Geloud WISP

Wireless Internet Service Provider (WISP):

Network and Subscriber Management System

User Manual

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cloud4WISP Wireless Internet Service Provider (WISP) Subscriber and Network Management System: User Manual

CONTENTS

- 1. Introduction to the cloud4WISP system
- 2. Installing the Access Control Software
- 3. cloud4WISP management features
- 4. cloud4WISP deployment
- 5. Initial configuration of a cloud4WISP access control PC
- 6. cloud4WISP cloud management features
- 7. Customer Relationship Management (CRM) portal
- 8. Support for cloud4WISP WISP customers

IMPORTANT NOTICE

Free online technical support is provided for cound4WISP customers. Go to the cloud4WISP website and click on the support tab. The cloud4WISP system has been designed to be very intuitive in order to minimize the requirement for technical support. Technical support staff will refer customers to this manual and so we request that customers read this manual carefully before contacting technical support. Please note that cloud4WISP does not provide telephone support.



1. Introduction to the cloud4WISP system

1.1. The cloud4WISP management system

The cloud4WISP management system was designed using telecommunications industry best practices; the OSS/BSS process model for telecom business management. The cloud4WISP provides all the systems functionality that is required to manage a WISP business. The cloud4WISP is integrated with the cloud4WISP access controller that is installed at the Network Operations Center (NOC) to manage the flow of subscriber data traffic. A cloud4WISP account can manage multiple cloud4WISP access controllers concurrently for WISP's that have more than one NOC, or else install access control at the PtMP tower. There is no limit to the number of subscribers that can be managed by a cloud4WISP account.



1.2. Feature Overview

cloud4WISP provides the billing, subscriber management, network supervision and CRM functionality that a Wireless Internet Service Provider (WISP) business requires. The cloud4WISP management feature summary is listed below.

- Sales: Add and manage subscribers.
- Provisioning: Create work orders to schedule subscriber installations..
- Activation: Activate new subscribers onto the network.
- Authentication: The CPE MAC address is entered to authenticate the subscriber.
- Subscriber rate plans: Create multiple cost/performance plans for subscribers to choose.
- **Fixed broadband billing:** Subscriber pre- and post-paid billing, with invoicing, collection notification and past-due automatic disable.
- **Mobile broadband service:** Access code generation and authentication for a non-subscriber Hotspot service.
- **Network monitoring:** Detection and alarm of cloud4WISP gateway and subscriber network to CPE data link failures.
- **Customer relationship management:** A CRM portal that subscribers use to access account data and submit a support request.
- **Helpdesk**: Support staff respond to ticket requests, and escalate issues to other staff and management.
- **Reports:** Report categories include billing, maintenance, data traffic and support.



1.3. A world-class WISP management system with minimum cost

WISP's are accustomed to paying a fee which might be \$1 or more for each subscriber each month when using a cloud management system. Not with cloud4WISP, the subscription account charge is a few cents per subscriber per month. There is no limit to the number of subscribers and multiple cloud4WISP access controllers can be added to one cloud4WISP account. This is possible because each cloud4WISP controller is a computing element in the Cloud network and processes all access transactions. The Cloud manages batch tasks, which greatly reduces the operating overhead. Once programmed by the Cloud, each cloud4WISP access without supervision.

1.4. Cloud4WISP overview

The administration process flow is initiated by sales adding a subscriber to the system. The subscriber information is added to the billing database and an installation work order is created and sent to the technician. The subscribers billing cycle is initiated upon activation.

Financial staff issue invoices as indicated by the billing cycle and post notifications of receipts. Each cloud4WISP access controller is monitored and an alert advises the administrator of a failure. Each subscriber has access to the CRM Portal to check the account and open a support ticket. The manager can obtain reports from each of the sub-systems to monitor the operation of the business.





1.5. Cloud4WISP staff roles

Cloud4WISP has five roles and each role has unique access privileges. Each role can have an unlimited number of staff login credentials.

- **Manager**: responsible for supervision of all roles and business decisions, access to operational reports.
- Sales: responsible for acquiring new subscribers and adding subscribers to the system.
- **Customer service**: responsible for the customer interface regarding any questions, problems, terminations, requests for upgrades, etc.
- *Finance*: responsible for income and expenses, principle tasks are to maintain the billing system and ensure that subscribers pay invoices.
- **Technical**: responsible for work orders, installation of new subscribers, maintenance of existing subscribers, repairs to the network, and expansion of the network.

1.6. Cloud4WISP sub-systems

Cloud4WISP sub-systems and sub-system processes are illustrated in the diagram.





1.7. Subscriber billing

The WISP creates a number of rate plans, each is a data speed and corresponding charge. A new subscriber chooses a rate plan that is added to the subscriber's profile. Activation of the subscriber initiates the start of the billing cycle. An invoice is issued for each billing cycle and the subscriber payment is noted in the billing system by the financial staff. The billing system sends the subscriber activation and rate plan instructions to the respective cloud4WISP access controller. In the case of non-payment the subscriber is deactivated.

1.8. Sales, provisioning and activation

Sales staff can add new subscribers and change subscriber information. The subscriber chooses a rateplan. Entry of a new subscriber initiates a workflow process that will generate a work order for technical staff to install the CPE wireless equipment at the subscriber premises. Subscriber billing information is added to the billing database. On completion of the subscriber installation the technician activates the subscriber and initiates the billing cycle.

1.9. Customer relationship management (CRM)

Each new subscriber receives a login credential for the CRM portal. This is a WISP branded website that the subscriber can login to see information about the account and retrieve billing invoices. The subscriber can open a customer support ticket that is sent to the support staff for answer. On-line payments can be made through the CRM portal. In the case that the Internet is not available due to circuit failure or non-payment then the captive portal displays a message.

1.10. Network monitoring and reporting

cloud4WISP monitors all access controllers for failure and sends an alert to the administrator if this occurs. Support staff can test the circuit to the subscriber CPE wireless when the subscriber reports no connection. Data traffic through each cloud4WISP access controller is monitored and a bandwidth use time graph indicates when a WAN circuit is nearing congestion. The administrator can see a status report for each cloud4WISP access controller.

1.11. Billing rate plans

The WISP can install an unlimited number of rate plans for fixed broadband subscribers. Each rate plan specifies a maximum download / upload speed and the corresponding plan charge. When enrolling a new subscriber the rate plan is chosen based on cost or data speed. Billing invoices charge the customer at the chosen rate plan. The billing system sends the customers chosen data speed to the cloud4WISP access controller.

1.12. Mobile broadband billing

Mobile broadband provides Internet access for customers who are not subscribers. The billing system issues access codes that have the parameters of duration and data speed. The customer will access an unencrypted WiFi wireless access point using a mobile device. cloud4WISP manages handoff of customers from one AP to the next to implement roaming. Mobile broadband eliminates the cost of fixed broadband premises installation and a monthly payment obligation.



1.13. Cloud4WISP access controller functions

Each cloud4WISP access controller implements several tasks:

- Authenticate each subscriber CPE onto the network.
- Apply subscriber rate plans.
- Enable/disable subscriber access.
- Monitor CPE status.
- Update the Cloud with network status and traffic.
- Captive portal for CRM and status.
- Mobile broadband authentication.





1.14. Cloud4WISP network implementation

cloud4WISP can manage multiple cloud4WISP access controllers. Install a cloud4WISP controller at the network operations center (NOC) and install additional cloud4WISP controllers at tower sites or tall buildings that have Internet access, eliminating a point-to-point wireless backhaul from the tower to the NOC.

When a subscriber is added to the billing system the cloud4WISP controller that will service the subscriber is specified, this might be a NOC or one of the PtMP towers. Each cloud4WISP controller downloads a partial database for the subscribers assigned to that controller. The cloud4WISP access controller functions autonomously and only receives updates from the Cloud when a new subscriber is added to that controller.

Cloud4WISP tower installation



Cloud4WISP building installation





2. Installing the access control software on the Intel compatible computer

2.1. How is cloud4WISP installed?

cloud4WISP is a cloud system for WISPs that automates the management of the business and the management of the network. cloud4WISP is a computer system that has two parts, the Cloud and the access control gateway. The cloud4WIAP cloud account provides all the management features and the WISP pays a subscription to maintain an account with cloud4WISP. An access control gateway installed in the network between the subscribers and the wholesale data circuit. The access control gateway receives instructions from cloud4WISP to control the Internet access and apply the rate plan chosen by each subscriber. The administrator and staff use the cloud4WISP Cloud to add subscribers, bill subscribers and to manage the network. The Cloud account can manage many gateways that are installed at different locations and can manage an ulimited number of subscribers. The features page describes all the benefits for the WISP owner.



2.2. You provide the gateway hardware

The free cloud4WISP access control software is installed on any Intel x.86 compatible PC, this can be older re-purposed hardware, pre-used hardware purchased from a data center, or a new industrial PC.

The only criteria for the access control computer is that it must have an Intel compatible CPU, 32 or 64 bits and it must have two Ethernet ports of 1Gb/s, one for the LAN and one for the WAN. The cloud4WISP software can be booted from a flash drive plugged into a USB port, or else the software can be installed on a hard drive in the PC unit. The flash drive or hard drive is used for temporary storage, not for long-term storage. The access controller constantly sends data to the cloud4WISP servers for long term storage.

The access control software is provided for the WISP as part of the cloud4WISP account creation process. The software is not specific for one PC and can be installed many times on different PC's



Any type of x.86 computer can be used for the access control. The WISP can use an old computer because even a slower processor can handle the traffic for a few hundred subscribers.



The WISP can purchase a high performance ex-data center server for less then \$200 which will be sufficient to manage several thousand subscribers.



The wisp can purchase a new industrial computer for under \$300 that is robust and can be installed at a tower site to connect directly to an Internet wholesale service at the tower.



cloud4WISP has no limit to the number of PC computer gateways that can be added to the cloud4WISP account, there is no charge for the gateway. This means that the WISP can have any type of network design. For example, the WISP can install a Starlink antenna at each wireless tower to provide access for the subscribers.



3. WISP management features

3.1. Overview of the Cloud management system features

cloud4WISP incorporates all the business management features that your WISP business requires, in a simple and intuitive user interface.



Monitor reports for billing, receipts, support, and network

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Network - technical staff

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- Check network to CPE

3.2. The cloud4WISP cloud subsystems

The cloud4WISP cloud management system has five subsystems that includes the API interface to one or more cloud4WISP gateways. The subsystems are shown in the diagram with the staff interfaces to each.

- Billing and invoicing: •
- Sales provisioning and activation: •
- Network management and monitoring: •
- Customer Relationship Management (CRM) and helpdesk: •
- API interface to one or more cloud4WISP gateways: •

Each function of the cloud4WISP Cloud is described in the sections which follow.





3.3. cloud4WISP Cloud staff roles

The cloud4WISP Cloud management system has five roles and each role has unique access privileges. Each role can have an unlimited number of staff login credentials.

- Manager: responsible for adding staff, setting rate plans and analysis of operational reports.
- Sales: responsible for acquiring new subscribers, adding subscribers to the system, initiate provisioning and generate a work order for the customer installation.
- Customer service: responsible for the customer interface, responding to questions and helpdesk support.
- Finance: responsible for billing and collections, issuing invoices and ensuring that subscribers pay by the due date. Financial staff also provide bookkeeping and payroll services using 3rd party software.
- Technical: responsible for fulfilling work orders, installation of new subscribers, maintenance of existing subscribers, repairs to the network, and expansion of the network.



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3.4. Sales

Sales staff add new subscribers and update subscriber information. The new subscriber chooses a rateplan which is added to the customer record. Subscriber billing information is added to the billing database. Entry of a new subscriber can initiate a work order for technical staff to install the customer equipment.

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3.5. Provisioning the service

Entry of a new subscriber by sales staff initiates a workflow process that will generate a work order for technical staff to install the CPE wireless equipment at the subscriber premises. The technician will set the installation date then take equipment to the customers premises for installation. On completion of the installation the technician activates the subscriber and initiates the billing cycle.



3.6. Rate plans

The WISP can install an unlimited number of rate plans for fixed broadband subscribers. Each rate plan specifies a maximum download / upload speed, the corresponding plan charge and an optional data cap. When enrolling a new subscriber the rate plan is chosen by the customer based on cost or data speed. Billing invoices charge the customer at the chosen rate plan value. The billing system sends the customers chosen data speed to the cloud4WISP access controller. Some examples of rate plan tiers are:

- Tier 1: data maximum download 1Mb/s, maximum upload 100Kb/s, monthly charge \$5.
- Tier 2: data maximum download 5Mb/s, maximum upload 500Kb/s, monthly charge \$15.
- Tier 3: data maximum download 10Mb/s, maximum upload 1Mb/s, monthly charge \$25.
- Tier 4: data maximum download 20Mb/s, maximum upload 2Mb/s, monthly charge \$45.



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kaff				Catewa	48	can be purchased via the login page.	
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Berry Hinlas	1			4 Custom	675	renewed until the next period starts. Some 'top-up' plans should be created, these will allow contomers to purchase entry data so the join taxes or contomer nexts.	
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3.7. Subscriber billing

A new subscriber chooses a rate plan that is added to the subscriber's profile. Activation of the subscriber initiates the start of the billing cycle. An invoice is issued for each billing cycle and the subscriber payment is posted in the billing system by the financial staff. The billing system sends the subscriber activation and rate plan instructions to the respective cloud4WISP access controller. In the case of late-payment the subscriber is deactivated automatically by the billing system.

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3.8. Mobile broadband service

Mobile broadband provides Internet access for customers who are not subscribers. The billing system issues access codes that have the parameters of duration and data speed. The customer will access an unencrypted WiFi wireless access point using a mobile device. The cloud4WISP Cloud authenticates the access code when the customer enters the code into the login page. Mobile broadband is ideal for customers who do not want a monthly payment obligation.

B Dashboard							
B Gateways	S Create co	des for T	ower 4 (2285101251)			^
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3.9. Network monitoring and alerting

Data traffic through each cloud4WISP controller is monitored and a time graph of bandwidth use indicates when a WAN circuit is nearing congestion. The administrator can see a status report for each cloud4WISP controller. The cloud4WISP Cloud monitors all cloud4WISP controllers assigned to the account for failure and sends an email alert to the administrator if this occurs. Support staff can test the circuit to the subscriber CPE wireless when the subscriber reports no connection to identify if the problem is due to the network or at the subscribers premises.

Consumer (17 2010	Gateway (ID)		Downtime		Status
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Gateways			A Check-In	· Mert sent	A warning
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Customers	 Homoring seconds 				~
Coder	The monitor sends an alert when a	gateway fails t	to check-in an	l another when it	resumes.
Cours	The hide option removes a gatew	ray from the da	ishboard, usef	ul for prolonged o	utages.
Billing	The downtime defines how long t	to wait before a	ilerting, Increa	ise to reduce faise	alerts.
Helpdesk	Alert email address:		1		
Work Orders	Email language:	Spanish \sim			
Monitoring			1000		
Staff		Alert	Hide	Downtime	
Settinos	Tower 1 (779b7e8b50)	M		5 mins ~	
	Tower 2 (9a80671c88)			5 mins ~	
Show Help	Tower 3 (576ed3f888)			5 mins \vee	
Logout	Tower 4 (2285101251)			5 mins ~	
		Change Sell	inen l		



3.10. Customer Relationship Management (CRM)

Each new subscriber receives a login credential for the CRM portal. This is a WISP branded website that the subscriber can login to see information about the account and retrieve billing invoices. The subscriber can open a customer support ticket that is sent to the support staff for answer. On-line payments can be made through the CRM portal. In the case that the Internet is not available due to circuit failure or non-payment then the captive portal displays a CRM message.

The WISP is solely responsible for answering subscriber tickets. cloud4WISP does not receive subscriber tickets.



3.11. Helpdesk

A subscriber can initiate a support request through the CRM portal. The support request is sent to the help desk for the support staff to answer. If the support staff cannot answer the question it can be escalated to other staff; financial, technical, sales or manager. A response might require a phone call to the customer.



 Dashboard Gateways Plans Customers 	# Updated L3 2003-07-05 Plan uppride 11 2009-09-26 Totket from o 10 2009-19-27 Upgrade plan	Ticket Cr Dav stomer portal r Onen Down Create new ticket	eated Ass al Craig Yank Yank Rend Other andra	gned Concor		
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			Status	Open V	helpdesk licket]

3.12. Reporting

Reports are generated by the cloud4WISP Cloud to provide the WISP manager with data to monitor the performance of the business and performance of the network. The reports are listed below.

Reports for billing.

- List of subscribers, status enabled/disabled, billed date, due date.
- List of invoices issued to subscribers and payment status.

Reports for data traffic, time graphs can be selected from 1-hour to 1-week.

- Time graph of an cloud4WISP gateway connected and authenticated users.
- Time graph of an cloud4WISP gateway performance as a %.
- Time graph of an cloud4WISP gateway backhaul WAN usage in Mb/s.
- Authenticated user login information (currently using the network).
- Connected user login information (connected but not currently using the network).

Reports for the network.

- Monitoring status of all access control gateways on-line/off-line.
- Check subscriber CPE circuit status.
- List of outstanding work orders, see each work order status.

Reports for support.

• List of support ticket requests via the CRM portal, see each ticket status.



Gateway status Status reload disabled v			^		
Current status of WISP gateways			R		
Gateway (ID)	Auth #	Conn #	Status		
Tower 1 (EZ-100G) (779b7e8b50)	1	1	~		
Tower 2 (EZ-100G) (9a80871c88)	0	0	× 🗛		
Tower 3 (EZ-100G) (576ed3f888)	3	3	~		
Tower 4 (EZ-250G) (d70cfcc591)	2	2	~ <u>A</u>		
Tower 5 (EZ-100G) (2285101251)	1	1	✓ ▲		
Tower 6 (EZ-1000R) (0d26b36404)	0	0	~ <u>A</u>		
Tower 7 (EZ-1000G) (6d7052f8d0)	1	1	~		
Tower 8 (EZ-250R) (fba0898308)	0	0	×.		
✓ X Check-in C Recent rel	w	AN usage:	24 hours 🗸		
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		Dow	m: 773.08 MB	Up: 128.01 MB Total: 901.10 MB	

3.13. Installation of the Customer Premise Equipment (CPE)

The customer requires a physical connection to the network. This requires a client premise equipment (CPE) wireless installing with line of sight connection to the Point to Multi-point (PtMP) antenna tower. The CPE wireless receiver is connected to the PtMP transmitter using the CPE software.





3.14. Authentication

Authentication is an cloud4WISP Cloud configuration that will permit the cloud4WISP access controller to recognize the new customer CPE wireless when it connects to the network after completion of the subscriber premises installation. The cloud4WISP customer record is updated with the authentication information. cloud4WISP authenticates the subscriber using the CPE MAC address which is much simpler than other methods, making installation very easy.



3.15. Activation

When the authentication of the customer CPE has been completed and tested then the customer can be activated. The customer record 'enable' box is checked to activate the customer. The customer should confirm that the Internet service is working according to the service offered and then sign off the work order to accept the installation. In the case of late payment the billing system will automatically deactivate the customer until the account is paid then it will automatically activate the customer.

	Customer provisioning: Work order: Create work order for CPE installation Assign work to: Unassigned Order comments: Please make the following changes
Activation: Activate the customer by checking the enable box. The billing system will deactivate the customer if late payment	Internet access management: Customer enablet: Internet access allowed Recurring plans only, a login code can be created for single use Internet access plan: Tier 2 Enter same MAC again if access is needed on multiple gateways Q Test access from gateway to customer CPE (results on Monitoring page)
Customer record	CPE MAC address Description Gateway Allow 1 (e8:40:f2:3b:c5:c3) Bradley Cooper ret Tower 3 (E Add + Add



3.16. Access control

Each cloud4WISP access controller implements nine functions:

- Receive and process subscriber access instructions from the Cloud.
- Authenticate each subscriber CPE onto the network.
- Enable/disable subscriber access.
- Apply rate plans to each subscriber.
- Verify CPE link status on request.
- Send the network status and traffic stats data to the cloud4WISP Cloud.
- A captive portal provides the customer with access the the CRM UI.
- A captive portal provides the customer with network error messages.
- Mobile broadband authentication.



3.17. Support

Free online technical support is provided for cloud4WISP customers. Go to the cloud4WISP website support tab. The Cloud system has been designed to be very intuitive to minimize the requirement for technical support. The cloud4WISP Cloud system is multi-language and can be switched between English and Spanish. Other languages will be available.

We request that WISP's read this manual carefully before contacting technical support.



4. cloud4WISP Deployment

4.1. NOC installation: Network Operations Center with wireless and landline links.

Most WISP's build a network architecture with a NOC installed at a point where the access to the wholesale fiber circuit is available. From the NOC a star network is built to each PtMP tower using point-to-point wireless links. Each PtMP tower then has a wireless connection with the customers CPE wireless. The cloud4WISP gateway is installed at the NOC to implement access control for subscribers connecting to the PtMP towers. The choice of cloud4WISP product is determined by the bandwidth of the wholesale circuit. The cloud4WISP installation is shown in the next diagram.



4.2. High throughput: Network Operations Center with stacked gateways.

cloud4WISP access control gateways are available with 250Mb/s and 1Gb/s throughputs. When higher bandwidths are required the gateways are stacked to increase the throughput of access control. This is illustrated in the next diagram. A customer maximum bandwidth is limited to the maximum bandwidth of the cloud4WISP controller that the customer is connected to. This feature is very convenient for the WISP as the infrastructure investment is incremental according to the acquisition of subscribers, minimizing expenditure.



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4.3. Connecting PtMP towers that have a network connection.

When a PtMP tower has a local Internet connection then an cloud4WISP access control gateway is installed at the tower, as shown in the next diagram. This will be the case when the PtMP tower is also a mobile phone tower, or when the PtMP antenna is installed on the roof of a tall building and a fiber wholesale connection is available at the building.



4.4. Satellite backhaul: at a PtMP tower.

Some WISP's already install a satellite backhaul at a PtMP tower using the HughesNet Geo-stationary satellite service. The service availability is limited, covering most parts of North America and four countries in South America. WISP's that are located in some geographies now have access to a high bandwidth satellite backhaul using the Starlink Business service. A backhaul speed of up to 500Mb/s is available with low latency. Eventually Starlink will have global coverage and a WISP will be able to install a tower with a Starlink backhaul anywhere. The Starlink satellite antenna is installed at a high point on the tower with 180 degree visibility of the sky. The cloud4WISP access control gateway is installed at the PtMP tower as shown in the diagram.





4.5. Distributed control: access control at PtMP towers, eliminating the NOC.

Satellite services are now available in many parts of the world and so the WISP can install a satellite backhaul at each PtMP tower, as illustrated in the next diagram. The towers are managed through the cloud and the NOC plus wireless PtP infrastructure between each tower and the NOC is eliminated. Low earth orbit (LEO) satellite services cannot have many antennas grouped in one location as bandwidth will be limited due to all antennas communicating with the same satellite. When the satellite antennas are distributed at each tower the best performance is obtained.



4.6. Multi-tenant building: cloud4WISP configuration.

Providing Internet service in an urban area will frequently require installing service in a multi-tenant building. The building should be wired internally with CAT6 cable to each unit, and a wireless router installed in each unit, as shown in the next diagram. The multi-tenant building connects back to the WISP PtMP tower through a PtP wireless link. An cloud4WISP access control gateway is installed in the building to manage the wired subscribers. Each wireless router will be wired back to the cloud4WISP access controller and authenticated with the MAC address of the router. The PtP wireless link from the building to the PtMP tower must have WDS enabled to pass the MAC address of the cloud4WISP gateway back to the PtMP tower. The MAC address of the building cloud4WISP gateway is added to the allowed MAC table of the PtMP tower cloud4WISP gateway in order to bypass access control at that gateway.





4.7. Tower installation: when the PtMP tower has wholesale broadband access.

When the WISP installs a PtMP antenna on a mobile phone tower then the tower operator will provide back-up power and a wholesale Internet connection. The cloud4WISP access control gateway will be installed in the tower equipment cabinet as shown in the next diagram.





4.8. cloud4WISP advantages: network design benefits.

The cloud4WISP access control gateway and Cloud technology offers a series of advantages for both new and established WISPs by dramatically reducing the investment and operating costs compared with any other technical solution. By reducing the technical complexity it is possible for a person with limited technical skills and financial resources to start a WISP business. WISP entrepreneurs can accelerate the time to service deployment and initiate revenue generation earlier in the startup cycle.

- The distributed operation of cloud4WISP gateways makes it possible to easily deploy access control at a tower site that has a data link installed at the tower.
- The time to deployment and subsequent revenue generation is shortened due to the plug-andplay nature of the cloud4WISP Cloud technology. The WISP requires one tower site connected to the Internet to start in business.
- The cloud4WISP Cloud solution is redundant. With distributed access control there is no one point in the network where failure will bring the whole network down.
- Any failure of the Cloud servers will not affect the operation of all cloud4WISP controllers in the network as they operate autonomously to the Cloud service.
- When PtMP tower backhaul service like LEO satellites become available then the WISP can consider eliminating NOC expenses.
- The initial cost of implementation is dramatically reduced, as the network infrastructure can be built out as needed and easily incremented in performance.
- The cloud4WISP Cloud technology is very easy to deploy and the WISP entrepreneur does not need specialized network skills; as would be the case if the entrepreneur was scripting routers and configuring RADIUS servers; the cloud4WISP controller and Cloud platform is plug and play.
- There is no limit to the number of cloud4WISP access controllers that can be assigned to a Cloud
 account, and no limit to the number of subscribers that can be managed by an cloud4WISP Cloud
 account.



5. Initial configuration of the cloud4WISP access controller software installed on a PC hardware

5.1. The configuration process

The cloud4WISP access control software has a simple graphic user interface that is accesses via the LAN port using a second PC. The purpose of the interface is to ensure that the cloud4WISP controller can connect to the Internet and is recognized by the cloud4WISP account. All subsequent configuration is done via the cloud4WISP account.

5.2. Initial setup

Connect the LAN port of a computer to the LAN port of the cloud4WISP product. The computer Ethernet port will get an IP address from the cloud4WISP DHCP server.

Open a browser and the page will be redirected to the cloud4WISP setup GUI, shown in the screen shot below. Ensure that the browser home page does not use encryption (https://) otherwise the browser page will not be redirected. Some browsers detect the login page and advise the user that a button must be clicked to login.

When the browser page opens to show the GUI select the preferred language (English or Spanish). The first box shows the device ID, which will be required to register the cloud4WISP product with the cloud4WISP management account.

ISP Network Management	ID: 63a7cddcf 24WISP status: O Internet access: YES (
easyWISP: Setup	
This page is only used to connect to the Internet, all configuration and man done via the <i>c</i> 4WISP cloud service. To set up and manage this gateway go to <u>https://admin.cloud4wisp.com</u> .	agement is
You need to provide the ID 63a7cddcf7.	
You need to provide the ID 63a7cddcf7. Administrator Password Setup	
You need to provide the ID 63a7cddcf7. Administrator Password Setup A password is required to secure this page.	
You need to provide the ID 63a7cddcf7. Administrator Password Setup A password is required to secure this page. Username: admin	
You need to provide the ID 63a7cddcf7. Administrator Password Setup A password is required to secure this page. Username: admin Password: *****	



The box at the top right corner shows the device ID and the Internet connection status. If the Internet access shows a red 'NO' then verify the physical connection and also determine if a static IP address is required for the WAN port.

The first box shows the device ID, which will be required to register the cloud4WISP product with the cloud4WISP management account. The link to create and manage the clud4WISP account is also shown in the first box.

The second box requires a password to be entered to subsequently access the device. Choose a strong password, include upper and lower case letters, number and symbols. Repeat the password in the field below.

Scroll down the page to see the next box, this is a graphic representation of the cloud4WISP device connectors. Verify that the WAN cable is connected.

Administrato	r Password Setup	ID: 63a7cc
		4WISP status
A password is required to secure this page	9.	Internet access: YI
Username: a	dmin	
Password:	****	
Retype: *	****	
	Update	
Internet Power LAN	LAN LAN LAN WAN	
Power LAN Power Tour WAN Netw	LAN LAN WAN	
Internet Power LAN	AN LAN LAN WAN	
These settings control how the gateway co WAN Type:	Vork Port Setup	
These settings control how the gateway co WAN Type:	A Vork Port Setup Unnects to the Internet DHCP Release / Renew	
These settings control how the gateway co WAN Type: MAC Address:	AN LAN LAN WAN	
These settings control how the gateway co WAN Type: MAC Address: IP Address:	AN LAN LAN WAN A Vork Port Setup A A A A A A A A A A A A A	
These settings control how the gateway co WAN Type: MAC Address: IP Address: Netmask:	AN LAN LAN WAN AN LAN LAN WAN AN AN A	

Scroll down further to view the next box, the WAN network port setup. This is shown in the next screenshot. The default WAN setup is a DHCP client and so the WAN port may have already connect to the Internet if connected to an ISP router that provides a DHCP service. If the Internet access is showing not connected then configure the WAN port appropriately for the ISP circuit provided.



	Retype.	Update]	ID: 63a
				C4WISP Sta
				Internet access
	LAN		1 MANI	
Int	Power ernet	LAN LAN LAN	WAIN	
1408				
Po	wet			
			A	
0	WAN Netw	ork Port Setup		
These setting	gs control how the gateway co	onnects to the Internet	t	
These setting	gs control how the gateway co	onnects to the Internet	t	
These settin	gs control how the gateway co WAN Type:	DHCP	t	
These setting	gs control how the gateway co WAN Type:	DHCP Release / Renew	t V	
These setting	gs control how the gateway co WAN Type: MAC Address:	DHCP Release / Renew 00:0c:43:28:80:e7	t 	
These setting	gs control how the gateway co WAN Type: MAC Address: IP Address:	DHCP Release / Renew 00:0c:43:28:80:e7 192.168.3.8	t V	
These setting	gs control how the gateway co WAN Type: MAC Address: IP Address: Netmask:	DHCP Release / Renew 00:0c:43:28:80:e7 192.168.3.8 255.255.255.0	t 	
These settin	gs control how the gateway co WAN Type: MAC Address: IP Address: Netmask: Gateway:	DHCP Release / Renew 00:0c:43:28:80:e7 192.168.3.8 255.255.255.0 192.168.3.1	t	
These setting	gs control how the gateway co WAN Type: MAC Address: IP Address: Netmask: Gateway: DNS Server 1:	DHCP Release / Renew 00:0c:43:28:80:e7 192.168.3.8 255.255.255.0 192.168.3.1 8.8.8.8	t	
These setting	gs control how the gateway co WAN Type: MAC Address: IP Address: Netmask: Gateway: DNS Server 1: DNS Server 2:	DHCP Release / Renew 00:0c:43:28:80:e7 192.168.3.8 255.255.255.0 192.168.3.1 8.8.8.8 8.8.4.4	t	

When the WAN network port is correctly configured and the Internet access shows a green 'YES' then scroll the page down to see the next box, which is the firmware update box. This box is provided in case the cloud4WISP product cannot connect to the cloud4WISP account and a firmware update is required. Ignore this box during this setup procedure, and update the firmware when the cloud4WISP controller is connected to the cloud4WISP account.

Firmware Update
Firmware should be updated from the cloud but can also be updated here Select File: Browse No filcted.



Scroll down the page to see the next box, this is the Network Tools box and is provided to diagnose network problems. This box can be used in conjunction with the cloud4WISP technical support, which is accessed through the support ticket system.



The screen shown above illustrated the use of the 'ping' command to test the circuit latency to the could4WISP server.

Commands can be selected from a drop-down menu. Cloud4WISP technical support may request the WISP technical staff to run commands from this screen in order to diagnose a problem with the network.

After initialization of the cloud4WISP controller it can be assigned to the WISP's cloud4WISP account. The device ID shown at the top of the page will be required to complete assigning the device to the cloud4WISP account.



6. cloud4WISP management features

6.1. cloud4WISP overview

The cloud4WISP management system is designed for ease use. Four easy steps are required in order to start selling Internet services. The four steps are shown in the diagram below.



As the WISP business expands and new tower locations are obtained, cloud4WISP gateways will be added to the system. Subscriber plans may be added and change with time. Subscriber plans may include special promotions for marketing the WISP services. Subscribers will be constantly added to the system on a daily basis as the WISP makes sales to new customers, or upgrades existing customers.

6.2. Create a cloud4WISP account

Open a browser window with the following URL:

https://admin.cloud4wisp.com

The screen shown below will open. Select the preferred language by clicking on the flag in the top right corner, then click on the link 'create new account'

Account Login Username: Password: Log into account Create new account Forgotten password	



Create the new cloud4WISP account by completing the form shown in the screen below, then click the 'create new account' button. Note that a valid cloud4WISP gateway ID must be provides to create the account. An email message will be sent confirming the cloud account with a temporary password for login.

A New Cloud A	ccount	
To create an account	you will need a WISP gateway.	
The account is free ar	nd included as part of your purchase.	
You will need a new v	alid serial/ID to create an account.	
Fill out the form belo	w to open a Cloud account:	
Username:	270	
Gateway ID:		
The ID is displ	ayed on the admin page	
Name:		
Email:		
Verify Email:		
Company Name:		
Telephone:		
Address:		
Address (cont):		
City:		
State		
ZIP / Postcode:		
Country:		



When the cloud4WISP account has been created then login with the chosen username and password provided.

After the first login change the password, using a strong password. Keep the username and password in a safe location where it can be retrieved if necessary. Do not give the password and username to others. Employees can be added to the account later.

6.3. Dashboard

When the login has been completed successfully then the Dashboard will be displayed. See the next figure.

The first box shows the workflow steps to remind the administrator.

- 1. Set up a gateway
- 2. Add plans
- 3. Add customers

The first cloud4WISP gateway was added when the account was created. Subsequent cloud4WISP gateways can be added at any time. Customers/subscribers cannot be added without a billing plan to associate with the customer, therefore step 2 is the addition of a billing plan. It is likely that the WISP will require several billing plans, examples are:

- Basic Plan: 10Mb/s download speed, \$19/month
- Performance Plan: 25Mb/s download speed, \$39/month
- Business Plan: 50Mb/s download speed, \$65/month

When subscribers are added they are associated with one of the billing plans

The cloud4WISP Dashboard page, with four cloud4WISP gateways in use is shown on the following page.

The first box within the page is for instructional purposes and can be removed by the WISP.









The second box within the page shows the gateways that are associated with the account. The usual configuration is to install a gateway at each tower, however several towers may be backhauled to one gateway.

8	Gateway status	Status reload	disabled 🗸		^
1	Current status of W	ISP gateways			Ø
	Gateway	(ID)	Auth #	Conn #	Status
	Tower 1 (779b	7e8b50)	2	1	~
	Tower 2 (9a80	871c88)	3	3	~
	Tower 3 (576e	d3f888)	2	2	×
	Tower 4 (2285	101251)	4	4	×
		🗸 🗙 Check-in	C ^I Recent reboot	🚫 Disabled	🛔 Hide 🛛 🔺 Alert

The third box within the page is a graph that summarizes the number of logins across the WISP's network, the period of the graph can be selected at 7, 14 or 28 days



The fourth box within the page lists recent subscriber logins to the WISP's network. The number of subscribers displayed can be selected as 10, 100 or 1000

Logins:	ALL GATEWAYS	✓ 10 logins ✓	·	
Most recent	t logins across all g	jateways	_	8
Date time	Gateway	MAC address	Customer	Logir
05/15 17:14	Tower 4	84:39:be:64:45:c9	Bradley Cooper	мас
05/15 16:27	Tower 2	f4:6d:04:f5:10:9a	Sandra Bullock	мас
05/14 18:16	Tower 1	e0:2a:82:c3:8d:a4	Daniel Craig	MAC
05/14 15:21	Tower 1	e0:2a:82:c3:8d:a4	Daniel Craig	MAC
05/14 15:18	Tower 1	00:88:2c:0d:97:88	Mark Wahlberg	мас
05/14 14:45	Tower 2	f4:6d:04:f5:10:9a	Sandra Bullock	MAC
05/12 20:55	Tower 1	88:dc:96:44:98:4a	Dwayne Johnson	мас
05/12 18:06	Tower 4	08:9e:01:b3:72:61	Channing Tatum	мас
05/12 17:37	Tower 4	84:39:be:64:45:c9	Bradley Cooper	MAC
05/12 17:37	Tower 4	c8:9c:dc:83:aa:af	Christian Bale	мас
			Green: User logged in	mor



6.4. Adding cloud4WISP gateways

To add an cloud4WISP gateway click on the gateway menu entry then enter the gateway ID in the first box and click the 'add gateway' button

Three other boxes are provided. Display gateway permits the gateway to be selected from a drop-down list and selected in order to configure the gateway. Find a gateway permits the ID or name of the gateway to be entered in order to locate the gateway configuration page. Finally delete a gateway permits a gateway to be selected from a drop-down menu and deleted from the gateway database. This might occur is a gateway is transferred from one WISP account to another; a gateway cannot be registered in two accounts simultaneously.




6.5. Configuring an cloud4WISP gateway

First select the gateway from the display drop-down menu as shown in the screen below. Click on the selected gateway to open the gateway configuration screen

🖻 🕫 🝊 cloud4WISP: Gat	eways \times + \vee	-		×
\leftarrow \rightarrow \circlearrowright \textcircled{a}	https://admin.cloud4wisp.com 🛄 🕁	s≞ l~	ß	
Coudewise 2020 Coudewise 2020	 Display gateway Select gateway: Tower 1 (779b7e8b50) Tower 2 (9a80871c88) Tower 3 (576ed3f888) Tower 4 (2285101251) D or name: Find gateway Gateway ID: ID is displayed on gateway's admin page Add gateway Gateway ID: Zelect gateway Select gateway: v Remove data from the Cloud Gateway can be added by another account Delete gateway 			
		SHTZ	1.2.1	

When the gateway has been selected the configuration parameters will be displayed. This screen has a lot of information and is shown scrolled down over the following three pages.







The cloud4WISP gateway configuration parameters are described in sequence: **Box 1**: permits the selection of any gateway managed by cloud4WISP

😧 Dis	solav gatewav	^
	Select gateway:	
	Tower 1 (779b7e8b50)	0
	Tower 2 (9a80871c88)	
	Tower 3 (576ed3f888)	
	Tower 4 (2285101251)	

Box 2: shows the basic hardware parameters cloud4WISP gateway, the public IP, the MAC address, the hardware version, the firmware version and if enabled. The on-line status of the cloud4WISP gateway is shown, in the example the 'not checked in' message indicates that the gateway is off-line and action must be taken to put the gateway back on-line.

IMPORTANT NOTE: take care when modifying WAN IP addresses via the cloud. A mistake made may require a visit to the tower to restore the WAN IP address via the cloud4WISP setup page.

 Gateway sta 	atus		^
Public IP address:	107.194.14.55	Firmware:	1.3.5mt
MAC address:	70:b3:d5:e6:94:7e	Enabled:	Yes
Hardware:	EasyWISP EZ-100G	Uptime:	2d 21h 56m 36s 🔱

Box 3: lists the customer CPE devices that are services by the cloud4WISP controller.

		/` .	/
🖶 Customer access			~
Customers with access to this get the second sec	gateway		Ś
Name / Company	CPE MAC	Description	Enabled
Daniel Craig	e0:2a:82:c3:8d:a4	Daniel Craig residential	× .
Dwayne Johnson / DEF News Corp	88:dc:96:44:98:4a	Business - DEF News Corp	×
Mark Wahlberg	00:88:2c:0d:97:88	Mark Wahlberg residential	× .
		A series has a series of the series of the	11



Box 4: shows the cloud4WISP gateway settings, which can be modified using this page. The first section permits the device name to be changed, the login page to be changed for a custom login page, and the admin password to be changed. The next section is the WAN port settings, the default for the WAN port is DHCP client; however the WAN port can be configured for a static IP. The next section is the LAN port settings. The cloud4WISP EZ100G has four LAN ports, however they are configured as a switch. The IP parameters can be configured for the LAN ports. The next section is the firewall setting; the firewall will block access to private address ranges. This means that if the WISP has other equipment at the tower connected to a router in addition to cloud4WISP, it will block any subscriber attempt to access the network behind the cloud4WISP. The final section is the port forward settings. Port forward rules can be added to permit the WISP to access devices on the LAN size of cloud4WISP. For example the WISP might want to add remote configuration for the PtMP radio and CPE radios. Click the update button after the changes are made,

🕏 Gateway settings		
Custom login page and netw	ork settings for gateway	2
Name: [Tower 1	
Hostname: [wisplogin.com	
Login page:	wisplogin.com (default) \vee 💰 Add a custom page	
Admin Password: (****** Repeat: ******	
WAN port settings: U Cha	ange will reboot gateway and log out users	
▲ Invalid WAN settin	gs may require a site visit to restore cloud access!	
Type:	DHCP V	
IP address: [192.168.1.191	
Netmask:	255.255.255.0	
Gateway:	192.168.1.1	
DNS:	192.168.1.1	
LAN port settings: O Cha	nge will reboot gateway and log out users	
IP address:	192.168.96.1	
Netmask: [255.255.240.0	
Gateway:	192.168.96.1	
DNS: [192.168.96.1	
DHCP start:	192.168.96.10	
DHCP end:	192.168.111.254	
Lease time:	86400 (seconds)	
Firewall settings: C Chan	ge will restart firewall and log out users	
Block private IP ranges:] 192.168.0.0/16 + 10.0.0.0/8 + 172.16.0.0/12	
Port forward settings: WA	N port access to local network	
WAN port LAN IP	LAN port Forward name / comments +	



Box 5: displays a graph showing the number of users connected to the gateway. The timescale can be selected from 1 hour to 1 week.

Users:	24 hours 🗸	^
Graph o	of connected and authenticated (logged in) users over time	Ø
5	Now	
3	T TTTNTILL	
0 -	Connected Authenticated	

Box 6: displays the performance of the cloud4WISP gateway controller. This graph will indicate to the WISP if the cloud4WISP controller requires upgrading to a unit with higher performance. The timescale can be selected from 1 hour to 1 week.

Perfo	mance: 24 hours 🗡	^`
🔋 Grap	h of gateway hardware performance (shows hardware bottlenecks)	Ø
100%	Now	
50%		
0%	- CPU RAM	

Box 7: displays WAN usage which is the utilization of the WAN bandwidth. If the WAN circuit bandwidth utilization is constantly at maximum then the WISP should upgrade the circuit for higher capacity. The timescale can be selected from 1 hour to 1 week.





Box 8: lists authenticated subscribers currently logged in to the WISP's Internet service. This list should include all subscribers, unless one subscriber has a defective wireless connection.

Authenticated users (logged in)						
All logged in dev	ices with acecss	to the Internet	t (excluding acce	ess points)	32	
MAC address	OS/browser	Time left	<u>Data in</u> / <u>out</u>	Code / User		
b8:70:f4:e2:36:bb	Auto/MAC	26d 20h 42m	1.3G / 62M	Robert Downey	× O	
c8:9c:dc:83:23:1f	Auto/MAC	26d 0h 34m	108M / 5M	Tom Cruise	×O	
f4:6d:04:f5:10:9a	Auto/MAC	26d 20h 44m	11M / 10M	Sandra Bullock	ר	
	3 users authentica	ted × Logout u	iser 🚫 Logout a	and block user	more	

Box 9: lists connected subscribers who are currently accessing the Internet. This number may not include all the subscribers who are connected to the cloud4WISP gateway. The WISP can use the information in this graph to estimate the contention-ratio (see elsewhere in this document for an explanation of this parameter) of the tower service.

Connected users (using the gateway)							
All devices connected to the gateway (with or without Internet access)							
MAC address	IP address	Hostname	Block IP	Block MAC	Allow MAC		
b8:70:f4:e2:36:bb	192.168.106.90	john-PC	No	No	No		
c8:9c:dc:83:23:1f	192.168.107.73	jb-VB90RI	No	No	No		
f4:6d:04:f5:10:9a	192.168.108.158	John-PC	No	No	No		
				3 u	sers connected		

Box 10: shows the allowed and blocked MAC lists. Entering MAC addresses into the allowed or blocked list and clicking the 'update' button will add MAC addresses.

ked MAC list (one per line): :11:22:33:44:55 :bb:cc:dd:ee:ff
:11:22:33:44:55 :bb:cc:dd:ee:ff



Box 11: shows the allowed IP and blocked IP lists. Entering IP addresses into the allowed or blocked list and clicking the 'update' button will add IP addresses.

IP addresses and web sites		~
IP addresses, domains and web sites	always blocked or always allowed	Q
Allowed IP list (one per line):	Blocked IP list (one per line):	
12.34.56.78 www.web-site.com	12.34.56.78 www.web-site.com	
C Change will rest	art firewall and log out users	
	Update	

There is no limit to the number of cloud4WISP gateways that can be added to a cloud4WISP account.



6.6. Plans

A plan is a specific service provided for a group of subscribers. The plans developed by the WISP are sometimes referred to as tiers. Each plan determines the download and upload speeds, the download and upload byte counts, and the charge for that service in the local currency. Plan characteristics are developed by the WISP for the local market and will be determined by the operating costs, the local demand for the service and the economic levels of the potential subscribers. Plan examples are:

- Basic Plan (Tier 1): 10Mb/s download speed, \$19/month
- Performance Plan (Tier 2): 25Mb/s download speed, \$39/month
- Business Plan (Tier 3): 50Mb/s download speed, \$65/month

Any type of plan can be configured and there is no limit to the number of plans. Click on the plan entry in the main menu to list the plans already configured (no plans will be shown the first time that the cloud4WISP account is configured). See the screen below.





Click on the button 'add new plan' to create a new billing plan. The new plan screen is shown below

🖻 🗐 🕏 Custor	ner portal	🤹 cloud4WISF	P: Plans $ imes$	+	\sim	_		×
\leftrightarrow \rightarrow 0 i		admin.cloud4v	visp.com/?o	=r 🛄	☆	t≡ h	Ġ	
 Cloud Dashboard Gateways Plans Customers Codes Billing Helpdesk Work Orders Monitoring Staff Settings Show Help Logout 	A https:// Internet Plans Internet plans set Plans can eith are billed regula can be purchase The customer renewed until th will allow custor Plans De Plans P	admin.cloud4v t costs and limits her be 'recurring' c urly (eg every mon ed via the login pai r will lose Internet he next period star mers to purchase e an name: Tier 1 scription: Basic Price: 10.00 Plan type: Recu Period: Mont ad speed: 2 ad speed: 2 ad speed: 0.10 oad limit:	visp.com/?o: s for Internet : ur 'top-up'. Recu th). Top-up plan ge, access if their of ts. Some 'top-u extra data on th residential mo US Doll rring hly Mb/s GB U Ur GB U Ur is changed, cus	access access arring plan as are for data limit p' plans s e login pa ar (L \lequel ar (L \lequel) Unlimited Unlimited alimited stomers m	☆ ns are for si casual cust is reached, hould be cr ige or custo	tomers and tomers and Plans are not reated, these omer portal.		
	• A Plan cannot	t be deleted while	in use, move cu Update plan	istomers t	to a differe	nt plan first		

The parameters required to create a plan are as follows:

- Plan name (usually the name given to commercialize the service)
- Description of the plan (e.g. for small and medium businesses, for residential subscribers)
- Charge for the plan (e.g. a monthly charge if the billing cycle is monthly)
- Currency for the charge (five currencies are currently available, see the drop down list in the next figure)

.



- Plan type, usually recurring is selected
- Period is the duration of the billing cycle (e.g. one calendar month, 12 charges per year)
- Download speed (in Kb/s however speeds are provided to subscribers in Mb/s, e.g. 1000Kb/s), or check the box if no speed limit
- Upload speed (in Kb/s however speeds are provided to subscribers in Mb/s, e.g. 1000Kb/s), or check the box if no speed limit
- Data download limit (the maximum number of bytes that can be downloaded during each billing cycle)
- Data upload limit (the maximum number of bytes that can be uploaded during each billing cycle)

The figure below shows the currency alternatives in the drop-down menu.

💪 cloud4WISP: Plans	× +		×
← → O A	https://admin.cloud4wisp.com/?o=plans&p=5 🏂 🛱 🖗	٢	
 Codes Billing Helpdesk Work Orders Staff Settings Show Help Logout 	https://admin.cloud4wisp.com/?o=plans&p=5 ☆ ★<	2 3 3	
	▲ Logins may be altered if a plan is changed, customers may be logged out ● A Plan cannot be deleted while in use, move customers to a different plan first		
	Update plan		



In some locations or countries the ISP may charge the WISP for the data connection per Mbyte or Gbyte downloaded. If this is the case the WISP should put a download and upload data cap on users to prevent costs spiraling out of control. The WISP can charge different prices for each data cap. The subscriber who reaches the data cap before the end of the billing cycle can purchase additional data, which is sold as an access code that is entered in a login page. The login page is shown at the end of the billing section.

6.7. Customers (subscribers)

Click on the customer entry on the main menu tab to see a list of subscribers associated with the cloud4WISP account. This is shown on the following screen with subscribers who have been added to the account.

唱	Û	🖒 Cus	tomer po	ortal	4	loud4WISP	: Custo	×	+	\sim		_		×
\leftarrow	->	Ö	ல்	http	ps://adm	nin.cloud4w	visp.com	n /?o=	c 🛄	☆	∿≡	h	Ŀ	
C	7 cl	oud	101	Customers	-	Name		Find						💷 📼
	4 V	VISF		Manage subs	cribers w	with access to	o the Int	ernet					2	
-		Condeteror av		N	lame / Co	ompany			Plan	1	Billed	MAG	Cs	
63	Dash	board			Bradley C	Cooper		~	Tier 2	202	20-05-11	1		
-	Gatev	vays			Channing	Tatum		~	Tier 1	202	20-05-11	1	_	
	Plans				Christian	Bale		~	Tier 2	202	20-05-11	1		
-	T IGTIS	5 			Daniel (Craig		~	Tier 2	202	20-05-14	1		
<u> </u>	Custo	mers	_	Dwayr	ne Johnson	/ DEF News		~	Tier 4	202	20-05-11	1		
	Code	5		Emma	Stone / ES	6 Representa	a	×	Tier 3	202	20-05-11	1		
	Billin				George C	looney		~	Tier 1	202	20-05-11	1		
-					Kristen S	tewart		- 🗸	Tier 2	202	20-05-11	1		
3	Helpo	esk			Mark Wal	hlberg		*	Tier 1	202	20-05-14	1		
*	Work	Orders			Robert D	owney		~	Tier 1	202	20-05-11	1		
	Monit	orina			Sandra B	ullock		 	Tier 2	202	20-05-11	1		
	FIOIII	oring			Tom Cr	uise		~	Tier 2	202	20-05-10	1		
-	Staff					A	dd new c	ustome	er					
\$	Settir	igs		1 dillor	and here	1.10		10-00-001						
?	Show	Help					1				12			
C	Logo	ıt			1 - 1 - 1 -		T							
			-			(H)					XV			

Click on the 'add new customer' button to add a subscriber. The next screen will be displayed.

Customer details include name, email, company name (if a business customer), telephone, and complete address. It is important to obtain the customers email address as the cloud4WISP system will send a welcome message to the customer.



🕒 🖅 🖒 Custom	ner portal 🕼 cloud4WISP: Custo × + ∨ - 🗆	×
$\leftarrow \rightarrow \circ \circ$	∂ 🛆 https://admin.cloud4wisp.com/?o=c 🛄 📩 🖆 💪 🖻	
cloud		= <u> </u>
4WISP	Customers Name Find	
Octoud#WISP 2020	Manage subscribers with access to the Internet	
Dashboard	Name Pardlay Conner	
an Gateways		
Customers	Inini: Johnesqr.Cooperggmail.com	
Codes	Verny Email: Jonnesq+Cooper@gmail.com	
🕼 Billing		
🛿 Helpdesk		
💥 Work Orders	Address: Mountain Drive 18223	
🂖 Monitoring	Address (cont):	
Staff	City: Hollywood	
2 Show Help	State: CA	
() Logout	ZIP / Postcode: USA	
Congoar	Country: 12304	
	Customer portal credencials:	
	Customer portal: [fiwisp.wisplogin.com]	
	Username: BradleyCooper	
	Leave password box empty to auto-generate in welcome email	
	Password:	
	Customer welcome email: If an email address is provided a welcome email can be sent to the customer. The	
	email includes a username and auto-generated password to manage their account via the customer nortal page. If the customer has no email address the details can	1
	be printed for the customer.	
	Welcome subject: Welcome to our network	
	Welcome text: Welcome Bradley Cooper,	
	Thank-you for joining our network.	
	An account has been created for you on our customer portal at https://flwisp.wisplogin.com. your login	
	details are as follows:	
	Username: BradleyCooper XXXXXX will be replaced with new password	
	Save welcome text: Save for next customer C ⁴ Use default	
	Send welcome email	
	Customer provisioning:	
	Work order: Create work order for CPE installation	
	Assign work to: Unassigned V	1
	Order comments: Please make the following changes	
	Internet access management:	
	Customer enableu: La Internet access anowed Requiring plans only a login code con he created for sinch use	
	recurring plans only, a login code can be created for single use	
	Internet access plan:	
	Enter same MAC again if access is needed on multiple, but not all gateways OPE MAC address Description Cateway	
	1 84:39:be:64:45:c9 Bradley Cooper re: Tower 4 V Image: Tower 4	
	+ Add	
	Update customer	
	11 Min-Sta	~



The customer support person will add the new subscriber information to the cloud4WISP account. Alternatively the WAIP may prefer the sales person to add the new subscriber information. The following fields should be completed when adding a subscriber to the WISP's account

- Subscriber name
- Subscriber email. When the subscriber is added cloud4WISP will send a greeting email to this address.
- Company name if a business account, otherwise leave blank
- Subscribers telephone for contact. This will be required when the field service technician receives the installation work order and schedules an installation date and time with the subscriber.
- Address. This is the address where the CPE radio will be installed.
- Customer portal username. This is created by the WISP and is a service for the subscriber to login to see account information, send support requests and make on-line payments.
- The portal password field is left blank; cloud4WISP will send a password for the portal with the greeting message. The WISP has no access to the subscribers portal password.
- Welcome subject and welcome text; the WISP can personalize the welcome message that will be sent to the subscriber.
- Check the box to save the welcome text that the WISP has prepared and will be used for subsequent subscribers.
- Customer provisioning, check the box to create a work order
- Assign work to; the drop-down menu lists the staff who can be selected to send the work order to, this will be a field service technician or the technical manager.
- Other comments is a boc to provide additional information to add to the work order, for example, the subscriber might advise that there is a vicious dog locked in the house yard to want the technician who will do the CPE installation.
- The Internet access management checkbox enables Internet access for the subscriber. The WISP might wants to wait until the subscriber has given the first month payment before activating the subscriber.
- The Internet access plan can be selected from the drop down menu, this is the data speed and price plan or tier that was chosen by the subscriber.
- The CPE MAC address is entered when available; this MAC address will be authenticated by the cloud4WISP access controller. The field service engineer can add the CPE MAC address during installation if desired.
- The description field is optional but should provide additional information that a field service technician might need in the event that the link fails and requires service.
- The cloud4WISP gateway that will service the subscriber is selected from the drop down list
- The allow box is checked to allow the cloud4WISP gateway to accept access from the CPE radio.
- Finally the update button is clicked to enter this subscriber into the subscriber database. Note that the subscriber information can be modified at any time that the subscriber information changes.



An example of a welcome email message is shown below;



An example of a PDF welcome letter is shown below;

1.00	
	Welcome George Clooney,
	Thank-you for joining our network.
	An account has been created for you on our customer portal at <u>https://flwisp.wisplogin.com</u> , your login details are as follows:
	Username: GeorgeClooney Password:
	Please change the password as soon as you can.
	You can use the portal to check your account, pay and download invoices.
	Please contact us if you have any questions.
	Thanks.



Each subscriber has access to the CRM (customer relationship management) portal. This is a WISP branded website where the subscriber can access information about the account, and make payments on-line. The customer can also send support request messages to the WISP. The customer portal is configured by the WISP when the cloud4WISP account is created:

http://<wispname>.wisplogin.com

Each subscriber is given a username that is created by the WISP for access to the CRM portal. A password is sent to the subscriber in the welcome message. The WISP does not know the subscribers password.

6.8. Codes

The codes menu permits access codes to be generated for a subscriber to use to login to the network. Codes are generated for a specific gateway, which is installed at a PtMP tower. Code generation is also accessible by subscribers and hotspot users via the login page.

When 'codes' is selected in the menu a box permits the gateway to be selected where the codes will be used, as shown in the screen below.



When the gateway is selected two boxes open, the first is used to generate one or more codes, the second box is used to check codes that were generated previously.



 ← → ○ û A https://admin.cloud4wisp.com/ □ ☆ ☆	🖹 🖅 🔏 cloud	4WISP: Cod $_{ m imes}$	💁 Customer	portal	+ ~		-		×
 Manage gateway codes Dashboard Gateways Plans Customers Codes Billing Helpdesk Work Orders Monitoring Staff Settings Show Help Logout 	$\leftrightarrow \rightarrow \circ$ o	命 日 ht	tps://admin.clou	d4wisp.com/	□ ☆	7	t≡ l~	Ŕ	
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 Plans Customers Codes Codes Code Text: Random ~ Codes to create: Codes to create: Code Text: Random ~ Codes to create: Codes to create: Code Text: Random ~ Codes to create: Up Speed: Default ~ Up Limit: Default ~ Up Limit: Default ~ Up Limit: Default ~ Up Limit: Default ~ Create codes <li< td=""><td>📾 Gateways</td><td>💰 Create co</td><td>des for Tower 4</td><td>(228510125)</td><td>1)</td><td></td><td></td><td>^</td><td></td></li<>	📾 Gateways	💰 Create co	des for Tower 4	(228510125)	1)			^	
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 Codes Code Text: Random ✓ Codes to create: 1 ✓ Expiry Time: 30 mins ✓ Usage: 1User ✓ Down Speed: Default ✓ Up Speed: Default ✓ Down Limit: Default ✓ Up Limit: Default ✓ Staff Staff Settings Show Help U Logout 	🖀 Customers	Codes created in	n this box are only v a	alid for this gate	way. Code	s in use: 5	5		
 ☑ Billing ☑ Helpdesk ※ Work Orders ☑ Monitoring ▲ Staff ☆ Settings ? Show Help ① Logout 	🖾 Codes	Code Text:	Random V	Codes to cre	ate: 1	\sim			
 B Helpdesk Work Orders Monitoring Staff Settings Show Help U Logout 	🕅 Billing	Expiry Time:	30 mins \vee	Usage:	1 User	\sim			
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Settings Enter code to check: Check code View all codes		🔋 View, dowr	nload or delete top-	up and single u	se login code	es on a ga	iteway	Ø	
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U Logout	? Show Help				CONTRACTOR OF THE	1 0.0	STON OF		
	() Logout								

When generating an access code there are several parameters that must be selected.

- Code text: random or typed. Selecting random will generate a series of alpha-numeric characters that the customer with type into the login screen to connect to the network. Alternatively a string of up to 10 alpha-numeric characters can be entered to generate one specific access code.
- Number of cods to create: If 'random' has been selected then a number of random codes from 1 to 10,000 can be selected and subsequently generated.
- Expiry time: A drop-down menu permits the duration of the code to be selected from 30 minutes to 180 days and also any value can be entered if desired. The code starts counting down from the data and time of first use, and the count-down cannot be suspended.
- Usage: The number of users who can use the access code simultaneously. A drop-down menu permits the selection of from 1 to 6 users, or unlimited users.
- Down speed: This is the maximum download speed that is permitted for the code(s) generated. The download speed can be selected from the drop-down menu, or a download speed is entered.
- Up speed: This is the maximum upload speed that is permitted for the code(s) generated. The upload speed can be selected from the drop-down menu, or an upload speed is entered.



- Down limit: This is the maximum download byte count that is permitted for the code(s) generated. The download byte count can be selected from the drop-down menu, or a download byte count is entered.
- Up limit: This is the maximum upload byte count that is permitted for the code(s) generated. The upload byte count can be selected from the drop-down menu, or an upload byte count is entered.
- Create codes button: clicking this button will generate the list of codes requested, as shown in the screen.

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Cloud Course 2020 Dashboard Gateways Plans	 Manage g Tower Tower Create co Create top- 	ateway o 4 (22851012 des for T	ower 4 ()	2285101251) teway		د م کو
	Codes created in	this box ar	e only vali	id for this gatew	av. Codes in	use: 15	******
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	Expiry Time:	30 mins	~	Usane:	1User V		
Billing	Down Speed:	Default	~	Un Speed:	Default V		
Helpdesk	Down Limit:	Default	~	Up Limit:	Default V	Cr	eate codes
& Work Orders							1 1 1 1 1 1 1
Monitoring	New Codes:				8 K	Dow	Inload CSV file
Staff	Code	Time	Users	Down	d limit	Data	limit
Settings	089X0D	1 day	1	1024Khos	256Kbns	2048MB	1024MB
	005XQD	1 day	1	1024Kbps	256Kbps	2048MB	1024MB
Change Under	1YT9QK						
Show Help	1YT9QK 2NLAFW	1 day	1	1024Kbps	256Kbps	2048MB	1024MB
Show Help) Logout	1YT9QK 2NLAFW 405A8E	1 day 1 day	1	1024Kbps 1024Kbps	256Kbps 256Kbps	2048MB 2048MB	1024MB 1024MB
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Access codes that were generated previously can be viewed in the manage codes box. A search can be made for a specific code by typing it in to the enter code box and clicking the check code button, the code will be listed if found. The view all codes button can be clicked which will list all codes generated for the gateway. The characteristics of the code are displayed plus the time remaining for the code and the upload byte count and download byte count used. This is shown in the screen below.

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$\leftarrow \ \rightarrow \ \mho$	ធ	htt	ps://ad	lmin.clou	ud4wisp.cor	m/ [0 ☆	-	∱≡	h	ß	
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 Work Orders Monitoring Staff Settings 	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Manage co	odes fo	r gatew lelete top	ay Tower 4	(2285 le use lo	10125: ogin cod	1) 25 on a	gatewa	ay	~	
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Codes are entered into a login screen for two reasons.

The first case occurs when a subscriber has used the upload or download byte count allocated to the account, or else the billing period has expired and the subscriber has not paid for the subsequent billing period.

The second case occurs for hotspot login. In this case the PtMP antenna is not encrypted and the user is connecting a mobile device directly to the PtMP antenna. When the MAC address is not recognized the login screen is displayed.

The login screen is shown in the figure below.





6.9. Billing

The billing menu is used to track the billing status of subscribers, to issue invoices for subscribers, and to register a payment for a subscriber. If the subscribers account becomes past due then the subscribers looses access to the Internet and will see a login page.

The billing system has been designed for both pre-pay and post-pay billing; the WISP will make the decision to choose the pre-pay or post pay business model.

Clicking the billing tab in the menu will open the billing screen. Subscribers are listed in the billing bos and are shown in green when subscribers are paid to date.

Cloud	Billing Name	Find		
		THE		10
Celoud4WISP 2020	Name / Company	Enabled	Billed	Due
Dashboard	Bradley Cooper	~	2020-05-11	2020-06-11
i Gateways	Channing Tatum	~	2020-05-11	2020-06-11
Diane	Christian Bale	~	2020-05-11	2020-06-11
Fians	Daniel Craig	~	2020-05-14	2020-06-14
Customers	Dwayne Johnson / DEF News	~	2020-05-11	2020-06-11
Codes	Emma Stone / ES Representa	~	2020-05-11	2020-06-11
Billing	George Clooney	~	2020-05-11	2020-06-11
	Kristen Stewart	×	2020-05-11	2020-06-11
Helpdesk	Mark Wahlberg	~	2020-05-14	2020-06-14
Work Orders	Robert Downey	~	2020-05-11	2020-06-11
Monitoring	Sandra Bullock	~	2020-05-11	2020-06-11
riointoring	Tom Cruise	~	2020-05-10	2020-06-10
Staff	O Customers can also be billed independe	antly for Internet acc	ess and issued with	n a login code
Settings	Bill	for a login code		
Settings				
Show Help	Lines X	11 -1124		
Settings Show Help Logout			E /21 /2020	
Settings Show Help Logout	Invoices Name	5/1/2020 →	5/31/2020	Find ^
Settings Show Help Logout	Invoices Name Record of customer invoices / prev	5/1/2020 → rious bills for servi	5/31/2020 ce	Find A



When subscriber payments are past due then the subscriber entry is shown in red. This is seen in the screen below.

Cloud Wise. billing	\times +	\sim				-
	https://admin.	.cloud4wisp.com/?o=billin	g	□ ☆	rst	l~
cloud -			ALC: ADD			
WICD F	1 Billing	Name	Find			^
	Bill custon	ners for Internet usag	е			R
	N	ame / Company	Enable	d Billed	Due	e
ishboard		Bradley Cooper	~	2020-05-22	2020-0	5-25
ateways		Channing Tatum	×	2020-05-11	2020-0	5-18
ans		Christian Bale	~	2020-05-22	2020-0	5-25
		Daniel Craig	×	2020-05-14	2020-0	5-21
istomers	Dwayn	e Johnson / DEF News	×	2020-05-11	2020-0	5-18
odes	Emma	Stone / ES Representa	~	2020-05-22	2020-0	5-25
llina		George Clooney	×	2020-05-11	2020-0	5-18
ining		Kristen Stewart	×	2020-05-11	2020-0	5-18
elpdesk		Mark Wahlberg	~	2020-05-22	2020-0	5-28
ork Orders		Robert Downey	×	2020-05-11	2020-0	5-18
		Sandra Bullock	~	2020-05-22	2020-0	5-25
onitoring		Tom Cruise	×	2020-05-10	2020-0	5-17
aff 🛛	Customers (can also be billed indepe	ndently for Internet	access and issued w	ith a login co	ode
ettings		_		_		
			Bill for a login code	e		
low Help			11450			
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gout				「「「「」」		
gout	Invoices	Name	5/1/2020	→ 5/31/2020	Find	~
gout S	Invoices Record of	Name	5/1/2020 revious bills for se	 → 5/31/2020 ervice 	Find	×
gout	Invoices Record of o Number	Name customer invoices / pr Date	5/1/2020 revious bills for se Name / Com	 → 5/31/2020 ervice apany 	Find Value	Paid
gout 2	Invoices Record of o Number 5	Name customer invoices / pr Date 2020-05-22	5/1/2020 revious bills for se Name / Com Sandra Bull	→ 5/31/2020 ervice apany ock	Find Value \$20.00	Paid
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gout	Invoices Record of Number 5 4 3 2	Name Customer invoices / pi Date 2020-05-22 2020-05-22 2020-05-22 2020-05-22 2020-05-22 2020-05-22 2020-05-22	5/1/2020 revious bills for se Name / Com Sandra Bull Mark Wahlb Emma Stone / ES R Christian B	→ 5/31/2020 ervice apany ock erg epresenta ale	Find Value \$20.00 \$10.00 \$40.00 \$20.00	Paid v v v
igout	Invoices Record of Number 5 4 3 2 1	Name Date 2020-05-22 2020-05-22 2020-05-22 2020-05-22 2020-05-22 2020-05-22 2020-05-22 2020-05-22 2020-05-22 2020-05-22	5/1/2020 revious bills for se Name / Com Sandra Bull Mark Wahlb Emma Stone / ES R Christian B Bradley Coo	→ 5/31/2020 ervice ook erg epresenta ale oper	Find Value \$20.00 \$10.00 \$40.00 \$20.00 \$20.00	Paid V V V V
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gout	Invoices Record of Number 5 4 3 2 1	Name Customer invoices / p Date 2020-05-22 2020-05-22 2020-05-22 2020-05-22 2020-05-22 2020-05-22	5/1/2020 revious bills for se Name / Com Sandra Bull Mark Wahlb Emma Stone / ES R Christian B Bradley Coo	→ 5/31/2020 ervice ervice erg epresenta ale per	Find Value \$20.00 \$10.00 \$40.00 \$20.00 \$20.00 \$20.00 \$110.00	Paid V V V V V



An invoice can be generated for a subscriber by clicking on the subscriber's name, which will open the screen shown below.

Clicking the button will open a drop down menu. There are four options. One is to send an email message to the subscriber to request payment





When sending a request for payment the text of the message can be edited. The WISP can save the edited text by checking the box in order to send the message to subsequent subscribers. This is shown in the screen below.

日 ← (4 cloud4)	WISP: Billing $ imes$ +	~		-		×
\leftarrow \rightarrow O \checkmark	♪	loud4wisp.com/?o=b	☆ ・	\$≡ <i>l</i> ~	ß	•
Codes Co	Billing Name Bill customers for Internet Bill customer: Bill customer: Name: Email: Company Name: Company Name: Service status: Internet access plan: Billing period: Value: Action: Email subject: Payment Instructions: Save instructions: Save instructions:	Find t usage Bradley Cooper johnesq+Cooper@gmail.com johnesq+Cooper@gmail.com / Internet access allowed Tier 2 2020-05-11 - 2020-06-11 \$20.00 US Dollar (USD) Email invoice (ask for p:) Payment due for Internet for the period 2020-05-11 The amount to pay is \$20.0 Your payment for Internet for the period 2020-05-11 The amount to pay is \$20.0 You may be disconnected if paid. Save for next invoice (Send invoice)	<pre> Ø Ø Ø Ø Ø Ø O</pre>	r due not	2	



An example of an email message requesting payment is shown in the figure below.





When the print invoice option is selected the invoice is displayed in the window. The print button sends the invoice to the printer. The download button downloads the invoice as a PDF file.

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Customers Codes Codes Codes Codes Customers	S Invoice 4: Mark Wahlberg	Date: Number: Terms: Bill to:	INVOICE 2020-05-22 4 Paid Mark Wahlberg Seaview Drive 4 West Hollywood CA US 10245	145		
2 Staff	Description		Va	lue		1
Settings	Internet access plan: Basic residential monthly		\$10	0.00		
? Show Help		Subto	tal: \$10	0.00		
(U Logout		Т	ax: \$0	.00	_	χ_{-}
	Comments:	Print	Lan: \$10	Back to lis	st	0



The invoice can be downloaded as a PDF document and printed or sent to the subscriber. An example of a PDF invoice is shown below.

VOICE SAMPLE.pdf	×					<u></u>		×
Page: 1 /1 🌰 🏟 😽 🗔 🔎	🗩 Find:		1	F	3 _A			
Fire4 Systems Inc 6073 nw 167 st unit c12 hialeah FL 33015 US 7863585407 john@fire4.com	Date: [Number:] Terms: [Bill to: [INVOICE 2020-05-22 1 Paid Bradley Cooper Mountain Drive 18223 Hollywood CA USA 12304						
							_	
Description		Value						
internet access pran: Residential high speed	Subtot	\$20.00 al: \$20.00						
	JUSIO	ax: \$0.00						
	Tot	al: \$20.00						
Comments:								



There are two cases where the subscriber can be deactivated.

In the case that the subscribers billing period has expired and the account has not been paid then the subscribers access is deactivated.

The subscriber will also be deactivated if a download / upload byte count limit was set for the account and the limit has been reached within the current billing period.

The subscriber will then see the following screen.





In this case the subscriber has the option of clicking on 'account details' and then purchasing an access code to enter which will enable Internet access. The login screen to enter the access code is shown below,





6.10. Help Desk

The helpdesk page displays the help request tickets sent by subscribers through the subscriber portal. The customer support person can respond to the ticket to provide the information requested by the subscriber. The customer support person can also initiate a ticket.





The subscriber can login to the subscriber portal using the username and password sent in the welcome message.





6.11. Work Orders

Work orders are generated during the subscriber provisioning process. A work order is an instruction to a field service technician to prepare an installation at the subscriber's site.

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Cloud						
4WICD	× v	Vork Orders	Name or work	Find		^
©cloud4WISP 2020	🛛 🖸 Li	ist of jobs for se	rvice engineers to install, u	pdate or remove equi	pment	S
Dashboard	#	Updated	Work	Created	Assigned	
	22	2020-05-24	Update customer	John Barker	Brad Pitt	
Gateways	15	2020-05-24	Update customer	John Barker	Jamie Foxo	¢)
Plans	23	2020-05-24	Update customer	John Barker	Jamie Foxx	
	18	2020-05-24	Update customer	John Barker	Jamie Foxx	
Customers	14	2020-05-24	Update customer	John Barker	Brad Pitt	
Codes	11	2020-05-24	Update customer	John Barker	Brad Pitt	
Rilling	19	2020-05-24	Update customer	John Barker	Jamie Foxx	
• Dining	17	2020-05-24	Update customer	John Barker	Brad Pitt	
Helpdesk	13	2020-05-24	Update customer	John Barker	Jamie Foxx	
Work Orders	12	2020-05-24	Update customer	John Barker	Brad Pitt	
	10	2020-05-24	New customer	John Barker	Jamie Foxx	
Monitoring	21	2020-05-24	Update customer	John Barker	Brad Pitt	
Staff	20	2020-05-24	Update customer	John Barker	Brad Pitt	
Settings	16	2020-05-24	Update customer	John Barker	Jamie Foxx	Critical
Show Help			Create work	order		



Click on a work order to see the instructions. The field service technician has the information required to proceed with the CPE installation. The customer support representative or field service technician can call or email the new subscriber to schedule the installation and then add the date and time of the installation to the update notes field.

The work order can be printed by the field service technician and taken to the installation site.

The field service technician must also take a printed agreement prepared by the WISP which is signed by the subscriber after the installation work is completed, to state that the subscriber accepts the installation and that the installation is functional providing Internet access.

🔏 cloud4WISP: Work orders 🛛 🗙	+			- 0	×
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 ← → ○ A https://a ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓	dmin.cloud4wisp.com/?o=v Drders Name or work obs for service engineers to inst 23 Jamie Foxx V Daniel Craig Big Island Drive 7736 West Hollywood US 445-233-9283 Update customer Please install a CPE at th Please confirm installation \$\frac{1}{2}\$ John Barker: Reassigned to Ja \$\frac{1}{2}\$ John Barker: Priority changed	work& G tall, update o Created: Priority: Company: Address: State: Country: Email: me address or on date with mie Foxx to High	R ☆ ★= Find r remove equipme 2020-05-14 High ✓ CA USA johnesq+Craig@g f the customer.	Int	
Update: John Barker Status:	Open 🗸 Update	work order			AL X
			State 1	V DYSA	1



6.12. Monitoring

Each cloud4WISP gateway is monitored by cloud4WISP. Cloud4WISP shows the status of each gateway and indicates if the gateway is off-line in the monitoring menu. Status information for any gateway that is offline is listed in the first box.

All gateways associated with the cloud4WISP account are listed on the monitoring page in the second box, shown in the figure below. The WISP can choose to send an email alert when the cloud4WISP gateway goes off line and returns online. The WISP can also select the downtime from the drop-down menu indicating how long cloud4WISP should wait after the gateway is detected offline before a messages is sent.

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ateways			/12	3 m	1		_	
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🖶 Customers	1	12 10 17 045	00000	(a) (b)(b)	18 - 2010 - 19 - 49			
Codes	The mo	nitor sends an alert when	a gateway fails to	o check-in an	d another when it	resumes.		
KCR Billing	The d	ide option removes a gate owntime defines how long	to wait before al	erting, Incre	rui ror proionged o ase to reduce false	utages. alerts.		
8 Helpdesk								
M w Lo I		Alert email address:		n				
Work Orders		Email language:	Spanish 🗸					
Monitoring			Alert	Hide	Downtime			
💄 Staff		Tower 1 (779b7e8b50)			5 mins \vee			
Settings		Tower 2 (9a80871c88)			5 mins V			
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The cloud4WISP gateway status is also shown on the display gateway page. The gateway status uptime display is shown as a red box with the message 'not checked in'.

🖻 🖅 🍊 cloud4WISP: Gateways 🗙 🕂 🗸				-	. 🗆	×
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E Codes	R	Customers with access to this gateway Name / Company CPE Daniel Craig e0:2a:82 Emma Stone / E5 Representation Inc 00:e0:44 George Clooney 38:60:77	MAC Descri t:03:80:a4 Daniel Craig 568:59:77 Emma Stone 175:10:02 George Cloone	ption residential commercial ay residential	Reabled	
Settings Show Help U Logout	ated (logged in) users over time Now nected Authenticated	Performance: 24 hours ~ Graph of gateway hardware performance 100% 50% 0% 0%	(shows hardware bottle	Now	2	
WAN usage: 24 hours v 10 Graph of Internet usage data (all	data through WAN port) 💸	Authenticated users (logged in) All logged in devices with access to the In MAC address 05/browser Time	ternet (excluding acces	s points) Code / Use	No.	
10000 5000 0 mm. Down: 179.68 MB	Now am (Kb/s)Up (Kb/s) Up: 24.17 MB Total: 203.86 MB	38:60:77:75:10:02 Auto/MAC 21d 21h 00:e0:4c:68:59:77 Auto/MAC 21d 21h 2 users authenticated * A	51m 1.9G / 104M 19m 92M / 14M ogout user © Logout a	George Cloon Emma Ston nd block user	ey × O e × O more	
El Connected users (using the gate All devices connected to the gate MAC address IP address 38:60:77/75:10.02 192.168.99.99 00:e0:4c:68:59:77 192.168.98.4	Average and the second	MAC addresses	K		ľ	
6 IP addresses and web sites						X



The figure below shows the message sent when a gateway goes offline.



The figure below shows the message sent when the gateway returns online.





6.13. Staff

Click on the staff menu entry to list the staff having access to the WISP account. The list of staff is shown in the screen below.



Click on the 'add new user' button to add a staff member to the list of staff who have access to the cloud4WISP account.

The screen on the following page shows the staff entry display.

The first parameter is a check box that permits the WISP owner to enable or disable staff.

Each staff member is given a username by the WISP, which is entered into the space below.

The role entry has a drop down entry with two options, manager and viewer.

Next the personal information of the staff member is entered: including name, email company name (if sub-contractor), telephone and address.

Finally the update button is clucked to add the staff member.


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Cloud WISP EduudWISP 2020	Staff List People with access to man	age this WISP account		8	
Dashboard	Enabled:	Staff member will be logged out if disable	ed		
📾 Gateways	Username:	AnneHathaway ?			
📚 Plans		Reset password. New password will be emaile	ed to staff		
🖀 Customers	Role:	Customer service \vee			
Codes	Role permissions:	1. Update helpdesk tickets and work o	orders		
💋 Billing		 2. Update customer details 3. Create login codes & bill customer 	` 5		
B Helpdesk	Name:	Anne Hathaway			
💥 Work Orders	Email:	johnesg+Hathaway@gmail.co			
🈻 Monitoring	Verify Email:	iohneen+Hathaway@gmail.co			1
💄 Staff	Company Manage				
Settings	Company Name:				
? Show Help	Telephone:	305-555-6666			
ပ် Logout	Address:	Main Street 883			E
	Address (cont):				
	City:	Hialeah			
	State:	FL			
	ZIP / Postcode:	33015			
	Country:	USA			A
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Cloud4WISP defines five roles, where each has different access privileges to the cloud4WISP system. These are shown in the figure below;

Role:	Customer service	~
Role permissions:	Manager Technical	and work orders
	Customer service	
	Financial	II Customers
	Sales	
	A 11-4h	



The roles are:

- Manager
- Technical
- Customer service
- Financial
- Sales

The manager can enter and modify data in any part of the system. The manager is likely to be the WISP owner. Each of the other roles has limited access to the system as follows;

Technical. Role permissions:

- 1. Update helpdesk tickets and work orders
- 2. Add, update and remove gateways
- 3. Update monitoring settings

Customer service. Role permissions:

- 1. Update helpdesk tickets and work orders
- 2. Update customer details
- 3. Create login codes & bill customers

Financial. Role permissions:

- 1. Update helpdesk tickets and work orders
- 2. View customer details
- 3. Bill customers

Sales. Role permissions:

- 1. Update helpdesk tickets and work orders
- 2. Add customers
- 3. Create login codes & bill customers

When the new staff member entry process is completed a password will be send via email to the staff member.



6.14. Settings

The settings page permits the WISP administrator to configure functional settings for the account. The settings screen is shown below.

🖻 🖅 💁 Custo	omer portal	4 cloud4WISP: Settings	× + ~					×
$\leftrightarrow \rightarrow $ \heartsuit		admin.cloud4wisp.com/?o=set	tings	□ ☆	դ≞	l~	ß	••••
 ← → ○ ← → ○ ← → ○ ← Dashboard ← Gateways ≥ Plans ⇔ Customers ≅ Codes ♥ Billing ● Helpdesk ※ Work Orders ♥ Monitoring = Staff ◆ Settings ? Show Help () Logout 	Change passwei Account details of Current password: Repeat password: Repeat password: Repeat password: Contact us to details of Current password: Repeat password: Contact us to details of Conta	admin.cloud4wisp.com/?o=set ord an be changed on staff page di	tings	page design custom login and po me: FL WISP In L: fiv add the URL to the gas po: picture: picture: or: or: ound: Update settim View custom	transparence provinge transparence provinge transparence provinge pro	Comparison of the second secon		
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The first box permits the administrator to change the password. Always create a strong password using upper and lower case characters, numerals and non-alphanumeric symbols.

•	Change password	^
8	Account details can be changed on staff page	3
	Current password:	
	Repeat password:	
	Change Password	
	Contact us to change email address or other detail	ls

The custom page design box is used to create the subscriber portal page. The box is shown in the figure below.

	🛠 Custom page design 💦 🔊
	🔞 Design of custom login and portal page 🛛 🤌
	Business name: FL WISP Inc
	Account URL: flwisp.wisplogin.com
	You can add the URL to the gateway's allowed IP list
	Business logo: Browse 🛛 🗙 🛓
	Background picture: Browse 🗙 🛓
	Background picture: 0.7 transparency / opacity
	Box color: C
	Box title color:
/	Box text color:
	Box background:
	Update settings
	View custom page

- The business name will be displayed on the login page and can be modified in the business name box.
- The portal URL is derived from the name provided by the WISP when the account is created. The subscriber will use the following URL to access the portal

wispname.wisplogin.com



- The business logo is uploaded to display on the login page. The logo is a JPG and is scaled to 100px x 100px maximum. The logo file size should be less than 50KB.
- A background picture or design is uploaded to display on the login page. The background picture is a JPG and is scaled to 300px x 300px maximum. The background file size should be less than 200KB.
- The background picture transparency from 0.1 (very transparent) to 1 (no transparency)
- The login box color can be changed. Click on the color bar, then select a new color.
- The login box title color can be changed. Click on the color bar, then select a new color.
- The login box text color can be changed. Click on the color bar, then select a new color.
- The login box background color can be changed. Click on the color bar, then select a new color.

A login screen example for the user portal is shown below. The subscriber's username was entered by the WISP when the subscriber's account was created. Subsequent to account creation the subscriber is sent an email with the username plus an auto-generated password. The subscriber will use the username and password to login the firt time, and then the subscriber can change the password.





Should the WISP wish to permit subscribers to pay for the Internet service on-line using a credit card cloud4WISP provides a payment gateway for PayPal[™]. Paypal was chosen because this is the only payment gateway that can be used in the 50+ countries where cloud4WISP products are sold. The PayPal account must be a business account to charge credit cards, a standard PayPal account can only be used for sending and receiving payments with other PayPal users.

When a PayPal business account is created, three parameters are provided:

- Username
- Password
- Signature (encryption key)

The three parameters are entered in the box shown below. The update settings button is then clicked.

The WISP must make a test purchase before offering the service to subscribers to ensure that the PayPal account has been set up correctly and PayPal has authorized the account to receive credit card payments.

🗗 Billing settings 🛛 🔥						
👔 Setup of payment gateway to bill customers 🛛 🤍						
PayPal [™] can be used to bill customer subscriptions, for top-up purchases and hotspot payments.						
A <u>PayPal Business</u> account is needed to get API credencials						
To create an API signature with your PayPal account:						
 Log in to PayPal, click Profile under My Account Click My selling tools 						
3. Click API Access						
4. Click Request API credentials						
Check Request API signature and click Agree						
PayPal Business API settings: (provided by PayPal)						
API Username:						
API Password:						
API Signature:						
Please make a test purchase after changes						
Update settings						

Cloud4WISP will add country specific payment gateways in future if there is a volume demand for additional payment gateways.



6.15. Show Help

Many display boxes has a character that indicated the box can be removed or reduced to avoid screen clutter. This character is shown in the figure below.

The character can be seen on most menu screen boxes, as shown in the screen below.



Clicking the symbol reduces screen clutter.

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	 Gateway st 	atus Status reloa	d disabled 🗸			🖿 Logins:	ALL GATEWAYS	~	28 days	~			
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	Tower	1 (779b7e8b50)	0	0	~	30							
Dashboard	Tower	2 (9a80871c88)	0	2	~	1.00			٨				
a Gateways	Tower	3 (576ed3/888)	1	2	~	20							
Plans	Tower	4 (2285101251)	2	3	~								
· · · · ·		🗸 🗙 Check-in	C Recent reboot	🚫 Disabled 🛛 🗂 Hide	A Alert	10				1			
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I Billing Helpdesk Work Orders Monitoring	E Logins: A Date time 05/22 18:58	LL GATEWAYS Gateway <u>Tower 3</u>	 10 logins MAC address 00:e0:4c;68:59:77 	Customer Emma Stone	Login MAC				$\mathbf{\lambda}$		200507		
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Billing Helpdesk Work Orders Monitoring Staff Staff Staff Show Help Logout	E3 Logins: A Date time 05/22 18:57 05/22 18:57 05/22 18:38 05/21 18:38 05/11 5:02 05/19 13:58 05/15 20:09 05/15 17:14 05/15 17:14	LL GATEWAYS Gateway Tower 3 Tower 4 Tower 1 Tower 1 Tower 1 Tower 1 Tower 1 Tower 1	✓ 10 logins MAC address 00:e0:4c;68:59:77 68:92cte13:6a;aai 84:39:be:64:45:c9 e0:2a:82:c3:8d;a4 00:e0:4c:68:59:77 e0:2a:82:c3:8d;a4 00:e0:4c:68:59:77 e0:2a:82:c3:8d;a4 00:e0:4c:68:59:77 e0:2a:82:c3:8d;a4 84:39:be:64:45:c9	Customer Erma Stone Christian Balt Bradley Cooper Daniel Calay Daniel Calay Daniel Calay Daniel Calay Daniel Calay Daniel Calay Daniel Calay	Login MAC MAC				X				
	El Logins: A Date time 05/22 18:58 05/22 18:58 05/22 18:57 05/22 18:58 05/21 15:02 05/19 14:07 05/15 18:39 05/15 20:09 05/15 18:39 05/15 18:39 05/15 18:27	LL GATEWAY'S Gateway Tower 3 Tower 4 Tower 4 Tower 1 Tower 1 Tower 1 Tower 1 Tower 1 Tower 2	✓ 10 logins MAC address 00:e0:4::68:59:77 c8:90:d0:28:21:03:180:a4 e0:28:21:03:180:a4 e0:28:21:03:180:180 e0:28:180:180:180 e0:28:180:180 e0:28:180 e0:28:	Customer Emma Stone Orristion Bale Bradley Cooper Daniel Craip Daniel Craip Daniel Craip Daniel Craip Daniel Craip Daniel Craip Daniel Craip Daniel Craip Daniel Craip Bradley Cooper Sandra Bullock	2 Л Login MAC MAC MAC MAC MAC MAC MAC MAC		(Appr		X				



Click on the 'show help' menu entry opens boxes that were closed or simplified.





6.16. Logout

Logout terminates the current session and returns the browser to the login screen.





7. Customer Relationship Management (CRM) portal

The Customer Relationship Management (CRM) portal is a service provided by cloud4WISP that permits the WISP subscribers to access information about the subscribers account, to make an on-line purchase of Internet access, and to open a support request ticket that will be sent to the customer support person. The CRM portal page is fully customizable. The customization process is described in the settings section.

When a new subscriber account is created a greeting message is sent to the new subscriber. The greeting message contains the username that was created for the subscriber by the WISP, and also contains a password that is auto-generated by cloud4WISP. The WISP does not have access to the subscribers password. The subscriber is also advised of the portal URL, which always begins with the portal name chosen by the WISP when the cloud4WISP account is created.

https://wispname.wisplogin.com

An example of a subscriber greeting message is shown below.

1 message	to our network
Fire4 System Reply-To: Fire4 To: Daniel Crai	s Inc <noreply@wisplogin.com> 4 Systems Inc 9</noreply@wisplogin.com>
	FL
Welcome D	aniel Craig,
Thank-you f	ar joining our network.
An account	has been created for you on our customer portal at https://flwisp.wisplogin.com, your login details are as follows:
Username: I Password: 3	DanielCraig 194173e7
Please char	ge the password as soon as you can.
You can use	the portal to check your account, pay and download invoices.
Please cont	act us if you have any questions.



The subscribers opens a browser and enters the URL for the portal. The subscriber will then see the portal login screen. An example of the portal login screen is shown below.





The first time that the subscriber logs into the portal the screen will request the subscriber to change the password. The password provided my have the following characteristics

- 8 characters minimum
- must contain at least one number
- must contain at least one uppercase letter
- must contain at least one lowercase letter

If the password does not comply with the minimum requirements the subscriber will be asked to enter a new password.

The password entry screen is shown below.





When the subscriber has completed the password process the screen below will be displayed. The menu has five options.

- Account: shows details of the account use
- Billing: provides a means of purchasing additional Internet access
- Support: provides access to the ticket system to send a support request ticket
- Password: change the current password
- Logout





Selecting the support option from the menu will display the screen shown below. The subscriber will then click on the button to open a new support ticket.





The support ticket page adds the name, address and phone number from the subscribers account. The subscriber then types the subject followed by the message.

An example of a portal support ticket is shown below.





When the subscriber clicks the create ticket button the screen below appears with the auto-reply after sending the ticket.





The password change menu option permits the subscriber to enter the current password then type the new password twice before clicking update password.





When the subscriber has finished interacting with the portal the logout menu entry is clicked.



8. Support for cloud4WISP WISP customers

Free online technical support is provided for cound4WISP customers. Go to the cloud4WISP website and click on the support tab. cloud4WISP does not provide telephone support. The cloud4WISP system has been designed to be very intuitive to minimize the requirement for technical support. We request that WISP's read this manual carefully before contacting technical support. WISP's who require telephone support should contact cloud4WISP to get pricing for an annual support agreement.

The free technical support page is shown below.

How it works Features Deployment Pricing Support	Support Tech Support Request Support is provided Weekdays 9am-5PM (GMT)	
	Name: Email address:	
	Explain the problem you are having:	
We	e may not be able to answer all queries immediately but will try our best to get back to you within 24 hours.	
	Send Support Request	
	Copyright © 2022 cloud4WI SP. All rights reserved. Contact: support@cloud4Wisp.com 6073 NW 1678t, Suite C12, Miami FL 33015	
	Terms of Service Privacy Policy	0