



EnCOVER VE™ Dual-Band Instant Coverage Solution User Manual

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Preface Material

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NOTE: Keep all packing material until you have completed the inspection

Safety Warnings

To comply with FCC RF exposure compliance requirement, adhere to the following warnings:

Warning! The Access Pod with its built-in antenna must be installed with a separation distance of at least 20cm from all persons and must not be located in conjunction with any other antenna.

Warning! The outside antenna must be installed with a separation of at least 20cm from all persons and must not be located in conjunction with any other antenna.

Warning! Use of this Access Pod with antennas other than those illustrated could be hazardous. Before using other antennas, contact Mobileaccess Support.

Approved Antennas for use with the EnCOVER VE™ Solution

The gain of external antennas connected to the VAPs should not exceed 10 dBi.

Compliance with RF Safety Requirements

MobileAccess™ products have no inherent significant RF radiation.

The RF level on the down link is very low at the downlink ports. Therefore, there is no dangerous RF radiation when the antenna is not connected.

Certification and Compliance to Standards

Category		Standards
Safety:		IEC 60950-1: 2003; UL-60950-1:2003; CAN/CSA – C22.2 No 60950-1-03
EMC:		EN 301489-8 V1.2.1:2002; EN 301489-1 V1.5.1:2004; EN 61000 V4.6:2005 EN 55022 V4.2:2001 / FCC Part 15; VCCI Class A for VCU and Class B for VAP
Radio:	GSM/DCS -	EN-301502 V8.1.2: 2001; EN-301908 v3.2.1:2006; EN 300 609-4 V8.02:2000
	CELL/PCS -	FCC Part 24
	UMTS -	EN 301 908-11
SAR Body Testing		EN 50385 & FCC OET65C:2001

MTBF

Product	MTBF (Hours)	MTBF (Years)	Temperature
EnCOVER VE™ Control Unit	262,800	30	50 deg C 122 deg F
EnCOVER VE™ Access Pod	262,800	30	40 deg C 104 deg F

About This Guide

This guide provides essential product functionality with all the information necessary for proper installation and configuration of the EnCOVER VE™ system.

List of Acronyms

Abbreviation	Description
DB	Dual Band
PoE	Power Over Ethernet
PSE	Power Sourcing Equipment
SME	Small / Medium Enterprise
STP	Shielded Twisted Pair
UTP	Unshielded Twisted Pair
VAP	EnCOVER VE™ Access Pod
VCU	EnCOVER VE™ Control Unit
UMTS	Universal Mobile Telecommunications System
EGSM	Extended Global System for Mobile communications
PCS	Personal Communications Service
DCS	Digital Cellular System

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1 Overview

MobileAccess EnCOVER VE™ Dual-Band solution provides enhanced, cost effective in-building dual-band coverage for small to large-sized enterprises. This solution is quickly and simply deployed using the existing Ethernet cabling infrastructure to provide instant coverage without requiring the installation of new cables.

The EnCOVER VE™ solution distributes two types of services to EnCOVER VE™ Access Pods (VAPs) installed throughout the enterprise: wireless services from the service provider's equipment and Ethernet services from the corporate LAN. The Access Pods distribute the wireless services via integrated internal antennas, and provide Ethernet connectivity to the LAN terminals. (Optionally, external antennas can be connected to the Access Pods for additional coverage optimization).

The VAPs are distributed on each floor and plug into standard Ethernet jacks already installed at the enterprise site. They are powered via PoE technology and managed via an EnCOVER VE™ Control Unit (VCU) located in the floor's communication shaft. For site coverage that requires more than one VCU (each VCU supports up to 12 VAPs), several VCUs (up to 12) can be aggregated under a single VCU serving as Master. The Master VCU provides the interface to the capacity source, the service provider's equipment and for management of all units.

This enhanced Dual Band coverage solution can be easily and quickly installed (in less than a few hours) with minimal disturbance to the enterprise (as no installation of additional cables is required).

Currently, the VE™ Dual-Band system is available for the following band combinations:

- EGSM-UMTS
- CELL-PCS
- DCS-UMTS

The following figures illustrate single-tier and multi-tier EnCOVER VE™ installations.

In a single-tier installation, the VCU is connected to the service provider's equipment and to the Ethernet switch and distributes Ethernet and mobile services to up to 12 VAPs distributed over one more adjacent floors.

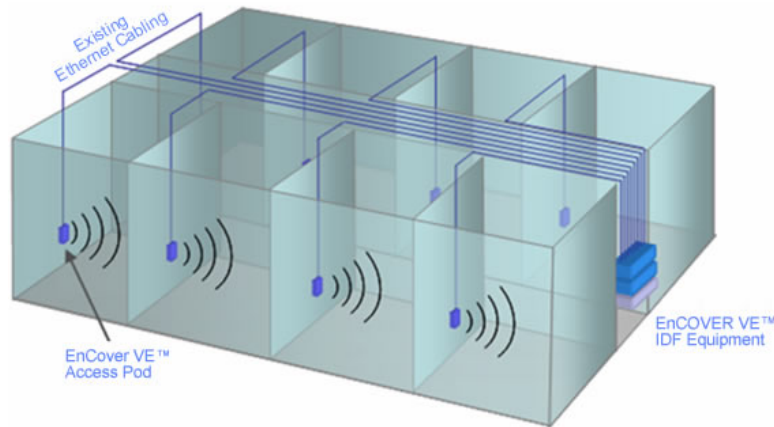


Figure 1. Single Tier VE™ Installation

Multi-tier installation includes the Master VCU that supports up to twelve Slave VCUs. In this type of installation the provider's services are fed to the Master VCU through which the Slave VCUs are controlled and managed.

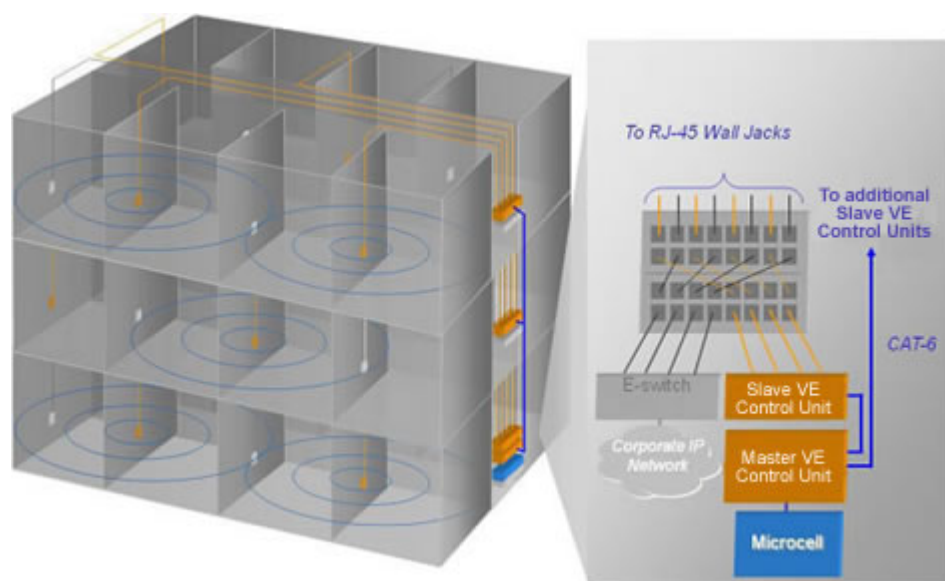


Figure 2. Multi Tier VE™ Installation

1.1 System Architecture

Main elements - The EnCOVER VE™ solution is based on the following main elements:

- **VE™ Control Unit (VCU)** – Control Unit that can serve either as a Master or a Slave and interfaces the other VCUs or VAPs accordingly. The physical connection determines whether the VCU is identified as a Master or Slave VCU unit. If a connection is detected at the RF source the VCU will be identified as a Master.
 - **Master VE™ Control Unit (Master VCU)** – installed in the main communication (IDF) closet, interfaces to the service provider's RF equipment and provides secure, central management to (up to twelve) VCUs and all connected VAPs.
 - **Slave VE™ Control Unit (Slave VCU)** – installed telco/IDF closet. Used to expand coverage to additional floors. Each VCU interfaces to the Master VCU and up to 12 VAPs and 12 Ethernet connections.

The Slave VCUs distribute wireless service signals to each VAP along with PoE and (where relevant) Ethernet signals from the Ethernet switch, throughout the existing CAT-5e infrastructure.

The Slave VCUs are connected to the Master VCU using CAT-6 or 7 cables.

- **VAP (EnCOVER VE™ Access Pod)** – These are pluggable antennas distributed at strategic locations on the floor to provide maximum coverage. VAPs provide RF coverage via integrated, internal antennas. VAPs equipped with an interface for external antennas are available for special coverage requirements.

Up to 12 VAPs can be connected to a single VCU using LAN cables (CAT-5e or higher).

Note: The system supports up to 12 VAPs per VCU, where in Master Slave configurations up to 144 VAPs can be installed (12 VAPs x 12 VCUs).

The following figure shows the Dual Band EnCOVER VE™ solution architecture (multi-tier).

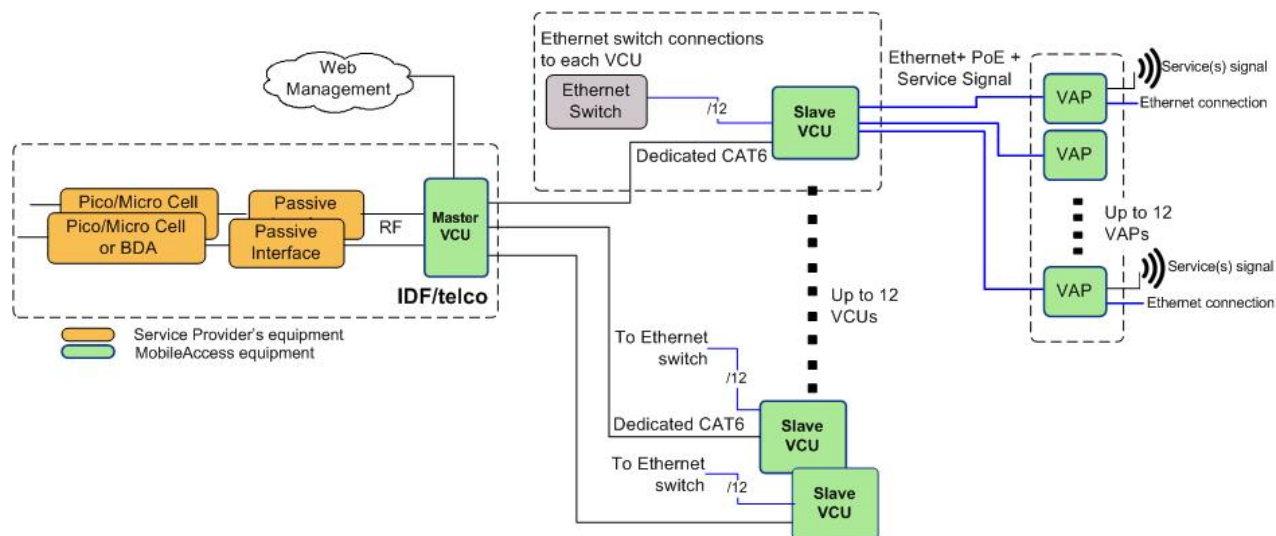


Figure 3. EnCOVER VE™ Multi-Tier Basic Architecture

The Master VCU distributes the wireless services from the service provider's equipment to the Slave VCUs. At the Slave VCUs, the wireless services are converged with Ethernet service and routed to the VAPs via the Ethernet LAN CAT-5e/6 cabling infrastructure.

The VAPs distribute the wireless services via integrated internal antennas or external antennas (optional VAP models) and provide Ethernet connectivity to the LAN terminals.

1.2 System Elements

This chapter describes the interfaces of the EnCOVER VE™ Control Units and Access Pods.

1.2.1 EnCOVER VE™ Control Unit (VCU)

Capabilities and interfaces

The EnCOVER VE™ Control Unit can operate as a Master VCU, managing up to 12 VCUs **OR** as a Slave VCU connected to up to 12 VAPs.

While operating as a Master VCU:

- Interfaces to RF source(s) and to VCUs
- Converges Wireless services and distribution to Slave VCUs
- Slave VCUs and VAP management and control – Locally
- Remote management

While operating as a Slave VCU:

- Interfaces to Master VCU
- Converges Wireless services, Ethernet and PoE and interfaces to VAPs
- Connected VAPs management and control

1.2.1.1 VCU Front Panel

The front panel supports the interfaces to the wireless services (two services – corresponding to the two supported bands) and includes the VAP interfaces (that can also serve as Slave VCU interfaces in Master/Slave VCU configuration). The front panel also interfaces to the Ethernet switch, includes two connectors for receiving the wireless services from the Master VCU and the management interface. Control and management interfaces.

The following provides the front panel ports.

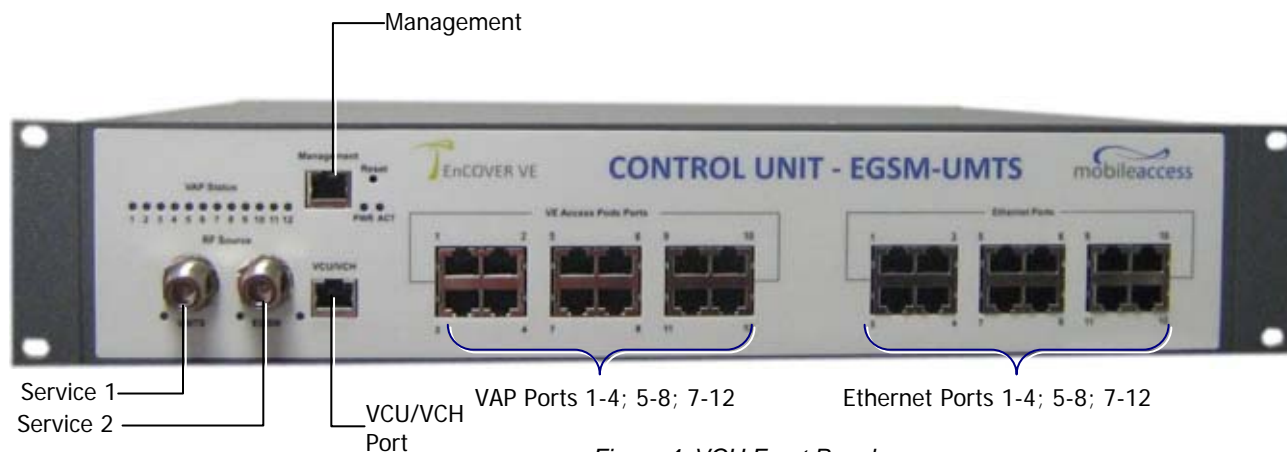


Figure 4. VCU Front Panel

Table 1: VCU Ports Description

Ports	Description
Service1 Service2	RF connections (two wireless services) to the service provider RF equipment (e.g. picocells). Coax cables. <ul style="list-style-type: none"> • EGSM-UMTS: Service 1 - UMTS, Service 2 - EGSM • CELL-PCS: Service 1 - PCS, Service 2 – CELL • DCS-UMTS: Service 1 – UMTS, Service 2 - DCS
Management	RJ45 WEB management connection.
VE Access Pod Ports 1-4; 5-8; 7-12	VAP/VCU port connections (depending on whether the unit is functioning as a VCU or Master VCU). RJ-45 connection to VAP/VCU through the LAN infrastructure. CAT-5e/6 cables.
Ethernet Ports 1-4; 5-8; 7-12	Ethernet port connections to Ethernet Switch. Ethernet cables.
VCU/VCH	Used for connecting a Slave VCU to the Master VCU in a multi-tier deployment
Reset	N/A

The following provides a description of the front panel LEDs.

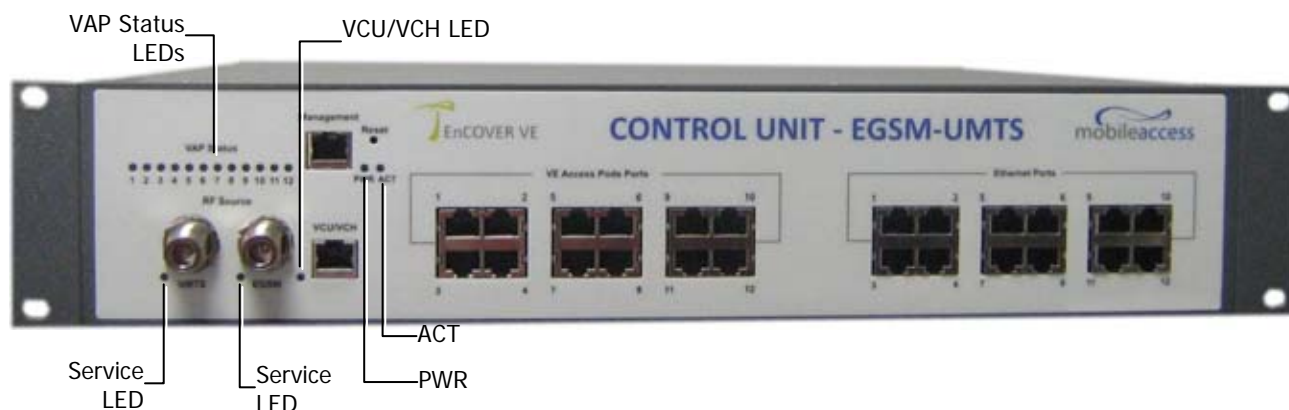


Table 2: VCU LEDs Description

LED	Description
PWR	Indicates whether the VCU receives power: Green - Power OK Disabled - No power received by VCU
ACT	VCU activity LED: Solid Green – during initialization Blinking Green – normal system operation Solid Orange – VCU is faulty Fast Blinking Green – User activated <i>VCU Identify</i> on this VCU
VAP Status (one LED per port)	Indicates the status of the connected unit (VAP or VCU) Disabled – no power supplied to corresponding unit Blinking Green - associated unit is initializing Solid Green - associated unit is in normal operation Solid Orange - associated unit is faulty, or connected unit is not managed (due to mismatch type, VoIP phone, VCU connected to a slave VCU etc.) Fast Blinking Green – User invoked “identify” command on the corresponding unit Off – when there is no VAP or VCU connected to this port.
RF (one LED per Service)	Indicates the status of connected RF capacity source: Green – Relevant only when VCU is the Master and indicates normal RF level Orange - Relevant only when VCU is the Master and indicates that the RF level is either too low or too high, or that the service has been turned off by the user. Off - When VCU is a slave unit
VCU/VCH	Indicates the status of the connection to the Master VCU: Off – when in Master mode Blinking Green – During Attachment process with upper VCU Master Solid green - when in Slave (IF-IF) mode and adjustment alarm is clear

1.2.1.2 VCU Rear Panel

The rear panel includes the power input, the AUX alarms and service personnel connections.

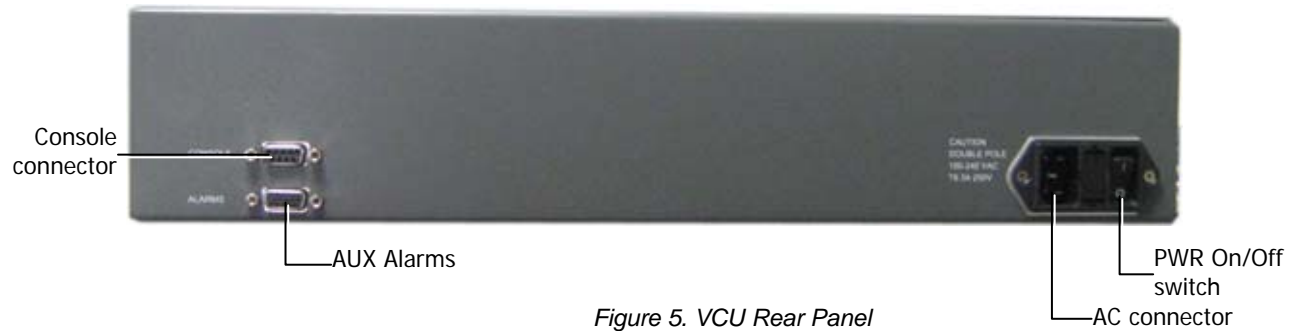


Figure 5. VCU Rear Panel

Table 3: VCU Rear Panel Description

Connector	Description
Console	RS232 local connection for service personnel
Alarms	AUX alarms connections - see 4.2
Power Input	Standard 3-pins AC power connector equipped with an ON/OFF switch. 90-264V AC, 47-63 Hz AC; 350W power consumption maximum.

1.3 EnCOVER VE™ Access Pod (VAP)

Each VAP provides the following functions:

- Antenna – distributes the wireless services signals. The antenna is internal, where an external (optional) antenna can also be connected (in models supporting external antenna).
- Connection to Ethernet port – relevant when connected to jacks that provide an Ethernet connection to a user terminal.

The VAP can be mounted/hung on the wall or placed on a flat surface (such as a desk).

The following figure shows the desktop VAP and the underside view with the CAT-5e/6 patch-cord cable.



Figure 6. EnCOVER VE™ Access Pod-Front



Figure 7. EnCOVER VE™ Access Pod-Rear

Figure 8: VAP LEDs

LED	Description
Power	Solid Green - Power supplied to VAP Off - No power supplied to VAP
Activity	Disabled - No power supplied to VAP or faulty VAP Blinking Blue - Power on, VAP is initializing or in a fault condition Solid Blue - Power on, RF signal received, unit operating Fast Blinking Blue - User invoked "identify" command on corresponding VAP

1.3.1 VAP Types

Two types of VAPs are available:

- VAP with internal antenna
- VAP with connector that interfaces to external antenna (for special coverage requirements)

The antenna type (internal or external) is automatically detected by the system so there is no need for specific configuration. Each VAP can only transmit through the provided antenna option. For example, if the VAP includes an external antenna connector the signal is only transmitted via the external antenna connector.

1.3.2 System Monitoring and Management

The EnCOVER VE™ system (Master VCU, Slave VCUs and VAPs) is centrally managed via a single Web connection to the Master VCU.

The basic screen in the GUI is the monitor tab which enables the user to view the system topology and setup parameters, the Control Units and all of the Access Pods that are connected to the Control Units.

Note: When locally connecting to a specific VCU, only the VAPs connected to this VCU can be monitored.

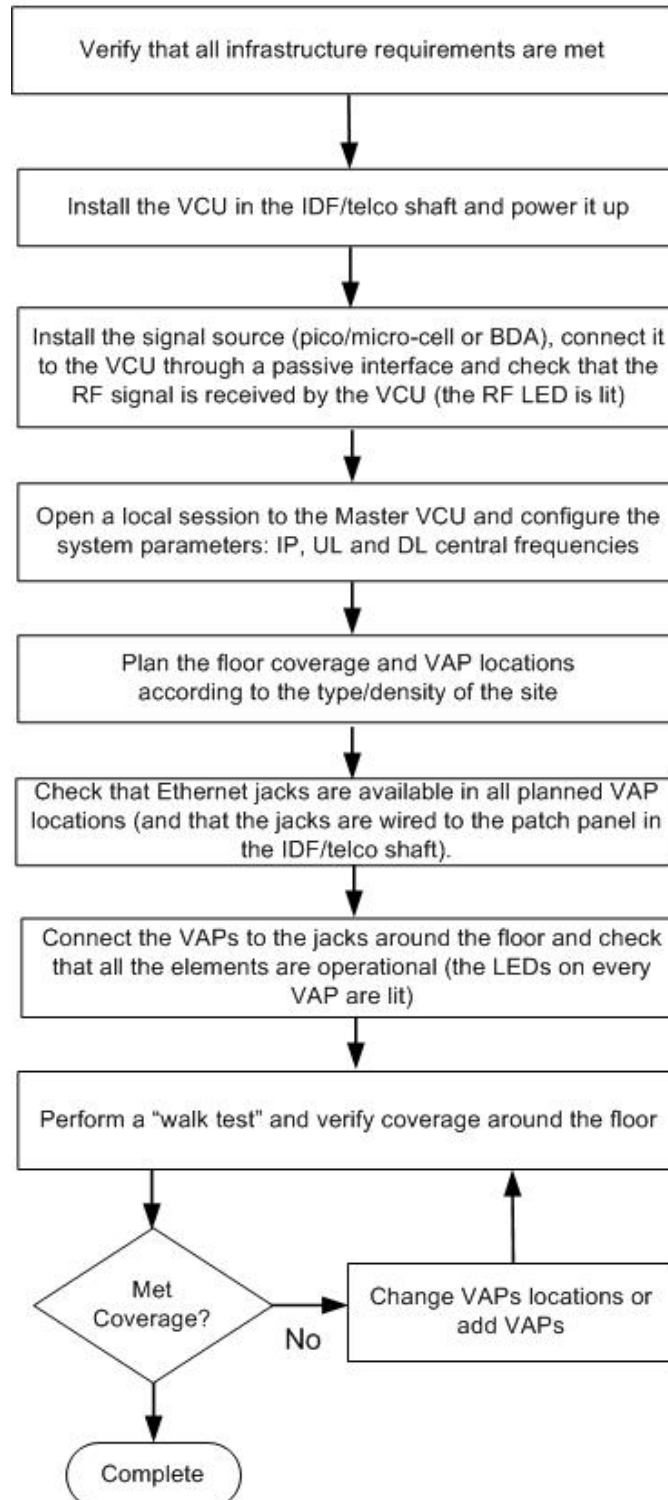
1.3.2.1 **Integration with an External Fault Management System**

The EnCOVER VE™ system can be seamlessly integrated into any existing Fault Management (FM) system that supports SNMP events. The Master VCU generates SNMP event for each relevant system alarm and forwards this trap to the pre-configured IP address of the external Fault Management system.

2 Installation Workflow

The following figure summarizes the main steps of the installation procedure:

Installation Workflow



3 Infrastructure Requirements and Layout Planning

3.1 General information on Location and Connections

- **Service provider's RF equipment** - Macro-cell, Micro-cell, Pico-cell, Femto-cell, BDA, etc. connects to the VCU through a passive interface.
- **VCUs:**
 - **Master VCU** installed at the main IDF/telco cabinet and connected to all VCUs.
 - **Slave VCUs** installed at the IDF/telco cabinet of each covered floor and connected to the cabling patch panel.
- **Wireless service signal from Master VCU to VCUs** – routed through dedicated Ethernet CAT-6 or 7 cabling.
- **Wireless service signal from VCUs to the VAPs** – routed through existing Ethernet CAT-5e/6 cabling infrastructure.
- **VAP location and mounting** - wall-mounting or desk-mounting. Connection to existing Ethernet jack (and external antenna if required).
- **VAP power source** - No power connections required. VAPs are power fed from VCU using PoE (Power over Ethernet) technology.

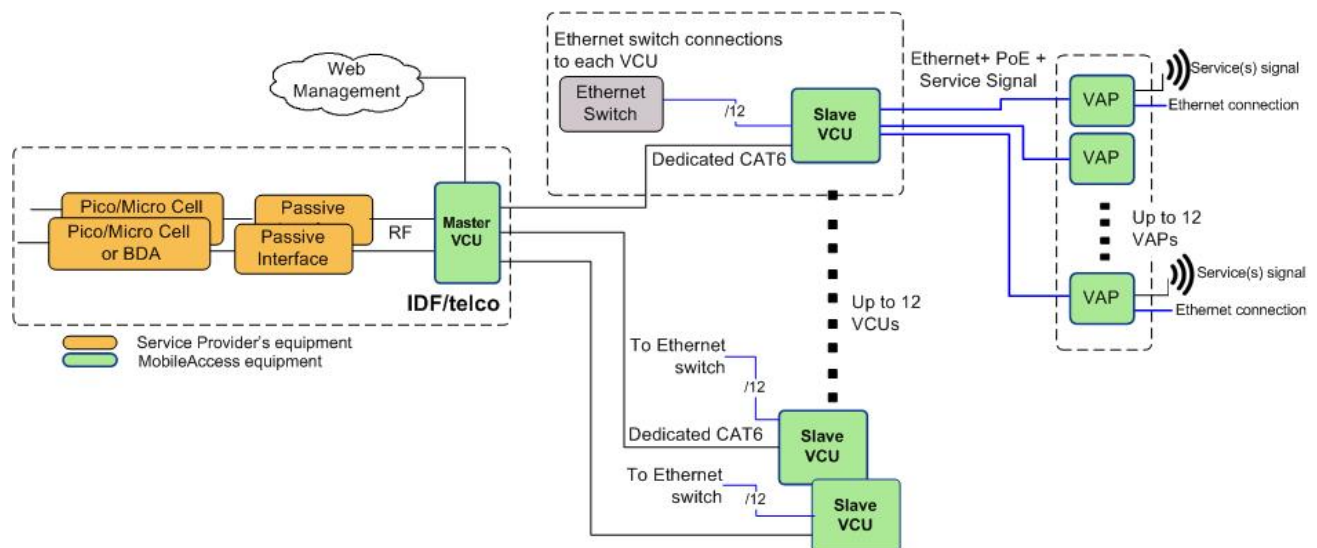


Figure 9. EnCOVER VE™ Multi-Tier Basic Architecture

3.2 Infrastructure Requirements

1. IDF/Telco closet space for one or more VCUs depending on the number and locations of the installed VCUs: (48.3 x 51.3 x 8.88 cm) per VCU.

Note: When planning the IDF/telco shaft, take the RF equipment (pico-cell/micro-cell or BDA) and the VCU in to consideration.

2. 350 Watts of AC power to the VCU IDF/Telco closet.
3. Building infrastructure:
 - Category 5e or CAT-6 cabling, Unshielded or Shielded Twisted Pair (UTP/STP)
 - 24 AWG minimum diameter for CAT-5e cabling
 - Dedicated CAT-6/7 STP cable from Master VCU to Slave VCUs with run lengths NOT exceeding 100m (300ft).
 - CAT-5e/6 UTP or STP cable from VCU to each VAP with run lengths NOT exceeding 100m (300ft). VAPs can be connected over existing CAT-5e/6 cabling infrastructure and existing Ethernet jacks without affecting the LAN.
4. Master VCU Cable Connections:
 - 2 x N-type female, 50 ohm interfaces to carrier equipment
 - Up to 6 x RJ-45 interfaces to VCUs
 - 1 x RJ-45 interface to Management
 - 1 x D-Type 9 pins RS-232 interface for local craft
 - 1 x D-Type 15 pins interface for External Alarms (dry contacts)
5. Slave VCU Cable Connections
 - 1 x RJ-45 interface to Master VCU (not used in small single tier deployments)
 - 12 x RJ-45 interfaces to VAPs
 - 12 x RJ-45 interfaces to Ethernet Switch for LAN service "bridging"
 - 1 x D-Type 9 pins RS-232 interface for local craft

3.3 Coverage and Installation Planning

Note: The following section provides the information required for planning the VAP installation on a single floor. In a multi-tier installation, this procedure is performed for each floor separately.

The maximal coverage area of each VAP is affected by the density and type of environment to be covered. Therefore, it is recommended to determine the location in two phases:

- Plan the *ideal* location of each VAP in order to achieve complete coverage of the floor and then
- Select *exact* location according to the location feasibility, where each VAP unit may be mounted on a wall or placed on a desk and an option for an external antenna is available (for specific VAP models).

The supplied services (wireless only or Ethernet and wireless) depend on the jack to which the VAP is connected:

- If the jack supports an active Ethernet connection – the VAP will distribute LAN traffic along with the wireless service. For more information see section 4.3.1.
- If the jack is not currently active (not connected to an Ethernet switch) - the VAP will distribute only the wireless services.

This section provides information on coverage criteria in various types of environments (Open, Standard, Dense and Merged) and provides rules-of-thumb for various installations of the VAPs.

Note: Section 3.4 provides a detailed example of installation planning in various types of environment. It is recommended to review this example after reading this section.

3.3.1 Types of Environments

This section describes the different types of installation environments and provides guide lines for best coverage of each type of space.

The coverage guidelines in this section are conservative “rule of thumb” estimates of RF coverage per VAP, meant to be used in scenarios in which detailed designs are not performed. When the coverage layout is designed, the coverage per VAP is expected to increase by up to 33%. Coverage estimates in this section assume 25% overlap between the coverage areas of neighboring VAPs to ensure robust, full coverage throughout the enterprise with no “dead zones”.

The coverage guidelines in the following tables are provided for the *higher* frequency bands (UMTS & PCS). The lower frequency bands (DCS, EGSM & CELL) are omitted from the tables since coverage in these bands will be better than that of the higher frequency bands. The coverage of a dual-band system will be determined by the higher frequency band (i.e. PCS for CELL/PCS and UMTS for EGSM/UMTS and DCS/UMTS).

3.3.1.1 Open environment

An environment with minimum of obstacles (such as walls). This type of space can be a large conference or meeting room, cubical areas, lobby or atrium areas.

Table 4: Open Environment Installation Distances

Band and Technology	PCS (CDMA or GSM)	PCS (WCDMA)	UMTS (WCDMA)
Downlink Frequency	1900 MHz	1900 MHz	2100 MHz
Signal Propagation from VAP	90 feet (27 m)	83 feet (25 m)	67 feet (21 m)
Recommend spacing between VAPs	180 feet (54 m)	166 feet (50 m)	134 feet (42 m)
Recommended maximum distance of VAPs from outer walls	90 feet (27 m)	83 feet (25 m)	67 feet (21 m)
Coverage Area per VAP	25,425 sqft (2,362 sqm)	21,375 sqft (1,986 sqm)	14,250 sqft (1,324 sqm)

3.3.1.2 Standard Environment

A traditional office environment with offices, hallways and scattered cubicles.

Table 5: Standard Environment Installation Distances

Band and Technology	PCS (CDMA or GSM)	PCS (WCDMA)	UMTS (WCDMA)
Downlink Frequency	1900 MHz	1900 MHz	2100 MHz
Signal Propagation from VAP	67 feet (21 m)	64 feet (19 m)	58 feet (18 m)
Recommend spacing between VAPs	134 feet (42 m)	128 feet (38 m)	116 feet (36 m)
Recommended maximum distance of VAPs from outer walls	67 feet (21 m)	64 feet (19 m)	58 feet (18 m)
Coverage Area per VAP	14,250 sqft (1,320 sqm)	12,750 sqft (1,185 sqm)	10,425 sqft (969 sqm)

3.3.1.3 **Dense Environment:**

A dense environment consists of a relatively large amount of walls, offices, equipment, tall file cabinets, bookshelves and other items that could potentially impact the wireless signal.

Examples for this type of environment are dense offices, hospitals and manufacturing spaces.

Table 6: Standard Environment Installation Distances

Band and Technology	PCS (CDMA or GSM)	PCS (WCDMA)	UMTS (WCDMA)
Downlink Frequency	1900 MHz	1900 MHz	2100 MHz
Signal Propagation from VAP	64 feet (19 m)	60 feet (18 m)	45 feet (14 m)
Recommend spacing between VAPs	128 feet (38 m)	120 feet (36 m)	90 feet (28 m)
Recommended maximum distance of VAPs from outer walls	64 feet (19 m)	60 feet (18 m)	45 feet (14 m)
Coverage Area per VAP	12,750 sqft (1,185 sqm)	11,250 sqft (1,045 sqm)	6,300 sqft (585 sqm)

3.3.1.4 **Combination of Environments**

In areas with combinations of environments of various densities, place the VAPs on the border between the different types of areas – closer to the denser area.

For example, in a cubical area with the outside wall having offices, simply locate the VAPs a little *closer to the outside offices* to provide coverage through the office walls. (See VAPs 11 and 13 in the floor plan map in section 3.4.3.)

To ensure maximal coverage, VAPs can be re-located or added. If a coverage gap is detected, the VAPs can be re-located until the coverage gaps are filled.

3.4 Planning VAP Layout

The following section describes the steps of planning the VAPs along the covered floor. At the end of this section an example of a planning map is provided.

Note: It is highly recommended to use a floor plan when planning the VAPs locations.

3.4.1 RF Coverage Factors

It is important to note the type of factors that can severely impact RF coverage which should be avoided:

- **Metallic structures** such as elevators, high file cabinets and some moveable metallic partitions severely degrade RF signal and all efforts should be made to locate VAPs in front of or above metallic objects (desks, filing cabinets) to allow the signal to propagate.
- **Wall materials** such as concrete, tile and cinderblock along with bathroom fixtures typically have fairly high signal attenuation and should be considered as dense spaces.

- **Types of glass** (typically exterior or mirrored) that have metallic coatings on it which can affect RF coverage, however that is typically not encountered inside a building.

3.4.2 Mapping Locations

To map the VAP Locations

1. Map out the available Ethernet jack locations: mark all the CAT-5e/6 drops locations on the floor plan map.

TIP: The size and number of the ceiling tiles can be used to measure distances.

2. Using the floor plan and the VAPs coverage guidelines (as given in section 3.4.3) mark approximately where you would like to place each VAP in the facility.

VAPs may be added (or removed) at anytime for optimal coverage.

3. For each jack to be used for connecting a VAP, check if the jack is already connected to the Ethernet switch (via the patch panel). Record the connections for each jack, for reference.
4. Connect the Ethernet cables corresponding to the selected jacks as follows according to section 4.3.1.
5. It is also recommended to check the area in which the VAPs are to be installed and make sure that the installation is feasible.

3.4.3 Optional Directional Antennas

Each VAP has an integrated internal antenna that provides isotropic radiation. To prevent interference and improve coverage, you may connect directional antennas to VAPs (ordered with the external antenna option) installed near outer walls (the VAP antenna parameter must be set accordingly via the Web GUI – see 6.3.6.2).

3.4.4 Installation Plan Example

The Following figure shows a floor plan map with all required marks:

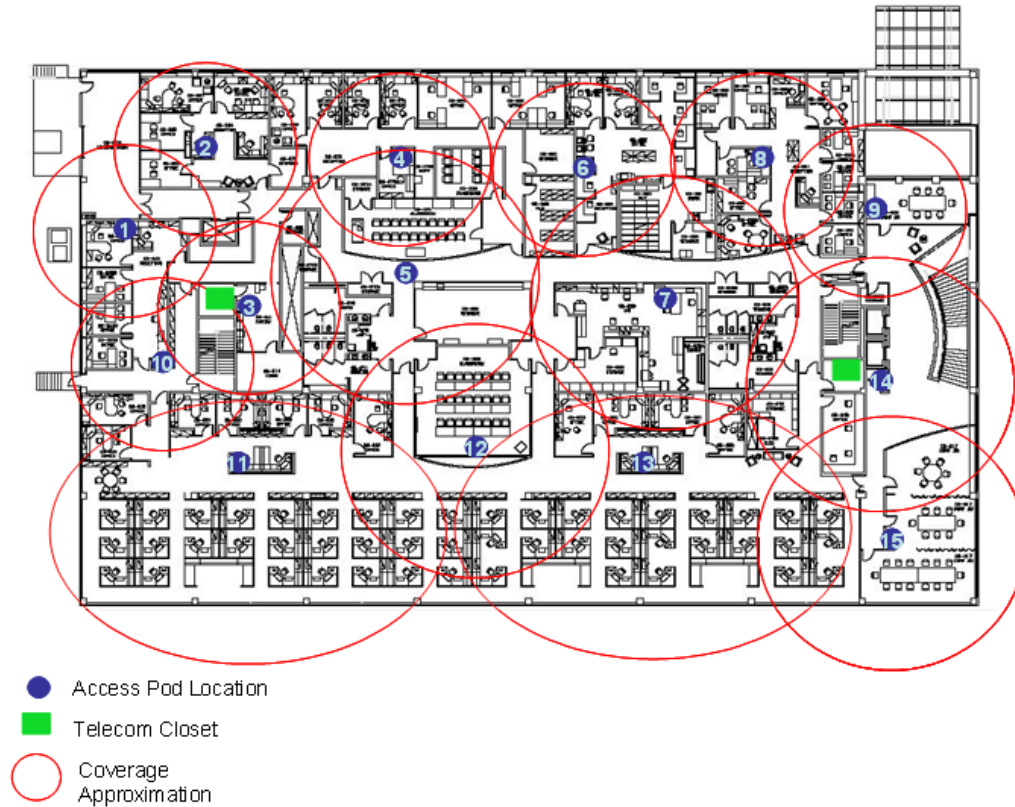


Figure 10. Floor Plan Example

Notes:

- The red VAP coverage circles are approximately 45, 58 and 67 foot (14, 18 and 21 m) radius for the small, medium and large circles respectively (drawn according to the guidelines for UMTS service, given in section 3.3.1).
- VAP 3 is surrounded by dense objects, the bathroom and stairwell which would reduce coverage in that area by the other VAPs.
- VAP 5 is an example of a unit that provides good coverage down the hallways.
- VAPs 11 and 13 are placed closer to the offices to cover them well but on the open side will actually cover a much greater area which is why the coverage is larger and shown here more as an oval than a circle.
- The area between VAPs 7 and 14 outside the bathrooms would probably be the lowest coverage spot in the building because of the bathrooms and stairwell on either side of that area. If after the system installed, this area is still a little low on coverage, a VAP can be added, but it may also be covered by VAP 14.

Note: The plan can be modified at any time by moving the units around or by adding units.

The following figure depicts an actual measured quantified coverage of a floor area planned according to the above rules

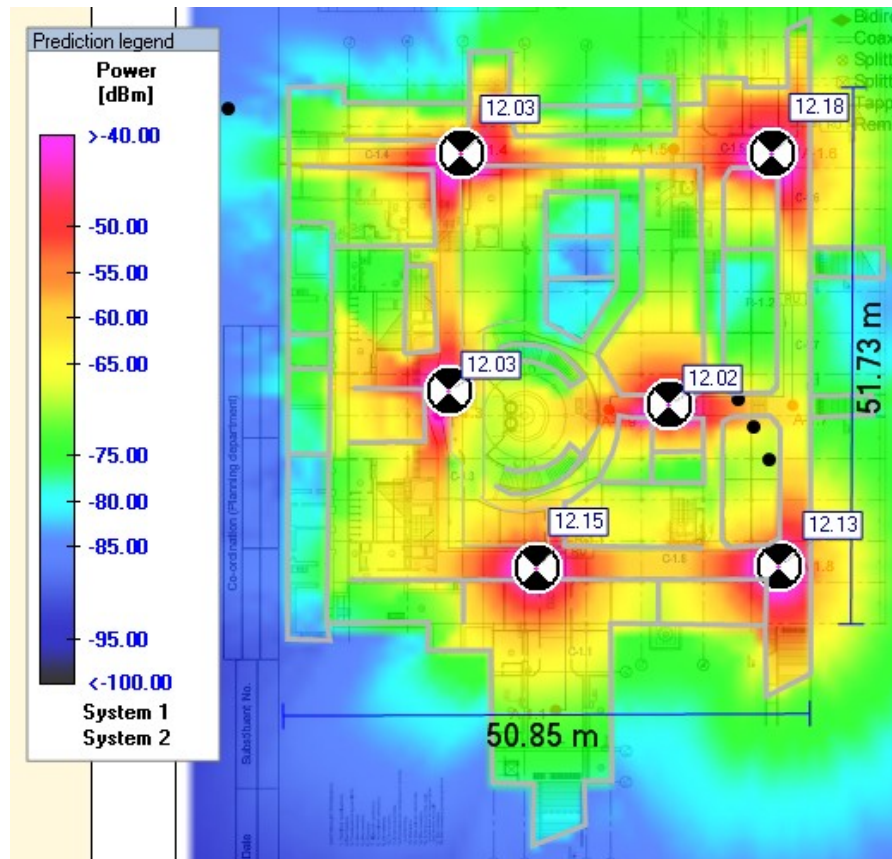






Figure 11. Distributed VAPs propagation, 12dBm output power @ 1.8GHz

4 VCU Unit Installation and Configuration

This section describes the installation and configuration procedures of the EnCOVER VE™ Control Unit (VCU) in each floor. These should be performed only after planning the floor coverage and installation locations as described in the previous sections.

The EnCOVER VE™ VCU kit includes:

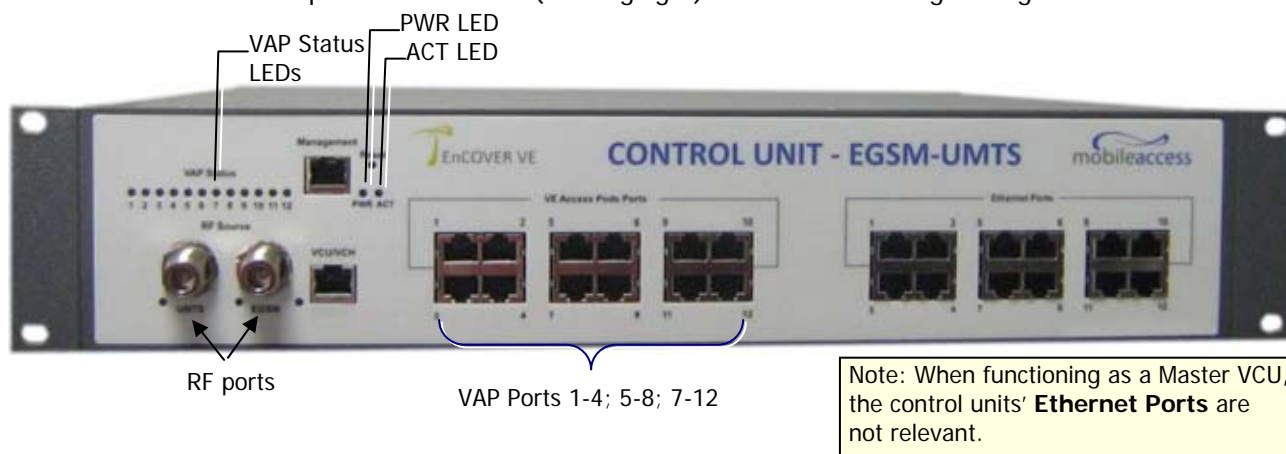
Table 7: VCU Kit

Description	Unit
Dual Band EnCOVER VE™ Control Unit (VCU) kit	
Power cord	
EnCOVER VE™ SW CD	
Local configuration cable (crossed RJ-45 cable)	

4.1 EnCOVER VE™ Control Unit Installation as a Master VCU

The EnCOVER VE™ control unit can be installed as a Master VCU and control up to 12 Slave VCUs. The Master VCU is installed in the main IDF/telco closet. This section describes the Master VCU installation procedure.

1. Install the **Master VCU** in the main IDF/Telco closet. The Master VCU can be installed in the rack or on the wall using the optional wall mount bracket in the IDF closet along with the provider's signal sources.
2. Connect the **Master VCU VAP ports** to the **Slave VCUs Expansion** ports via the patch-panel that feeds the dedicated CAT-6 or 7 cabling system.
3. Connect (or request the service provider's service personnel to connect) the provider's **signal source** (Macro-cell, Micro-cell, Pico-cell or BDA) to the **Master VCU front panel RF ports** (through passive interface).
4. Apply power to the Master VCU and note that the **PWR** LED is lit.
5. Power on the signal sources (for example EGSM and UMTS BTSs) and note that the unit ACT LED completes initialization (blinking light) and shows a solid green light.



NOTE: After the Slave VCUs are connected (according to section 4), verify that that the Master VCU **VAP Status** LEDs, corresponding to the connected Slave VCUs, complete initialization (blinking light) and show a solid green light.

4.2 Auxiliary Connections

The auxiliary connections are performed through the Master VCU rear panel **Alarms** port. See following figure.



4.2.1 Auxiliary Input Connections

This Auxiliary connector can be used to monitor up to eight auxiliary connections such as fire-alarm, air-conditioning alarm, open-door alarm, etc. The connections are normally open.

Connect the relevant alarms according to the connector pinout described in the following table.

Table 8. Auxiliary Connector

Pin Number	Auxiliary Alarm	Pin Number	Auxiliary Alarm
1, 26	8	8, 9	4
2, 3	7	10, 11	3
4, 5	6	12, 13	2
6, 7	5	14, 15	1

4.2.2 Alarm Output Connections

The controller can provide Major and Minor output alarms. These alarms can be connected directly to the auxiliary input of the Base Station, or to any other dry-contact application.

Note: If only one alarm is required (Minor or Major) an external connection of a wire jumper between pins 8 and 13 is necessary (normally closed)

Connect the relevant alarms according to the connector pinout below.

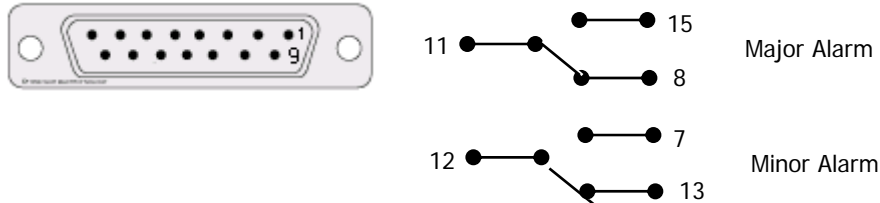
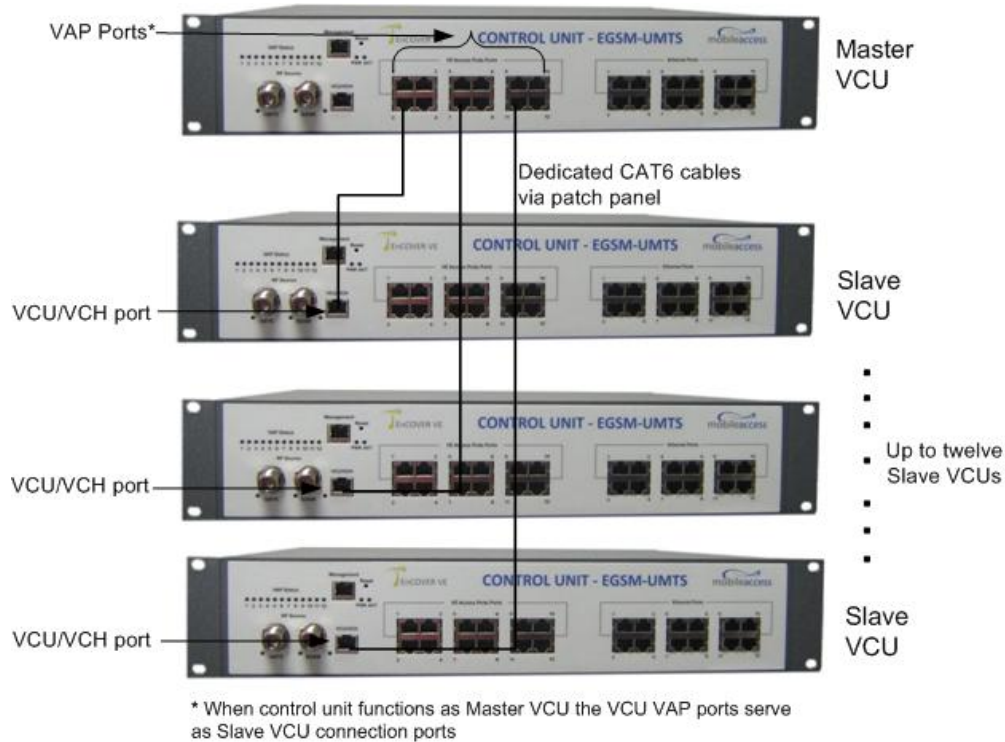


Table 9. Alarms Connector – used pins

8 – Major Error signal (normally closed)	7 – Minor Error signal (normally open)
11 – Major COM	12 – Minor COM
15 –Major Error signal (normally open)	13 – Minor Error signal (normally closed)

4.3 EnCOVER VE™ Control Unit Installation as a Slave VCU

1. Install the EnCOVER VE™ Slave Control Unit (VCU) in the IDF/Telco closet corresponding to the floor to be covered. The Slave VCU can be installed in the rack or on the wall using the optional wall mount bracket in the IDF closet.
2. Connect the Slave VCU **VAP** ports to the patch-panel that feeds the existing structured CAT-5e/6 cabling system.
3. Connect the Slave VCU front panel **VCU/VCH** port to the Master VCU **VAP** port via the patch panel using dedicated CAT6 cables.



4. According to VAPs layout plan (as explained in section 3.4.2) connect the Ethernet switch cables (see section 4.3.1 for more detailed explanation):
 - If the jack to be used is already in use (connected to Ethernet switch) – disconnect it from the Ethernet switch and re-connect it to the corresponding **Ethernet** port in the Slave VCU front panel.
 - Jacks not in use will be connected only to the Slave VCU.
5. Request the service provider's service personnel to connect the provider's signal source (e.g. UMTS Node B, GSM BTS, etc.) to the RF ports on the Master VCU front panel, through passive interface.

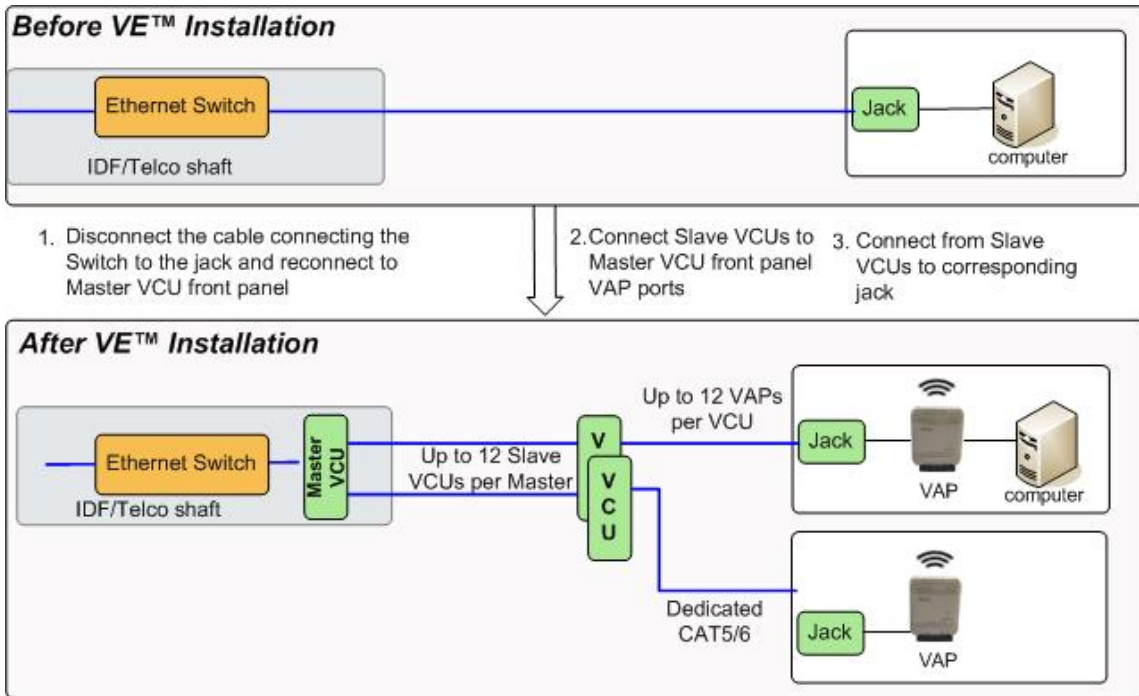
Note: The RF Source LED (see following figure) of the connected port on the Master VCU should be lit, indicating that the Master VCU senses the RF signal from the source.

- Apply power to the Slave VCUs and note that the VCU **PWR** LED is lit and that the **VAP Status** LEDs complete initialization and show a solid light.

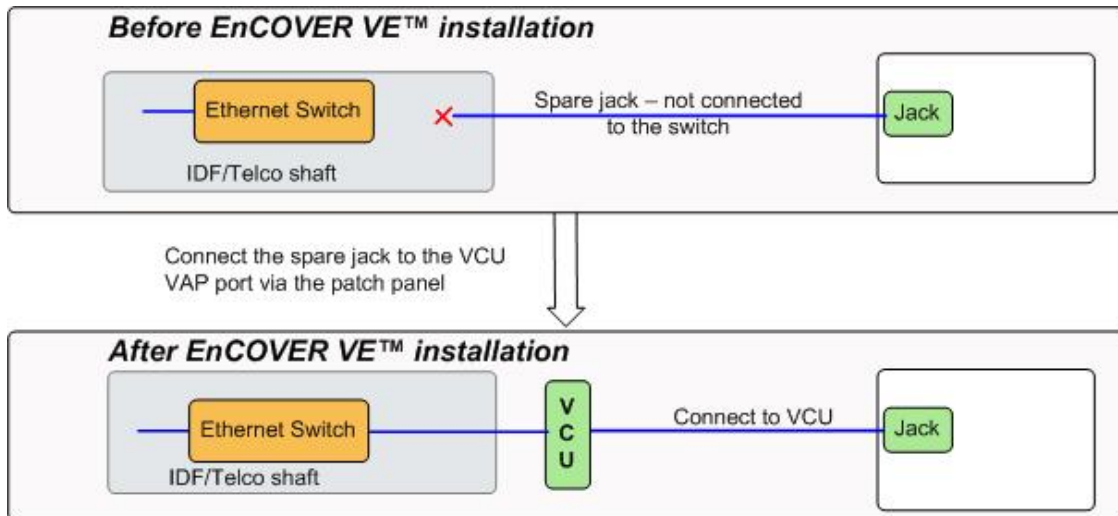


4.3.1 Connections of VAP Ethernet Cables

For VAPs installed on currently ACTIVE Ethernet ports - shift the relevant Ethernet LAN connections as follows.



For VAPs installed on currently INACTIVE Ethernet ports – connect as follows.



4.4 Provisioning the EnCOVER VE™ Control Unit

This chapter describes how to set the basic parameters required for operation and remote management of the Master VCU using the Web GUI. The VCU directly connected to the RF source automatically detects itself as the master VCU and the VCUs connected to the master VCU automatically detect themselves as slave VCUs (no special configuration required).

Notes:

1. The initial configuration of the Master VCU is performed via local connection (using a cross-cable). After performing the initial configuration and assigning the Master VCU an IP, the system can be connected, monitored and configured via a remote management connection.
 2. The configuration and management of all of the system units (VCUs and VAPs) is performed via the Master VCU unit (local or remote connection).
-

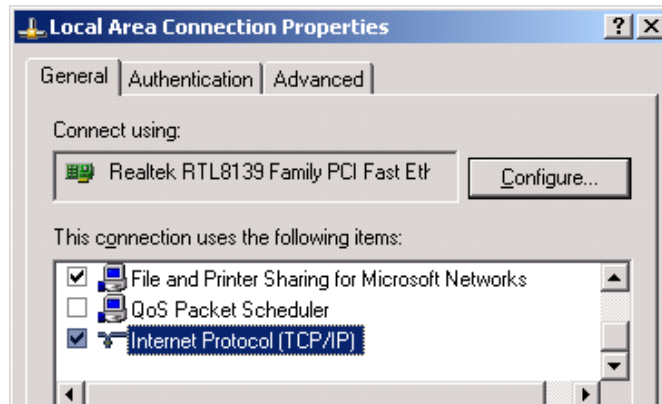
4.4.1 Configure the Computer Network Parameters

Configure the computer local LAN connection to operate in the same subnet as the default VCU IP address. Note that the procedure may vary slightly depending on the operating system installed on your computer. The following procedure is for Windows XP.

To configure the computer's network parameters:

1. Click the **Start** menu and choose **Control Panel**.
2. In the **Control Panel**, click **Network and Internet Connections**.
3. Click **Network Connections** and then double-click **Local Area Connection**.

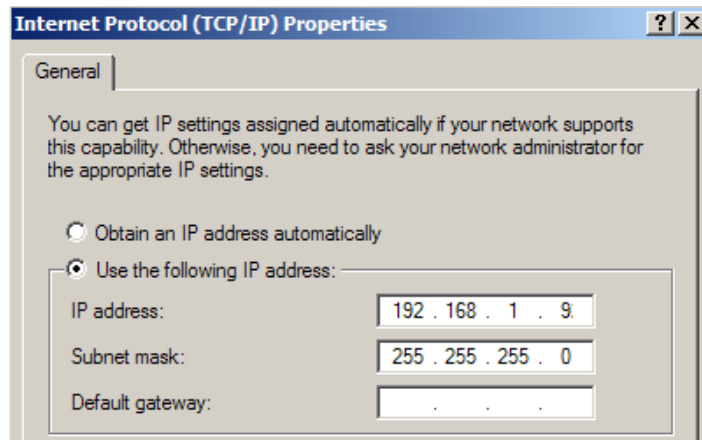
The Local Area Connections Properties dialog appears with the General tab displayed by default.



4. In the Items list, select "Internet Protocol (TCP*IP)" and click the Properties button.
5. The "Internet Protocol (TCP/IP) Properties" dialog appears.

NOTE: The Master VCU is supplied with the default IP address 192.168.1.1.

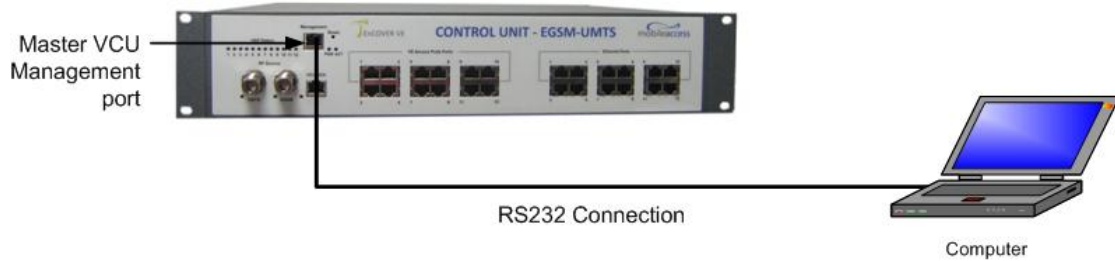
- In order to communicate with the unit, it is necessary to assign your computer a *Static IP* address in the same subnet: 192.168.1.2 to 192.168.1.250.
(i.e. 192.168.1.9 as shown in the example).
- Define the subnet mask as shown: 255.255.255.0



6. Click **OK**.
7. The computer communication parameters are now defined and you can open a session to the Master VCU and provision the unit.

4.4.2 Provisioning the Master VCU Unit

1. Perform a local connection to the Master VCU unit by connecting the Master VCU front panel **Management** port and a laptop computer.



2. Open a web browser and type the Master VCU IP address in the address bar (default: 192.168.1.1).



The Login window appears.

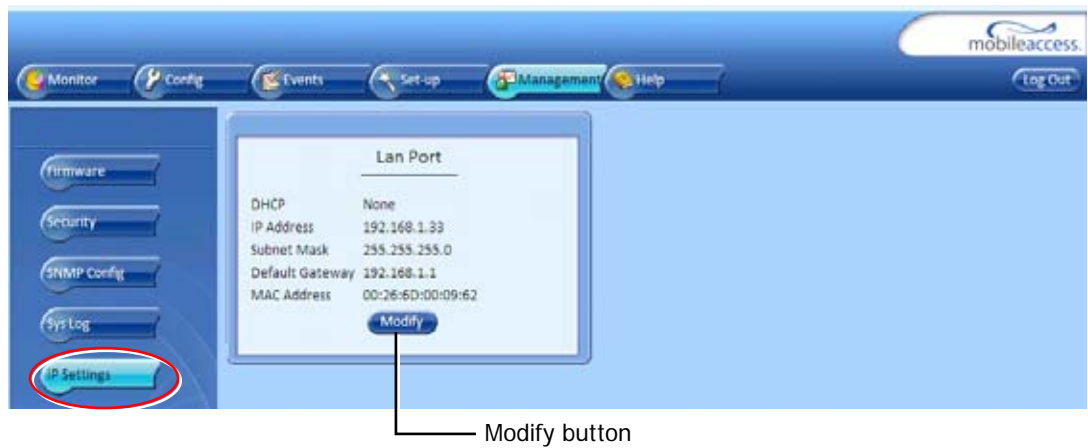


3. Type the **User Name "Field Engineer"** and enter the **Password "eng"**.

The EnCOVER VE™ Web GUI appears.



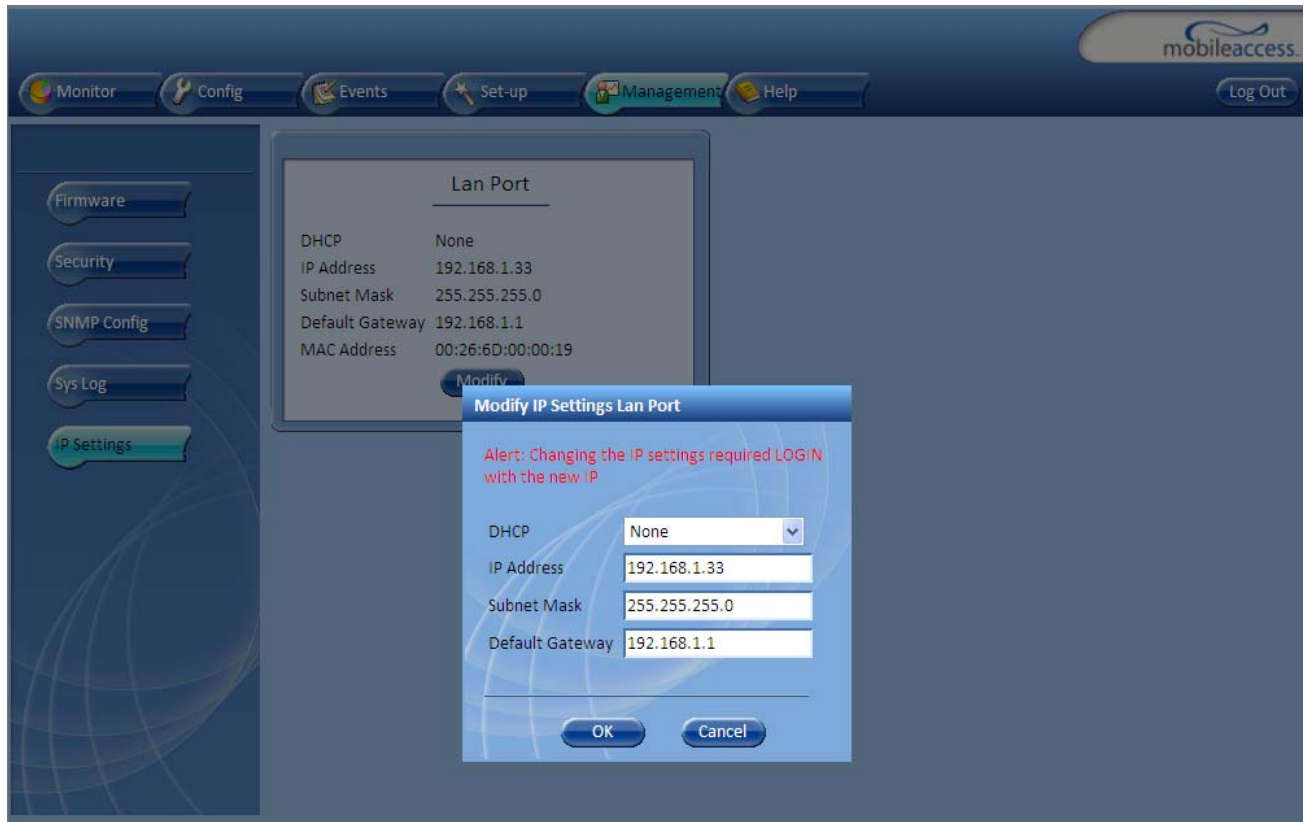
- On the invoked application window, choose the **Management** tab in the main menu bar and click the **IP Settings** tab on the side bar.



Modify button

- Click the **Modify** button to define the **STATIC IP Address** according to existing LAN.

Note: After the initial IP configuration, the Master VCU can be accessed remotely via Ethernet.



- Set the following available parameters:
 - DHCP - Dynamic Host Configuration Protocol (N/A)
 - IP address - Static IP address
 Default definitions:
 - The Default IP Address : 192.168.1.1
 - The Default Subnet Mask: 255.255.0.0
 - The Default Gateway: 192.168.254.254
 - Click **OK**.
- Log out and then log in again with the new IP settings.
 - Select the **Config** tab in the main menu bar.

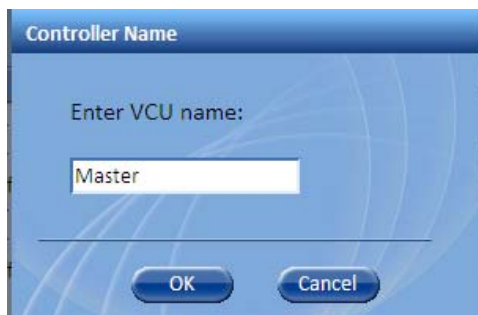
8. The Master VCU appears in the Network Topology Tree as **Master VCU**. Select the Master VCU by clicking on it.

The screenshot shows the mobileaccess configuration interface. At the top, there is a navigation bar with tabs: Monitor, Config (highlighted), Events, Set-up, Management, and Help. A 'Log Out' button is in the top right. On the left, a Network Topology Tree lists various components: EnCOVER VE, VCU-H -Master (highlighted with a red dot and labeled 'Master VCU'), VCU2 -CU 2, and several VAP1-VAP9 -APOD units. The main area displays a VCU unit image. Below it, there are three tabs: 'Module Info:' (circled in red), 'Service1 RF:', and 'Service2 RF:'. The 'Module Info:' tab shows fields for Name (Master), Serial Number (55133455992), Product Revision (N/A), SW Active Version (3.16), and SW Inactive Version (N/A). There are 'Modify' buttons for the Name and Date/Time fields. A 'Restart' button is under the 'Reset' section, and an 'Identity' dropdown is set to 'OFF'. On the left, a 'VCU alarms & Mask' panel lists various status indicators with checkmarks.

9. Before configuring the Master VCU it is recommended to give the unit an indicative name. To assign the Master VCU an indicative name:
- Select the **Module Info Tab** and click the **Modify** button.

This is a close-up of the 'Module Info:' tab. It shows the 'Name' field with the value 'Master' and a 'Modify' button to its right. An arrow points from the text 'Click Modify' to this button. Below the name field, the following information is displayed: Serial Number: 07425C3, Product Revision: N/A, SW Active Version: 0.2, and SW Inactive Version: N/A. At the bottom, there is a 'Restart' button under the 'Reset' section and an 'Identity' dropdown menu set to 'OFF'.

- Type the unit name (up to 20 alpha-numeric characters) in the **Controller Name** dialog and click **OK**.



- Set the RF parameters for each connected service (up to two). Each service (Service1/Service2) is configured through its' corresponding tab. To configure the service RF parameters:
 - Select the Service tab (Service1/Service2) of the service to be configured.



- Click **Modify and** enter the DL central frequency (first carrier) for each service according to the following ranges:
 - EGSM: 925 – 960 MHz
 - UMTS: 2110 – 2170 MHz
 - PCS: 1930 – 1990 MHz
 - CELL: 869 – 89 MHz
 - DCS: 1805 – 1880 MHz



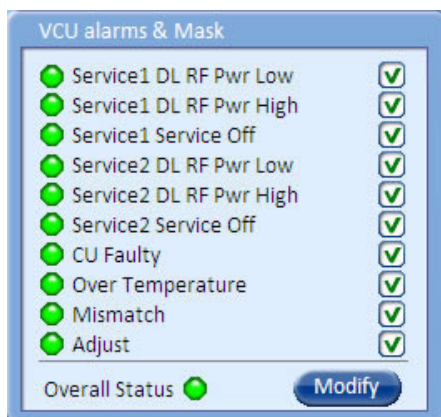
Note: The **Service DL CF** dialog displays the relevant range for each service.

- Click **OK**.
- Define Max expected power of BTS (0-33dBm)
- Define UL attenuation level for each service (0-25dB)

Notes:

1. Max expected Pin and Service CF parameters are service dependent and can be obtained from your service provider.
 2. The remaining parameters are predefined to their default values. (Service Bandwidth is set to 15MHz for EGSM, UMTS and CELL and to 20Mhz for DCS and PCS).
 3. Any updates of the service Central Frequency definition is sent to all connected VAPs.
-

11. To verify proper operation of the system, refer to the **Alarms** sub-tab (in the Config tab). See following figure.



12. Verify that all the alarms are GREEN. Refer to the alarm descriptions in the table following the figure below.

Alarm	Description
Service 1 DL RF Pwr Low	RED - DL RF Power is lower than 5dBm.
Service 1 DL RF Pwr High	RED - the input power exceeds the maximum limit and cannot be attenuated to the required limit. Traffic is disconnected.
Service 1 Service Off	User has disabled service
Service 2 DL RF Pwr Low	RED - DL RF Power is lower than 5dBm.
Service 2 DL RF Pwr High	RED - the input power exceeds the maximum limit and cannot be attenuated to the required limit. Traffic is disconnected.
Service 2 Service Off	User has disabled service
CU Faulty	RED - VCU fault. Remove and re-apply power to VCU or push the Reset button. If problem persists, replace VCU.
Over Temperature	Temperature of unit exceeds normal range.
Mismatch	Red – Mismatch of services
Adjust	Only relevant to control unit defined as a slave unit: RED – Indicates dB loss over the coax cable (either coax is shorter than 10m or longer than 100m or faulty)
Overall Status	Indicates Fault (RED) level or GREEN if there are no faults.

Note: To briefly check the VCU status, click on the VCU name in the Topology Tree. The VCU icon will appear, showing the LEDs status.

4.4.3 Provisioning the Slave VCUs

Note: The Slave VCUs management and configuration is performed through a remote connection to the Master VCU, via the web management. Before provisioning the Slave VCUs verify that the Master VCU unit, to which it is connected, has been provisioned (see section 4.4.1).

The Slave VCU RF parameters are set via the Master VCU, therefore there is no need to configure the RF parameters individually for each connected Slave VCU. It is recommended to assign each Slave VCU an indicative name.

To assign a name to a Slave VCU:

1. Connect to the Master VCU unit (either locally as explained in section 4.4.1 or remotely) and select the Slave VCU to be provisioned from the Network Topology Tree.

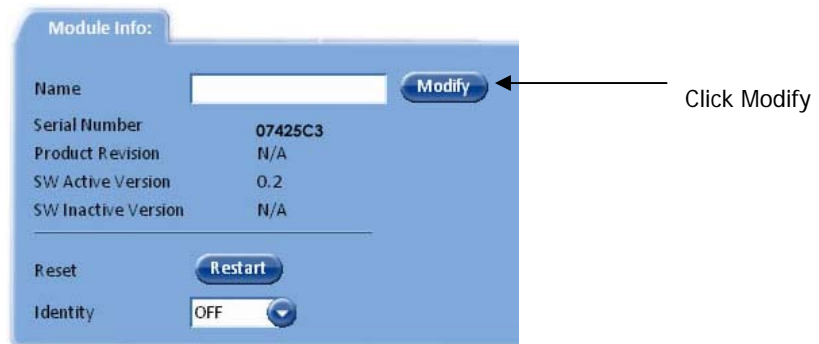


Each VCU has a default name of the form “VCUPx-name”, where:

- **Px** - Master VCU port number to which the Slave VCU is connected
- **Name** - user-defined name

2. To assign the Slave VCU an indicative name:

- Select the **Module Info Tab**
- Click the **Modify** button
- Type the unit name (up to 20 alpha-numeric characters) and click **OK**.



4.5 What Next?

Do not disconnect the Web Management application from the Master VCU; you will be using it to verify the connections after all the VAPs are placed in their locations.

5 EnCOVER VE™ Access Pod (VAP) Installation and Commissioning

This section provides a description of the EnCOVER VE™ Access Pods (VAPs) installation, verification and monitoring procedures.

5.1 VAP Installation






The VAPs installation procedure consists of connecting each VAP to the Ethernet jack in the appropriate location to provide optimal coverage (see sections 3.4 and 5.1.2).

5.1.1 VAP Kit Contents

The EnCOVER VE™ Dual Band Solution VAP kit includes:

Note: VAPs are provided with two mounting options: desk-mount and wall-mount

Table 10: VAP Kit

Kit Items	UNIT
EnCOVER VE™ Access Pod (VAPs)	
Wall-mount adaptor (with double sided sticky tape for fast installation)	 <p>Wall-mount adaptor</p> <p>Double sided tape</p>
Desk-mount adaptor	
8 screws: <ul style="list-style-type: none"> ○ 4 short screws – for securing adaptor to pod ○ 4 longer screws – for securing wall-mount adaptor to the wall (“anti-theft” installation) 	 <p>Long screws Short screws</p>
RJ-45 jumper cable	

5.1.2 VAP Locations and Mounting

It is recommended to place the VAPs on top of desks, cube walls, filing cabinets or higher on walls so as to maximize the provided coverage per VAP.

Note: Mounting a VAP beneath a desk or other low location (i.e office corner) decreases the effective coverage of the VAP and therefore a higher number of VAPs would be required to cover the same area.

When installing the VAPs, consider the following:

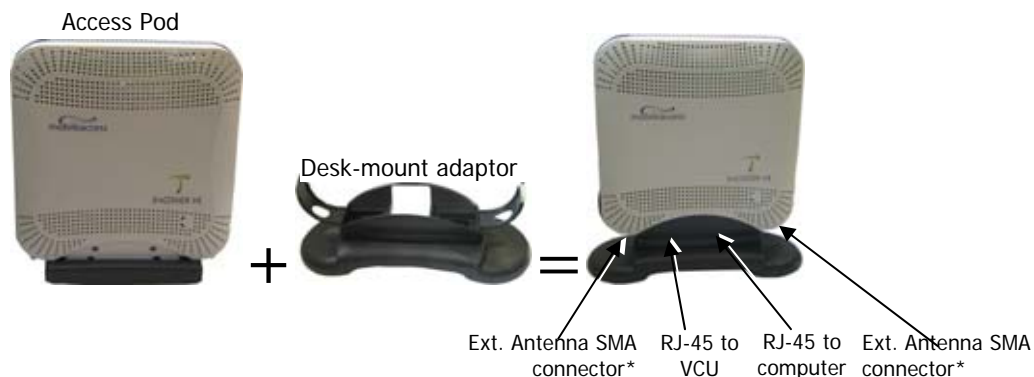
- Placing the units, as much as possible, in an open area
- Availability of CAT-5e/6 infrastructure
- The VAPs plug into standard (RJ-45) Ethernet connection jacks.
- If the jack to be used is already connected to Ethernet switch. For more information see 3.4.2 and 4.3.1.
- Aesthetics of the VAP location

5.1.2.1 Desk mount

- Secure the Desk-mount adaptor to the EnCOVER VE™ Access Pod using the supplied screws
- Connect the RJ-45 jumper cable (CAT-5e/6) to the VAP
- Place the VAP on a flat surface according to the planned location
- Plug the other side of the cable into adjacent standard (RJ-45) Ethernet connection jack.
(the adaptor screws and cable are included in the VAP kit)
- When using an external antenna, connect the **Ext. Antenna** SMA connector(s) to the external antenna(s). This option must be SW configured via the web GUI (internal antenna is enabled by default).

Note: The maximum external antenna gain should not exceed 10 dBi.

- Verify that the VAP receives power and sync up to the VCU via the LEDs on the unit.



*External Antenna connectors only available on specific VAP models (VAP-CELL-PCSE-EXTAN, VAP-DCS-UMTSE, VAP-DCS-UMTSE-EXTAN, VAP-EGSM-UMTSE-EXTAN) (see 1.3.1).

5.1.2.2 Wall Mount

Assemble the VAP to the wall-mount (the adaptor and wall mount screws, sticky tape and cable are included in the VAP kit as described in Table 10: VAP Kit)

- Connect the RJ-45 jumper cable (CAT-5e/6) to the VAP
- Attach the VAP to the wall according to the planned location using supplied screws (for “anti-theft” installation) or the double sided sticky tape for the wall-mount adaptor (for “plug-and-play” installation)
- Plug the other side of the cable into the adjacent standard (RJ-45) Ethernet connection jack.
- When using an external antenna, connect the **Ext. Antenna** SMA connector(s) to the external antenna(s). This option must be SW configured via the web GUI (internal antenna is enabled by default).

Note: The maximum external antenna gain should not exceed 10 dBi.

- Verify that the VAP receives power and sync up to the VCU via the LEDs on the unit.



5.2 Verifying Coverage

Verify coverage in the areas, adding and moving VAPs for optimal coverage according to the principles described in 3.3.

5.3 Naming the VAPs, Verifying Connections and Monitoring

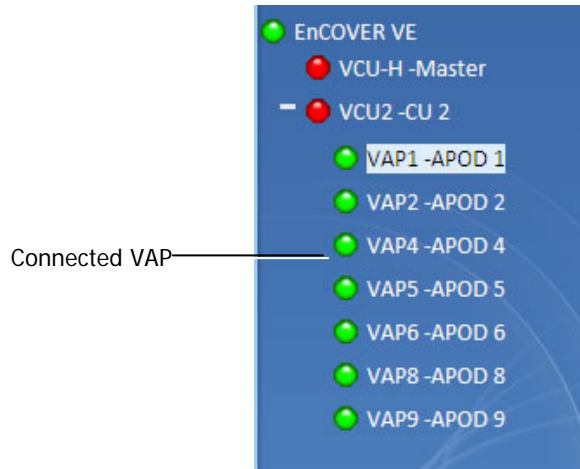
The VAPs are auto-discovered by the VCU and can be monitored via a remote or a local connection to the system Master VCU. No configuration procedure is required; however, if you wish, you may assign each VAP an identifiable name corresponding to its physical location.

Note: See section 6 for full explanation about navigating the EnCOVER VE™ Web GUI application.

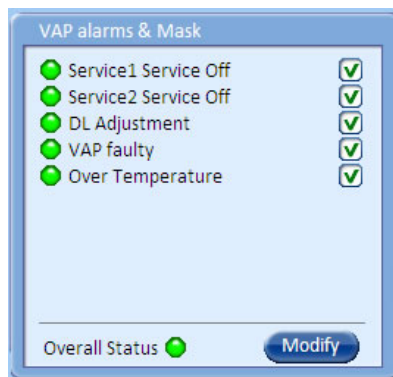
1. If a session is not already opened to the EnCOVER VE™ Web management application, open a session to the Master VCU according to section 4.4.1.
2. Select a VAP from the Network Topology Tree.

Each VAP has a default name of the form **VAP Px-name** where:

- **Px** – Number of Slave VCU port to which the VAP is connected
 - **name** - User-defined name
3. In the Network Topology Tree, under the Control Unit, verify that a GREEN (or RED) circle is displayed for each connected VAP.

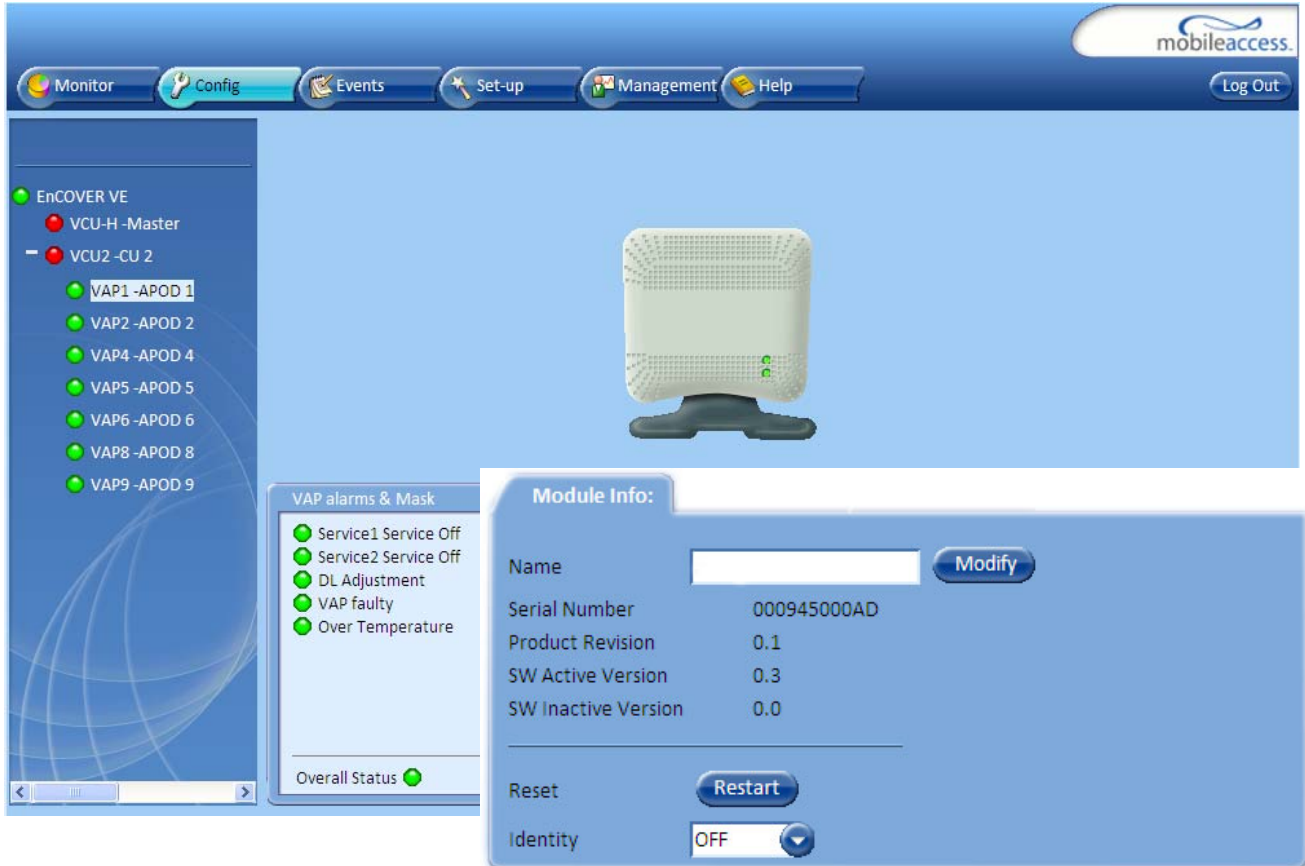


- If a VAP is *not* green, select the VAP from the network topology tree then select the Config tab. Refer to the **Alarms** tab work area. The alarms for the selected VAP are displayed.



Note: For more information, on the VAP Alarms, see section **Error! Reference source not found.**

4. Refer to the Config **Module info** tab.



5. Assign each VAP a name as follows:
 - Click the **Modify** button.
 - Click **OK**.
6. When required to transmit the RF signal through a connected external antenna (if VAP model supports this option):
 - Refer to the **Service 1** and/or **Service 2** tabs
 - Enable the External Antenna option

Note: If the external antenna option is not enabled, the signal is transmitted via the integrated internal antenna, by default.

7. Verify the system connections according to the following section (6).

6 Navigating the Management Application

This section describes the EnCOVER VE™ Web GUI management application and each of the tabs.

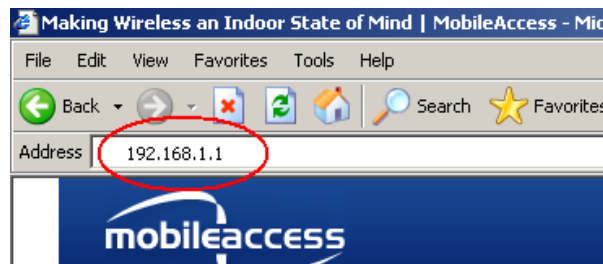
The EnCOVER VE™ Web management application is accessed through any standard web browser connected to the Master VCU via a network within the same subnet as the Master VCU or a different subnet which is routable.

6.1 Opening a Session and Authentication Levels

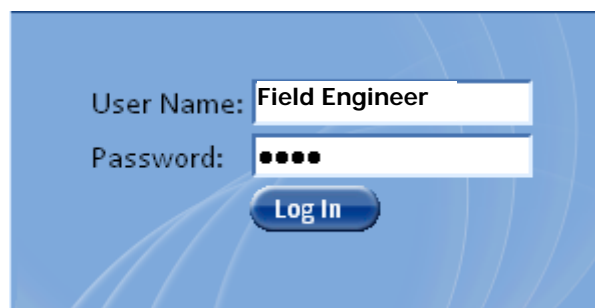
After the initial configuration (as explained in 4.4.1) the EnCOVER VE™ system can be accessed via the network.

To access the system:

1. Open a web browser and type in the address bar the Master VCU's IP address as you set it in the Master VCU configuration operation (see section 4.4.1).



2. The Login pane appears. Select your User Name and type in your password. The following authentication levels are available:
 - Operator: password = **oper**. This user has Read Only access.
 - Field Engineer: password = **eng**. This user has access to basic configuration options.
 - Technical Support: for MobileAccess service personnel.



6.2 Main Window

The Web GUI Main window appears after login.



The Main window consists of two main areas:

- Menu Bar – Provides the following tabs:
 - Monitor – Provides a summarized view of the system status
 - Config(uration) – Provides the selected units' configuration parameters and alarms
 - Events – Provides the events list and trap mask
 - Set up – Provides wizards that enable defining groups of APods
 - Management – Provides upgrade, IP configuration and security options
 - Help
- Sub-tabs – Provide options (tabs) that correspond to the selected menu bar tab

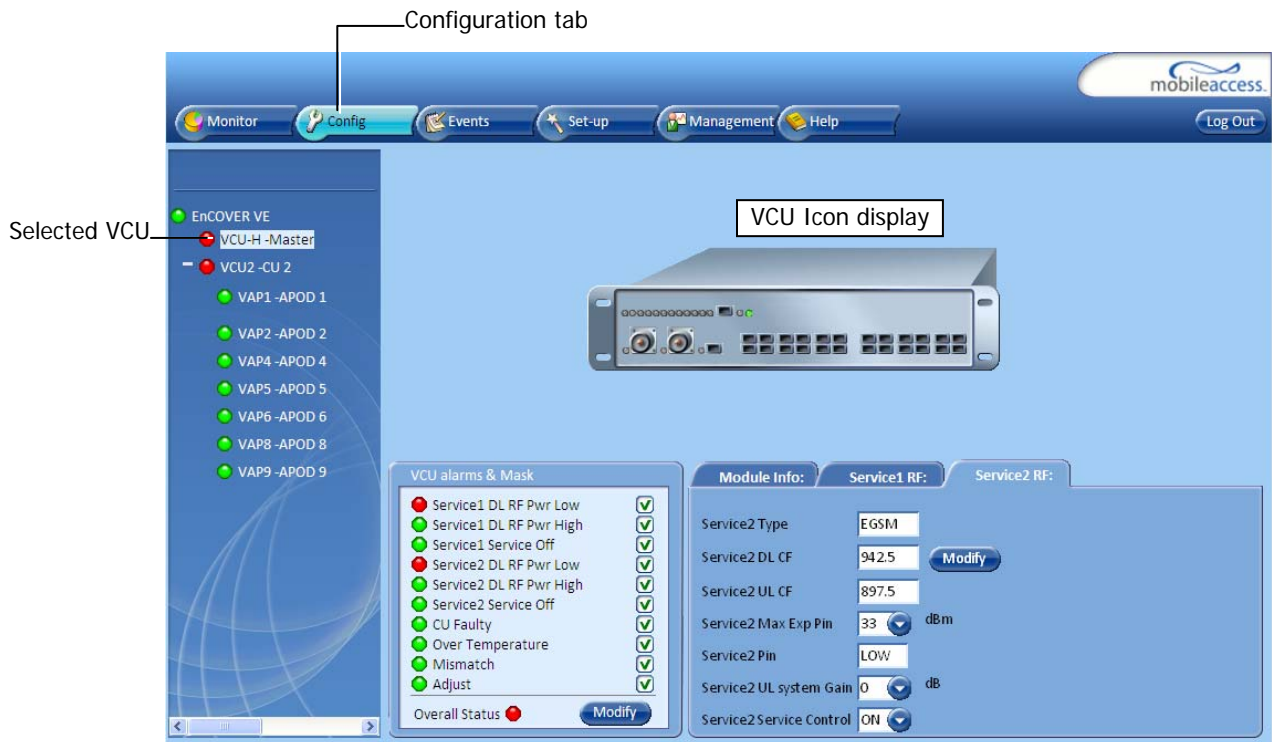
6.3 Configuration Tab

The **Configuration** tab provides the general information and service RF parameters for configuration of the units appearing in the Network Topology tree. The Configuration window is accessed by clicking on the **Config** tab in the main menu bar. The information and parameters displayed in the Configuration sub-tabs vary depending on whether a VCU or VAP is selected in the topology tree.

6.3.1 VCU Configuration

To access a VCU Configuration tab

Select a Master VCU/Slave VCU from the network topology tree on the left hand side of the window a click the **Configuration** tab from the menu-bar.



The Configuration tab is divided in to three main areas:

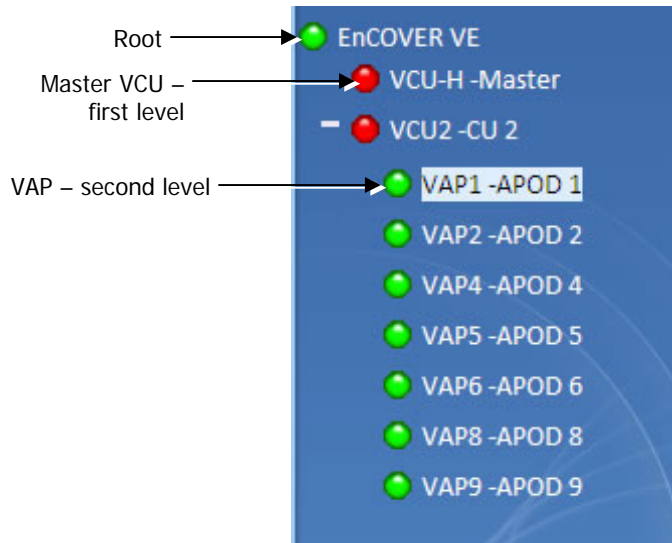
- Network Topology Tree – Displays the system units (Master VCU, Slave VCUs and VAPs) and their status
- Display area – Displays the icon of the selected unit including the LED statuses
- Work area – Displays the Module Info, alarms and RF tabs corresponding to the unit selected in the topology tree (Master VCU, Slave VCU or VAP)

6.3.2 Network Topology Tree

The Configuration Network Topology Tree appears on the left hand side when the **Config** tab is selected and displays the Master VCU, Slave VCUs and VAPs in two levels:

- First level – VCU
- Second level – Up to 12 VAPs

Note: The root is EnCOVER VE.



Each unit is assigned a **Type Px-name**:

- Type – VCU-H, VCU or VAP (for Master VCU, Slave VCU or VETM Access Pod)
- Px - VCU port number (not relevant for Master VCU)
- Name – user defined

Each unit is displayed with a colored bullet that indicates its' status:

Color	Indicates
Green	OK
Yellow	Minor alarm
Red	Major alarm
Gray	No communication

6.3.3 Configuration Display Area

When selecting an element (Master VCU/Slave VCU or VAP) in the network topology tree an icon representing the unit is displayed in the Configuration tab display area



The following table provides a description of the LEDs displayed for the VCU and VAP icons and that reflect the actual unit LEDs.

Unit	LED	No.
Master VCU/Slave VCU	RF	2
	IF	1
	Port Pwr	12
	Port Act	12
VAP	Status LEDs	2

6.3.4 Alarms Tab

The alarms displayed in the Alarms tab corresponds to the system element selected in the topology tree and vary depending on whether a VCU or VAP is selected.

6.3.4.1 VCU Alarms Tab

When a VCU element is selected in the topology tree, the Alarm tab displays the main alarms in the unit.

To access Alarms Tab of VCU

In the Topology Tree, click the **Control Unit (VCU)**, click the **Config(uration)** tab in the menu bar located at the top of the window and click the **VCU Alarms** sub tab.



If one or more alarms occur, the corresponding Status indicator is illuminated in RED. If the VCU is OK and no fault occurs, the **Overall Status** indicator will show GREEN.

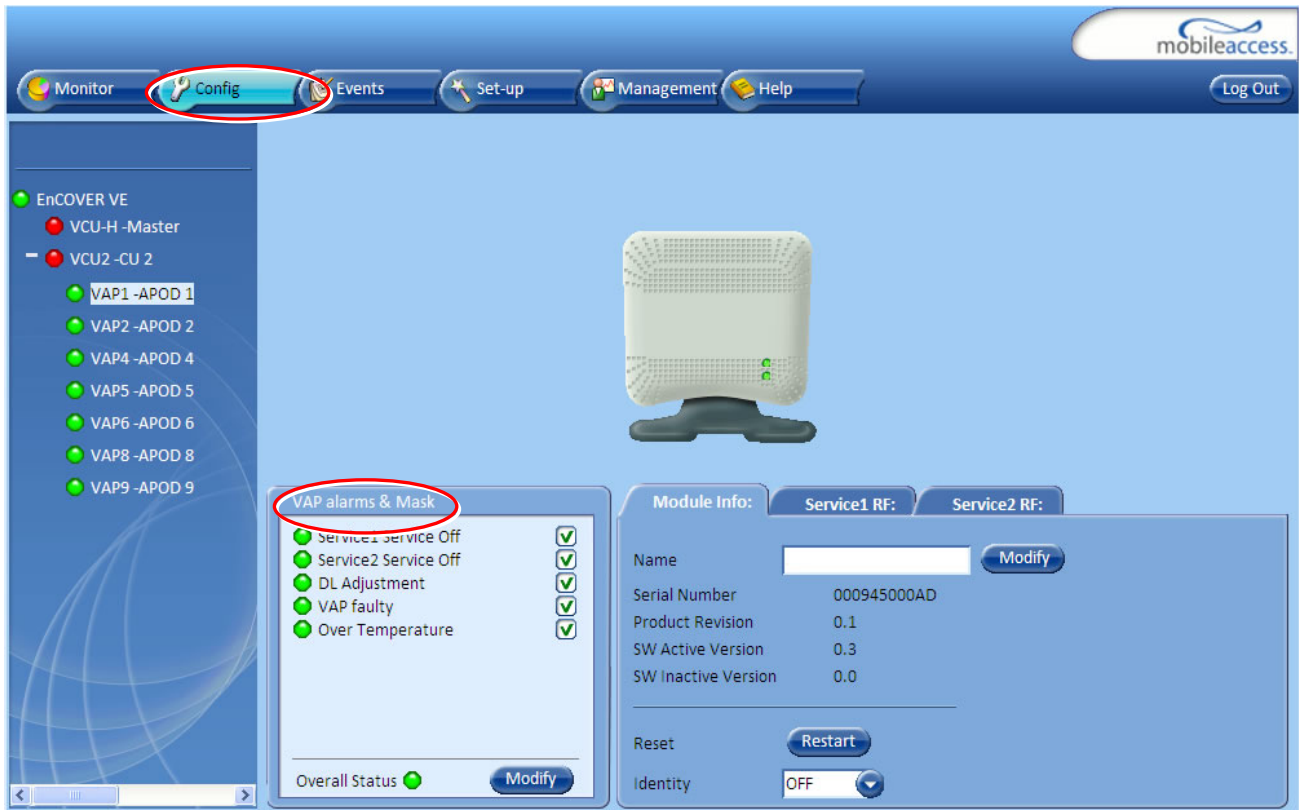
Alarm	Description
Service 1/2 DL RF Pwr Low	Input power of specific service lower than 5dBm
Service 1/2 DL RF Pwr High	Input power of specific service is higher than maximum expected power defined in the RF tab
Service 1/2	User has disabled service
Overall temperature	Temperature of unit exceeds normal range
CU faulty	Hardware fault detected in VCU
Overall status	Indicates Fault (RED) level or GREEN if there are no faults

6.3.4.2 VAP Alarms Tab

When a VAP element is selected in the topology tree, the Alarm tab displays the main alarms in the unit.

To access Alarms Tab of VAP

In the Topology Tree, click the **VAP**, click the **Config(uration)** tab in the menu bar located at the top of the window and click the **VAP Alarms** sub tab.



If one or more alarms occur, the corresponding Status indicator is illuminated in RED. If the VAP is OK and no fault occurs, the **Overall Status** indicator will show GREEN.

Alarm	Description
Service 1/2 Off	User has disabled service
DL Adjustment	Indicates dB loss over the coax cable (either coax is shorter than 10m or longer than 100m or faulty)
VAP Faulty	A fault has been detected in the VAP
Overall temperature	Temperature of unit exceeds normal range
Overall status	Indicates Fault (RED) level or GREEN if there are no faults

6.3.5 Module Info

The **Module Info** tab displays the selected elements' (VCU or VAP) general information (such as, unit name and SW versions). The displayed information corresponds to the selected element (VCU or VAP).

To access the Module Info tab

Select the system element from the network topology tree and click on the **Module Info** sub-tab.



The following information is displayed:

Field	Description
Name	User defined name for system element (up to 20 characters)
Serial Number	Factory set ID number
Product Revision	Revision number of VCU/VAP
SW Active Version	Version of the SW currently being used to manage and monitor the system
SW Inactive Version	Version of other system SW version not in use
Identify button	Enabling this option enables finding the physical location of the selected element (see 7.1). When this option is set to ON, the LEDs on the corresponding Access POD/VCU flickers.
Restart button	SW reset of the unit

6.3.6 Service Tabs (RF Parameters)

The **Service 1** and **Service 2** tabs provide the configurable RF parameters corresponding to the element selected in the network topology tree (VCU/VAP). Up to two service RF tabs are displayed – one for each *active* service. The displayed RF parameters are similar for both service tabs.

6.3.6.1 Master VCU/Slave VCU Service RF Tab

Note: The RF parameters are not displayed for control units functioning as slaves to Master VCU units.

To access the Service RF tab

Click the **Config** tab from the main menu bar and then select the control unit from the network topology and click the *Service RF* tab. The parameters displayed in Service RF tabs correspond to the selected element.



The following table provides a description of the RF parameters displayed in the Service RF tabs.

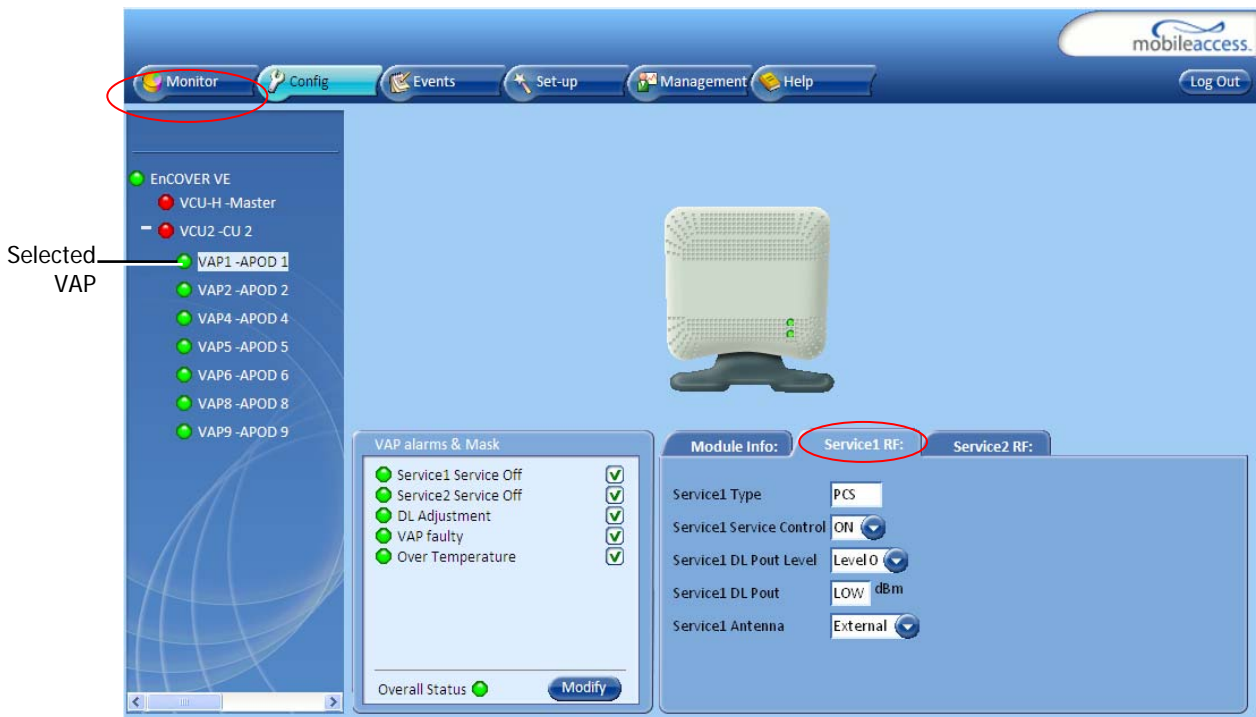
Parameter	Description
Type	Set (read only) according to unit type (e.g. EGSM / UMTS)
DL CF*	DL Center frequency (from BTS). User defined, according to connected service (EGSM / UMTS / CELL / PCS / DCS).
UL CF	UL center frequency (from BTS) – corresponding to defined DL Center Frequency. Automatically assigned by the system according to the DL frequency.
Max Exp Pin*	Maximum expected input power from the BTS. Used for adjustment procedure. Range: 0-33 dBm. User defined.
Pin	Actual measured Pin (read only)
UL System Gain	Used for adjusting the UL system gain. Range: -15 dB to +15 dB
Service Control	Enables (On)/Disables (Off) the service

* Required parameters to be provisioned by the user.

6.3.6.2 VAP Service RF Tab

To access the Service RF tab

Click the **Config** tab from the main menu bar and then select the VAP from the network topology and click the *Service RF* tab. The parameters displayed in Service RF tabs correspond to the selected element.



The following table provides a description of the RF parameters displayed in the Service RF tabs.

Parameter	Description
Type	Set according to unit type (e.g. EGSM /UMTS)
Service Control	Used to Disable (Off) or Enable (On) the service for the specific VAP
DL Pout Level	Low – measured power is below required level Level 0 - measured power is at required level Level 1 – measured power is (approx.) 5 dB less than the required level Level 2 - measured power is (approx.) 10 dB less than the required level High - measured power is over the maximum required level
UL Pout Level	Corresponds to defined DL Pout level
Antenna	Select External only if an external antenna is connected to this VAP. Otherwise, the option should be set to Internal (default).

6.4 Management Tab

6.4.1 Security Tab – Changing Password

The Management - Security tab provides password change options. This tab is common to the VCU and VAPs.

To set the application password or change an existing password

1. Select the **Security** option of the Management tab at the top of the window.



2. Click the **Modify** (Password) button of the User Name whose password is to be modified.
3. Enter the **New Password** and re-enter in the **Confirm New Password** field.
4. Click **OK**.

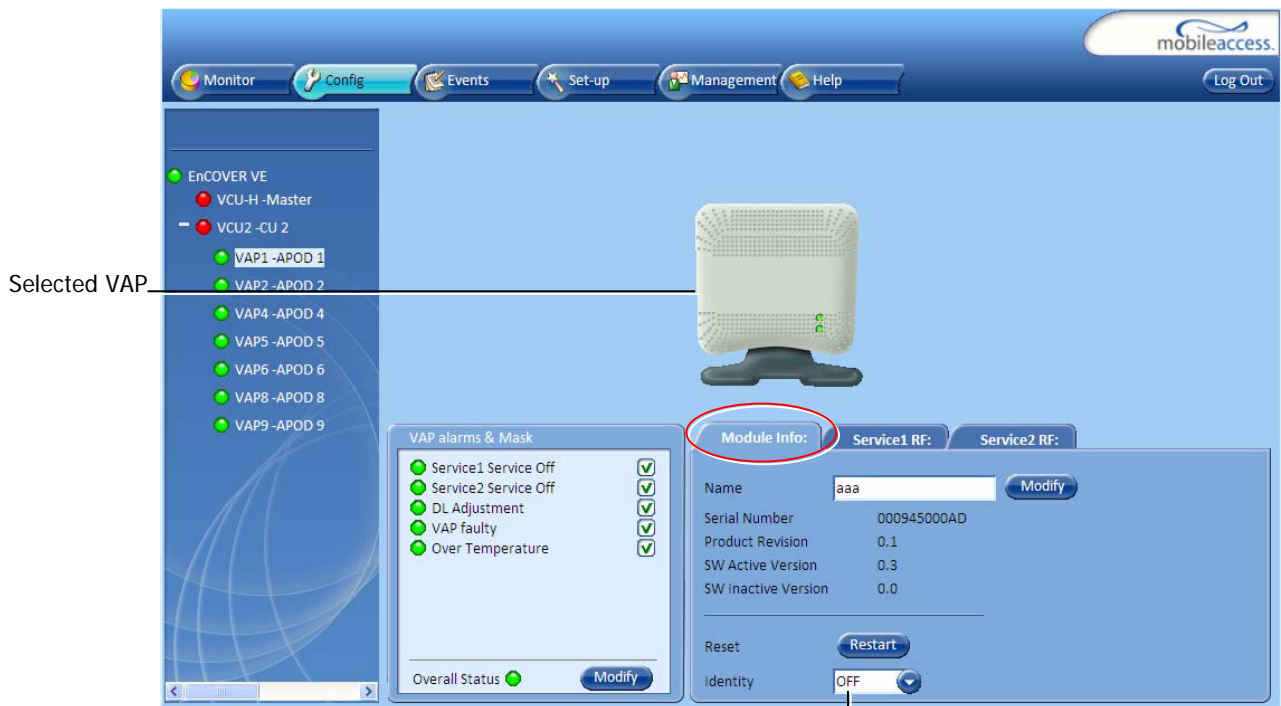
7 Troubleshooting

7.1 Finding a Specific VAP in the Building

It is recommended to assign each VAP an identifiable name corresponding to its physical location as explained in section 5.3. If a name was not configured, or for some other reason a specific VAP cannot be physically located, physically identify the VAP by following the instructions given in the following example.

To locate a VAP

1. Click the **Config** tab from the main menu bar and select the VAP to be located from the topology tree.



2. Click the **Module Info** sub-tab.

Identify On/Off

3. Set **Identify** to **ON**. The Activity LED (Blue) on the corresponding Access Pod will start blinking fast. (You will need to physically locate the VAP to see the blinking LED).



4. Locate the Access Pod.
5. Once found – it is advisable to assign it an identifiable name via the Access Pod **Module Info** tab as described in section 5.3 (e.g. floor 3, conf. room) and set the **Identify** field to **Off** again.

Appendix A - Traps

This section lists the Encover VE™ Dual - Band Controller and Access Pod traps

EnCOVER VE™ Control Unit Traps

No	Trap Name	Trap Description
1	HeartBeat	System heart beat.
2	Service1LowRFcarrier	(Major) Alert for low RF in VCU: 15 dB less than max expected power
3	Service1HighRFcarrier	(Minor) Alert for High RF in VCU: 3 dB more than max expected power
4	Service1Off	Major : user setting service to off
5	Service2LowRFcarrier	(Major) Alert for low RF in VCU: 15 dB less than max expected power
6	Service2HighRFcarrier	(Minor) Alert for High RF in VCU: 3 dB more than max expected power
7	Service2Off	Major : user setting service to off
8	Control Unit Faulty	Major: HW failure in CU
9	OverTemperature	Minor: VCU temperature is too high.
10	AbnormalSetup	Minor: Mismatched service types of more than two tiers
11	CU-SlaveDetected	Notify: A slave control unit is detected by the Master VCU.
12	CU-SlaveDisconnected	Notify: A slave control unit is disconnected from the Master VCU.

Encover VE™ APod Traps

No	Trap Name	Trap Description
1	AdjustmentSetup	Major: Cable is either too long (more than 100m) or too short (less than 10m)
2	Service1Off (at APod)	Minor: User set service too Off
3	Service2Off (at APod)	Minor: User set service too Off
4	APod Faulty	Major
5	OverTemperature	Minor: APod temperature is too high.
6	APodDetected	Notify: A VAP is detected by the VCU.
7	VAPDisconnected	Notify: A VAP is disconnected from the VCU.