

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 3rd 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

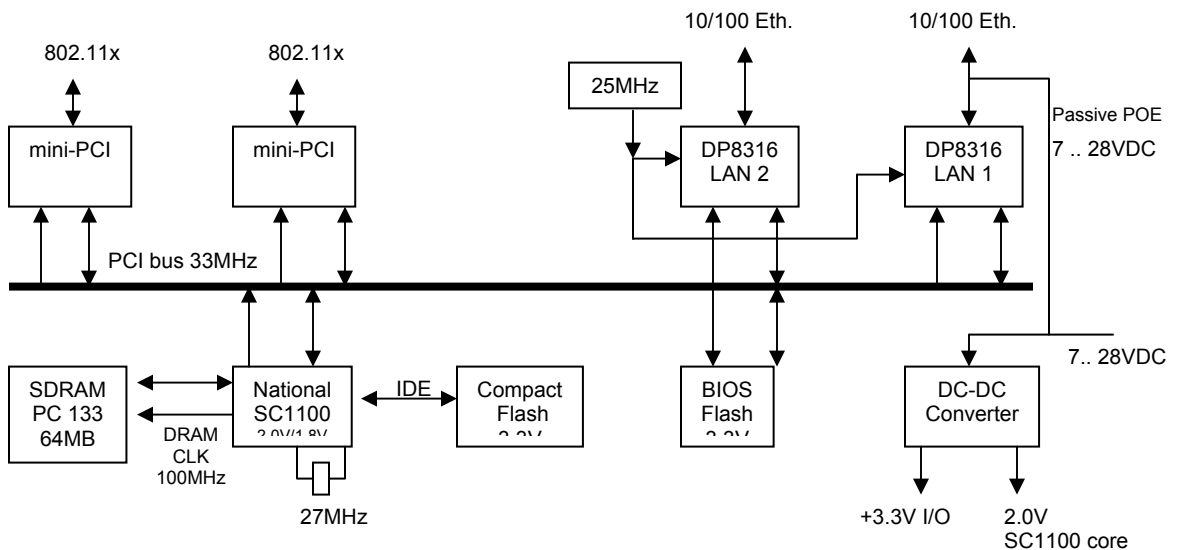
Description

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

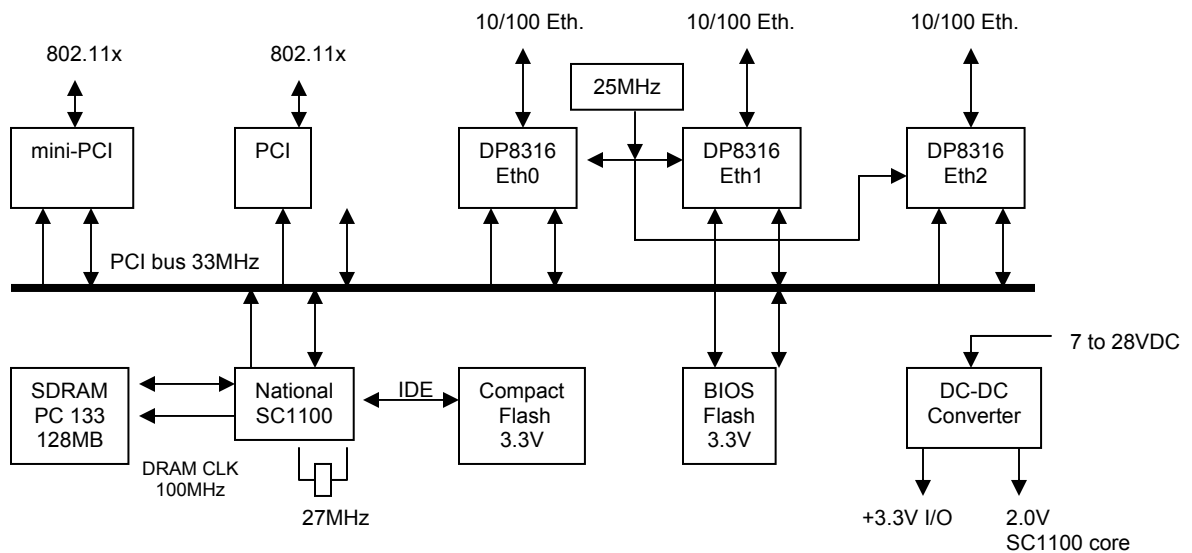
Soekris Net 4801

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
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5.3-5.8GHz

Panel

Superpass	18.0 dBi
RF Technics	18.0 dBi

Dish

Andrews	29.2 dBi
Pacific Wireless	26.0 dBi