate files.

The following figure describes the structure applied to the general PRIME layer code:

