

# Budgeting Hardware for Community Wireless Networks (Appendix)

## - - Voice and Data

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## 1. Introduction

With the aim of facilitating the hardware budgeting of Community Wireless Networks we have included a reference budget of the different subcomponents. These templates can be used as a reference. A final project proposal should identify local suppliers and market prices.

## 2. Hardware Subcomponents

### 2.1 Solar powered tower/mast

Unit	Specification	Comment	Price USD
Tower	30 m	With earthing and lightening arrestor	6000
Signal light	Solar powered	Not that the signal light must be powered with a separate solar powered system for security reasons.	1000
Solar power		For all radio equipment.	1500
Mounting		For wireless equipment	50

**TOTAL: 8550**

## 2.2 Base stations

### 2.2.1 Option A: 1 sector of 90°

Unit	Specification	Comment	Price USD
Access point	SmartBridges AirPoint NEXUS PRO TOTAL	QoS, PoE, 12dBi sectoral antenna 90°.	1500

**TOTAL: 1500**

### 2.2.2 Option B: 1 sector of 360°

Unit	Specification	Comment	Price USD
Access point	SmartBridges AirPoint NEXUS PRO TOTAL	QoS, PoE, 12dBi sectoral antenna, 90°.	1500
Antenna	Omni-directional, 12dBi		140
RF cable	C2FCP, 1m		40
Surge protection		Between antenna and base station.	20

**TOTAL: 1700**

### 2.2.3 Option C: PtP link (both sides)

Unit	Specification	Comment	Price USD
2 x Access point	SmartBridges AirClient NEXUS PRO TOTAL	QoS, PoE, 12dBi sectoral antenna, 90°.	1000
2 x Antenna	Parabolic, 25 dBi	For PtP links	300
2 x RF cable	C2FCP, 1m		80
2 x Surge protection		Between antenna and base station.	40

**TOTAL: 1420**

## 2.3 Customer Premises Equipment (CPE)

### 2.3.1 Option A: Indoor (low budget)

Unit	Specification	Comment	Price USD
Access point	Compex WP54G, indoor	Needs to be placed indoors.	100
RF cable	Low loss, 7m		50
Antenna	Panel, sectoral 65°, 9 dBi		50
Surge protection		Between antenna and base station.	20
UPS			250
Network switch			50

**TOTAL: 250**

### 2.3.2 Option B: Outdoor unit (medium budget)

Unit	Specification	Comment	Price USD
Access point	Compex WPP54AG, outdoor	PoE, 8,5 dBi, outdoor casing	300
Mounting	Galvanized steel, 50mm $\Phi$ , 5m	Pole, brackets	50
UPS			250
Network switch			50

**TOTAL: 650**

### 2.3.3 Option C: Backbone (high budget)

Unit	Specification	Comment	Price USD
Access point	SmartBridges AirClient NEXUS PRO TOTAL	PoE, 17 dBi, outdoor casing	500
Mounting	Galvanized steel, 50mm $\Phi$ , 5m	Pole, brackets	50
UPS			250
Network switch			50

**TOTAL: 850**

## 2.4 VoIP WiFi

These components are add-ons to the Customer Premises Equipment (CPE) kits. Each of the options assumes that there is a CPE installed.

### 2.4.1 Option A: VoIP mobility

A VoIP handset with support for WiFi. This option offers mobility to the user within the WiFi cell of the base station. Mobility between cells is also possible if they do operate inside of the same service set. DECT client

Unit	Specification	Comment	Price
WiFi VoIP Handset			250

**TOTAL: 250**

### 2.4.2 Option B: Wireless Local Loop (WLL) and VoIP (1)

A fix VoIP phone connected to a WiFi wireless client. This option offers WLL but no mobility. A WLL based solution that has line-of-sight between the central station and the clients can provide a coverage of several kilometres.

Unit	Specification	Comment	Price
VoIP Fix Phone			80
WiFi wireless client		Included in any option for CPE	0
RF cabling, antennas		Included in any option for CPE	0

**TOTAL: 80**

### 2.4.3 Option C: Wireless Local Loop (WLL) and VoIP (2)

An analogue handset connected via an analogue telephone adapter (ATA) to a WiFi wireless client. This option offers WLL but no mobility.

Unit	Specification	Comment	Price
Analogue phone			40
ATA			60
WiFi wireless client		Included in any option for CPE	0

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Unit	Specification	Comment	Price
RF cabling, antennas		Included in any option for CPE	0

**TOTAL: 100**

## 2.5 VoIP DECT

### 2.5.1 DECT handset

Unit	Specification	Comment	Price
DECT GAP handset	GAP Support		100

**TOTAL: 100**

### 2.5.2 DECT base station

Unit	Specification	Comment	Price
DECT base station			400

**TOTAL: 400**

## 2.6 PBX

### 2.6.1 PBX with PSTN gateway

Unit	Specification	Comment	Price
PBX + TDM400P	Asterisk	+ Traffic fees	2500

**TOTAL: 2500**

### 2.6.2 PBX with GSM gateway

Unit	Specification	Comment	Price
PBX + GSM ATA/PCI		+ Traffic fees	3500

**TOTAL: 3500**

### 2.6.3 PBX with Internet VoIP Gateway

Unit	Specification	Comment	Price
PBX	Internet Connectivity	+ Monthly fees	1500

**TOTAL: 1500**