

# Digital Path Networks

## *Gen3 Repeater Description*

### **Description:**

The DPN Gen 3 repeater functions as a wireless access point and relay point. It allows customers to connect directly to its omni-directional antenna while simultaneously providing a link to the main network backhaul.

It connects to the customer premise equipment (CPE) on IEEE 802.11b/g frequencies and protocol. It connects to the main network backhaul through IEEE 802.11a frequencies and protocol.

The antennas used are panel, dish, sector, or omni-directional. The ground for the system is referenced to earth from the 3<sup>rd</sup> prong of the AC mains outlet.

The Gen3 repeater is produced in a few different variants. The host processor board, radios, and antennas can be eliminated, exchanged, or configured to change the operating mode.

The Gen3 repeater consists of 3 modules. The host processor board, the Mini-PCI radio card, and the antenna(s).

### **Host Processor Board**

*Digital Path uses a dual supply of host processor boards from two separate manufactures.*

#### **Host Processor Board #1**

##### **PC Engines WRAP.1c**

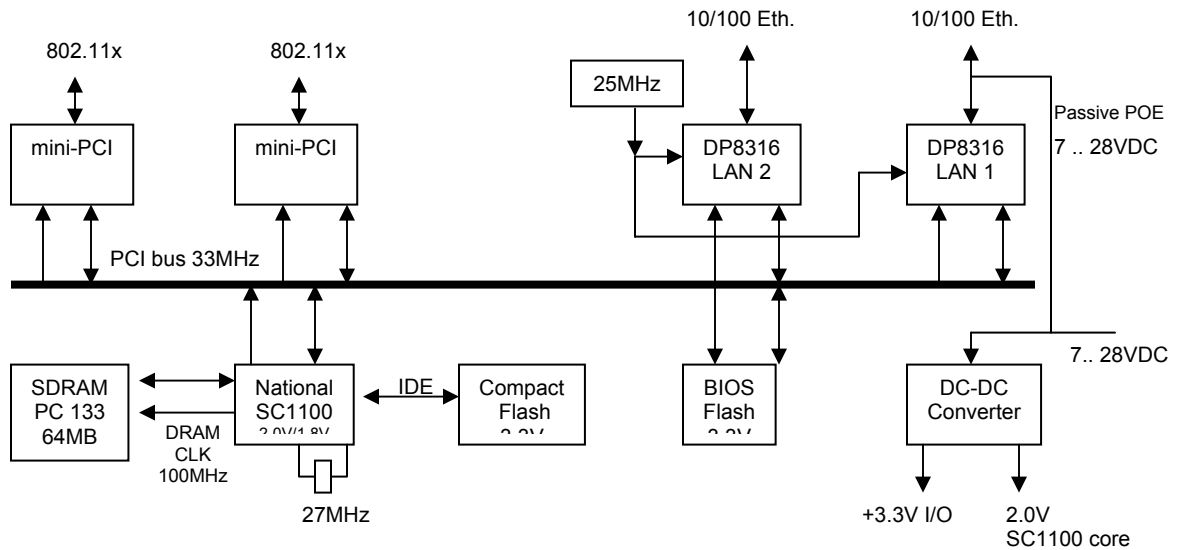
##### **Description**

WRAP is a small single board computer optimized for wireless access and network routing applications.

- National SC1100 CPU, 266 MHz 5x86 CPU, 16KB cache
- 2 Ethernet channels (National DP83816)
- 2 mini-PCI sockets for 802.11 wireless cards and other expansion
- 64 MB SDRAM, 64 bit wide for high memory bandwidth
- 128 KB flash for tinyBIOS system BIOS.
- 7 to 28V DC supply through DC jack or passive power over LAN 1 connector

· 1 serial port (DB9 male)

### Block Diagram (PC Engines WRAP.1c)



## Host Processor Board #2

### Soekris Net 4801

#### Description

The net4801 is a small single board computer optimized for wireless access and network routing applications.

National SC1100 CPU, 266 MHz 5x86 CPU, 16KB cache

3 10/100 Mbit Ethernet ports

Up to 128 Mbyte SDRAM

Compact Flash for Data storage

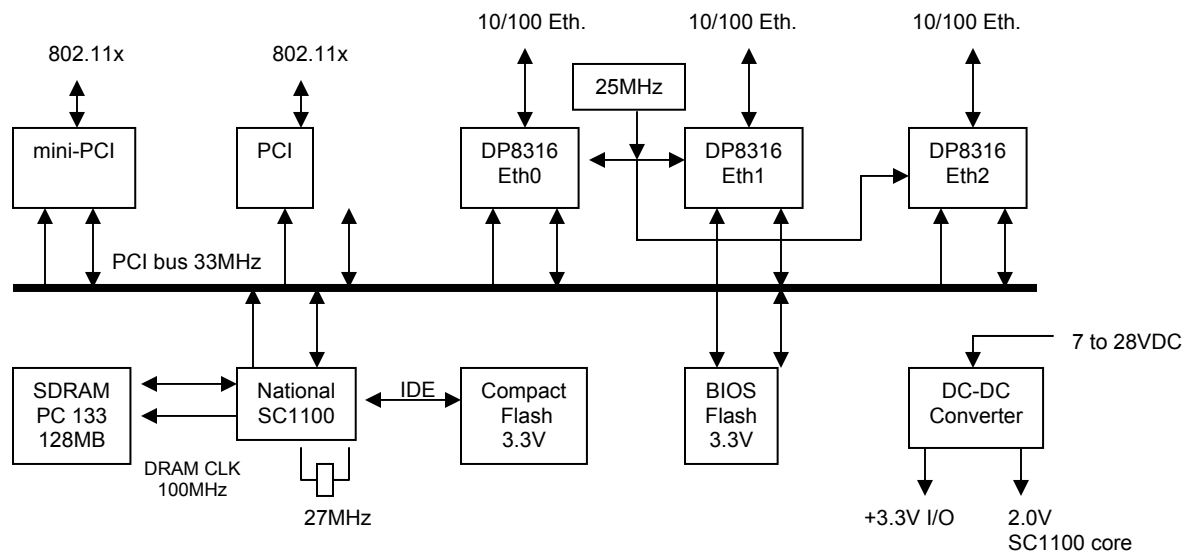
Standard 3.3V PCI expansion slot

Mini-PCI type III 3.3V expansions slot

USB 1.1 interface

7 to 28V DC supply through DC jack

## Block Diagram (Soekris net4801)



## Mini-PCI Radio Card

The mini-PCI radio card is a complete 802.11a/b/g transmitter receiver with MAC / base band processor. It interfaces with the host processor board via the PCI bus.

Digital Path uses radio cards based on two different reference designs from Atheros.

- **Atheros 5002x**
  - 5112 Radio On a Chip (ROC)
  - 5212 MAC / base band processor
- **Atheros 5004x**
  - 5112 (ROC)
  - 5213 MAC base band processor

**Block Diagram (*Atheros 5004x and 5002x chipset*)**

*See the Atheros PDF page 20, figure 1-3*

## Antenna

Each repeater has a combination of 1 or 2 antenna(s) depending on the configuration and number of radio cards present.

### 2.4GHz

#### Panel

Superpass	14.2 dBi
RF Technics	14.0 dBi

#### Omni-directional

Superpass	8.0 dBi
RF Technics	9.0 dBi

#### Sector (180 degrees)

Superpass	9.1 dBi
-----------	---------

### 5.3-5.8GHz

#### Panel

Superpass	18.0 dBi
RF Technics	18.0 dBi

#### Dish

Andrews	29.2 dBi
Pacific Wireless	26.0 dBi