

Aptilo Networks

"We control billing, user services and access in wireless networks worldwide"



Prasanna Satarasinghe







BEST MOBILE OFFLOAD SOLUTION

















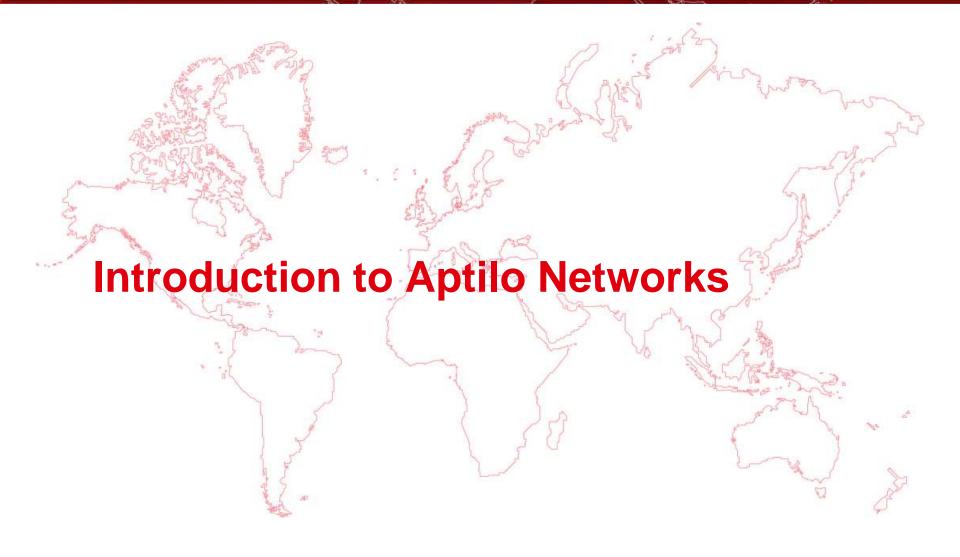


Agenda

- Aptilo Company and Product Introduction
- Free, tiered access for BB Internet customers
- Point-of-sale access for usage-based and/or voucher access
- Retail captive portals
- Location-based messaging and advertising
- Hospitality services
- Replay of sporting events
- Roaming both within BB Operator hotspots and third Party hotspots







Company Overview

- Founded 2001, Sweden
- 12-year focus Wi-Fi Service Management
- Fast-growing company
- Americas HQ, Dallas
- Infrastructure vendor agnostic
- Market leader Wi-Fi Service Management
- Strong global turnkey strategic partners



EMEAStockholm, Sweden



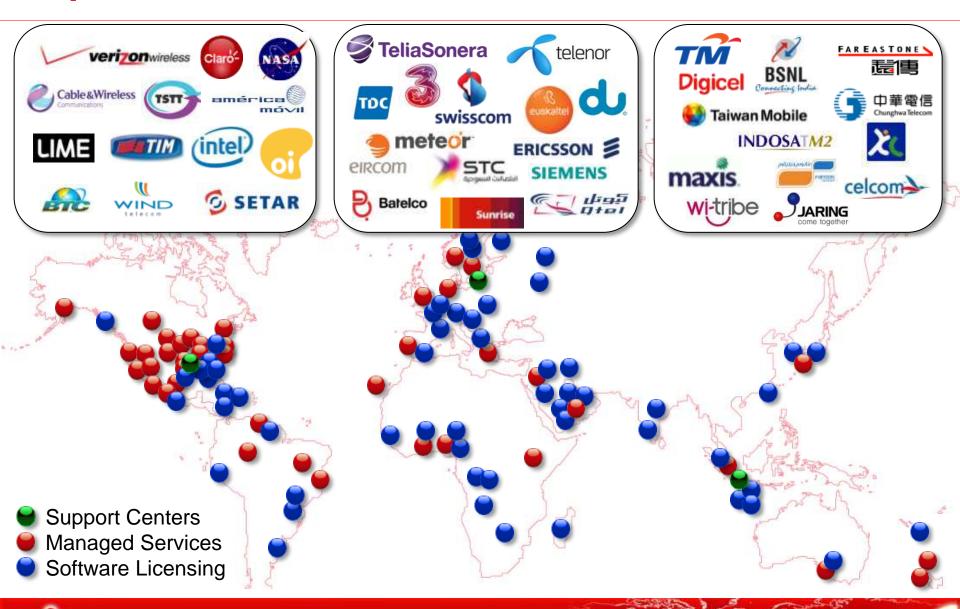
Americas
Dallas and Toledo, USA



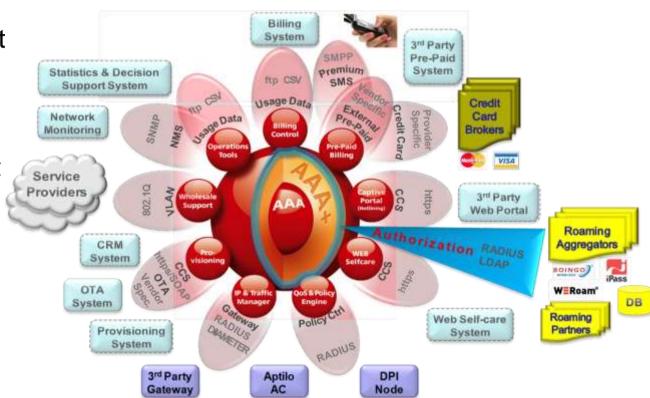
APACKuala Lumpur, Malaysia



Aptilo - 140 customers in 60 countries



- The power of a purpose-built pre-integrated solution
- Highly flexible and modular architecture
- Quick time-to-market
- Scalable and robust
- Multi-vendor support
- Standards-based
- Carrier-grade



Best in Class WiFi Service Management Platform

Authentication

 Ensure that the user is who they claim to be

Authorisation

 Decide what resources a user has access to

Accounting

Track the user's consumption of resources

Policy Charging and Rules Function

Granular rules, intelligent policies and smart charging decisions



"We control billing, user services and access in wireless networks worldwide"

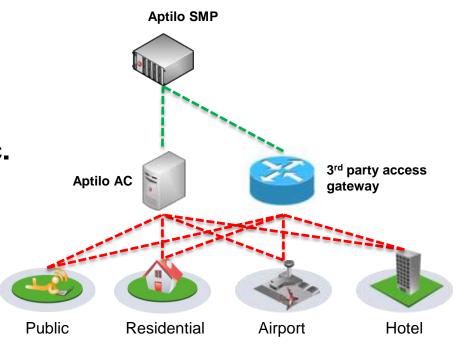


People from all over the world will flock to Brazil to celebrate the World Cup and 2016 Olympics. The ability to offload mobile data to Wi-Fi will ease network congestion significantly and increase data speeds, for an exceptional user experience.



Aptilo Core Products - SMP

- WiFi Service Management including Package sign-up, Authentication and Service Authorization
- Subscriber management
- QoS and policy engine
- Pre-paid system, Quota & Billing Control
- Monitoring and Reporting
- Voucher management
- Interfaces to directories, CRM, etc.
- External APIs for integration
 - CS, HTTP, SOAP, LDAP, MAP, DIAMETER, RADIUS, etc
- High availability architecture
- Industry-leading AAA Server



Aptilo KPI, Reporting and Monitoring



Monitoring

- 0
- Network overview
- Node up/down time
- SMS/email alerts

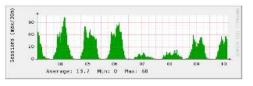


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Statistics

- Connected Users
- Bandwidth Usage





Reporting

- Daily, weekly, monthly summary reports
- Revenue & top selling packages reports

Reports

a. Yesterday

e. Last month
d. 2 months ago
e. 3 months ago

Session list

Wholesale/Retail/Roaming reports



- Query user reports
- Per user BW consumption

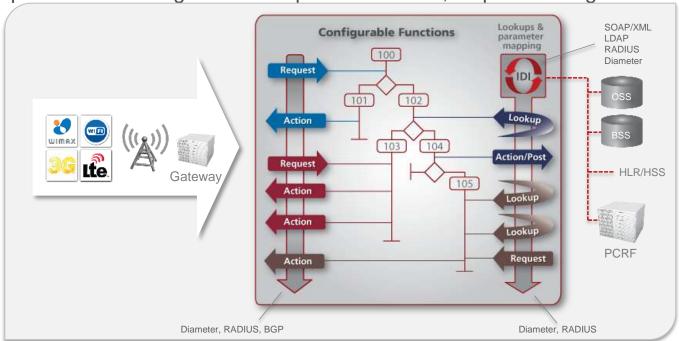






Programmable Logic – Aptilo ServiceGlue

- Configurable policy rule-sets, flexible parameter settings and dynamic service definitions support wide range of business logic and service authorization options
- 'Interface agnostic' service management engine
 - Application layer separated from interface layers
- Modularized architecture
 - Openness to adding customer specific modules, as part of the general solution

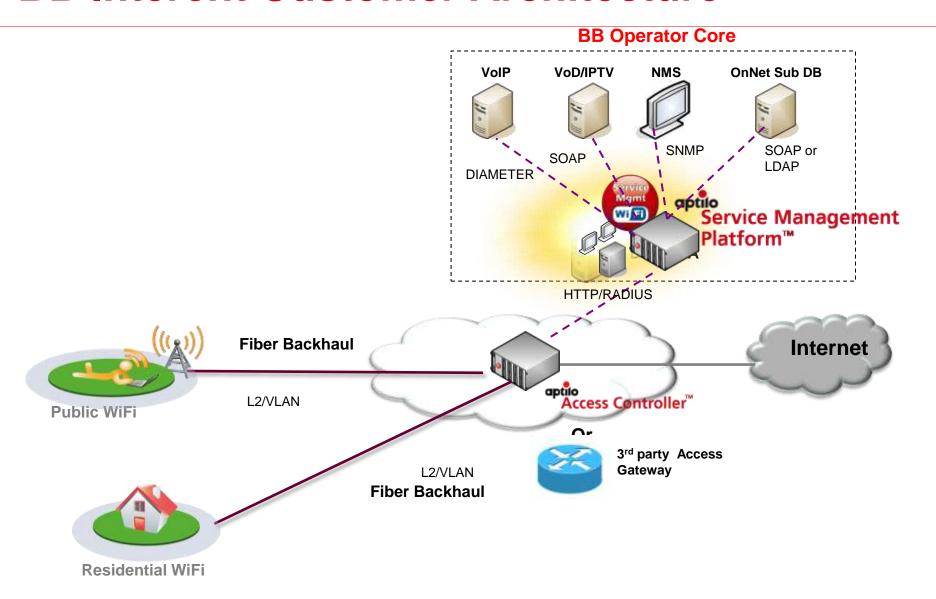






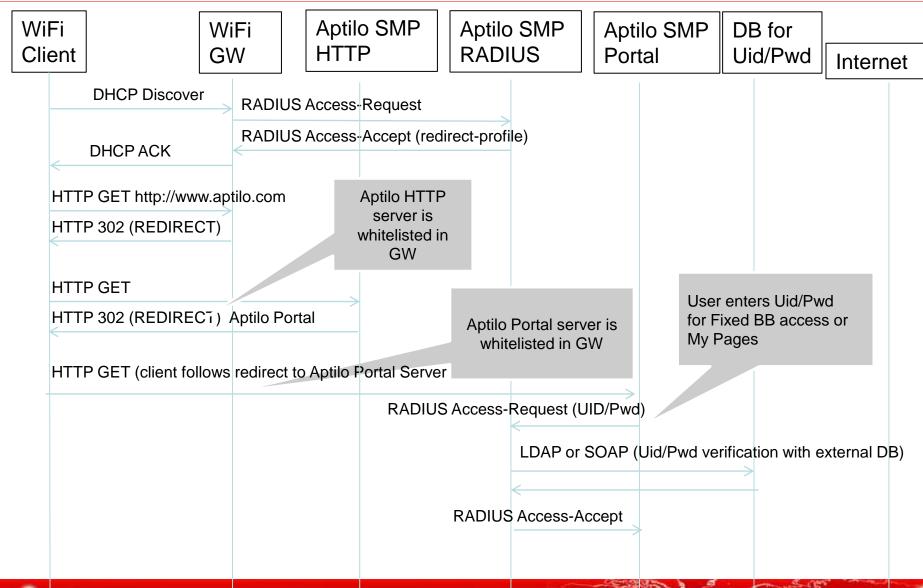


BB Interent Customer Architecture

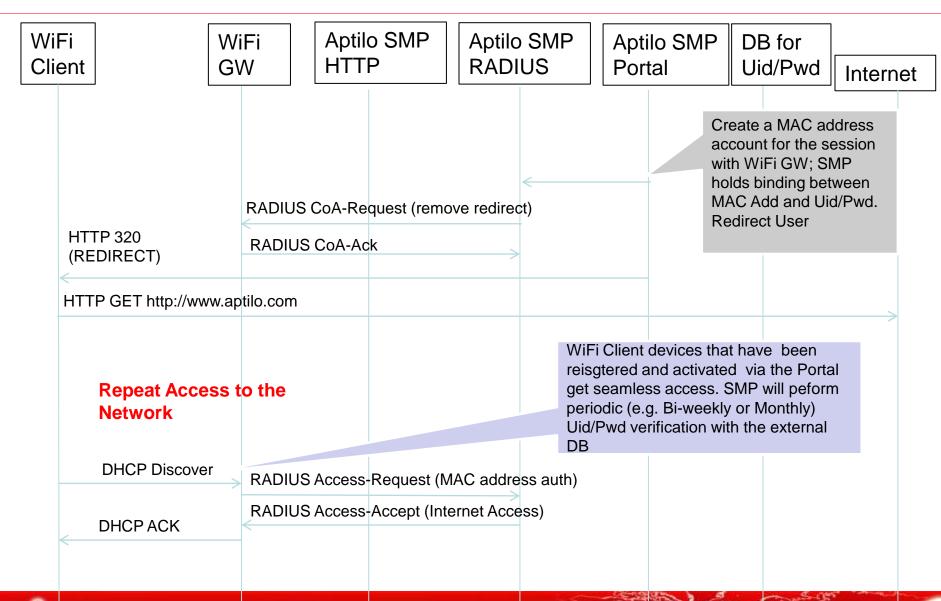




Third Party GW Log-in Flow 1/2



Third Party GW Log-in Flow 2/2





Enhancements to Home BB Services

- Provide TV/Video Content and if applicable Voice (VoIP) directly to the WiFi enabled devices with On demand QoS/BW over the WiFi network
- Deliver end to end QoS including in the Home WiFi network, BB Access Network, Edge and Service Routers to support Voice and Multimedia services directly to the WiFi enabled devices
- Control and manage the end user WiFi devices and offer value added services
 - -Customers manage the device persona & registration of devices
 - ISP manages the total number of devices /concurrency/BW/ QoS/ Volume CAP/FUP/Mobility, etc
- On demand/fixed Community SSID at selective Home locations based on Home/Community SSID BW demand/consumption
- TV/Voice on the go with superior end user quality of experience in selected locations for higher ARPU or Customer Retention







Aptilo Point of Sales Capabilities

- Username/password login
- Vouchers and prepaid scratch cards
- Credit card payment
- Mobile phone account payment
- Roaming with carriers and roaming aggregators
- Property Management Systems
- End-user self-provisioning
- Retail account management
- Advanced authentication

























Payment server capabilities

- Username/password login
- Vouchers and prepaid scratch cards
- Credit card payment
- Mobile phone account payment
- Roaming with carriers and roaming aggregators
- Property Management Systems
- End-user self-provisioning
- Retail account management
- Advanced authentication

- Scratch Card
 - One time or multiple time access, e.g. 5 times in 24 hours
- Voucher
 - Anonymous
 - Temporary
 - Username and password
- E-Voucher and batch voucher generation
- Conference centre module
 - Group accounts





Type of Accounts Supported in Aptilo SMP

 SMP supports many more options on top of duration(time based) accounts

Time Limited accounts (e.g. Voucher code)

 A time limited account often used when providing physical voucher cards e.g. 30 minutes from the time of first login.

Time-quota accounts (effective time)

 A time limited account defined by the allowed session duration and where the count starts at the first login. Time can be saved for later sessions.

Byte-quota accounts

A data volume limited account defined by the allowed sum of sent and received data e.g. 500 MB.

Volume/Time Quota account

Both time and data volume limited account.

Punch Card accounts

 An account that allows for more than one session, e.g. 10 logins valid for 60 minutes each. The vir "puncher" is reduced after each session by one.

Credit / Money Quota account

Account type based on credit / money instead of time or data volume.











Why B2B support is crucial when rolling out Wi-Fi

Operator must be attractive to venue owners

- Offering Wi-Fi services to venue owner's customers
- Flexibility to offer different business models

Type of Venue Owners

- Enterprise
- Hospitality
- Healthcare
- City / Municipality
- Transport (Airport, Bus, Boat)

Type of Wi-Fi services

- Guest Internet Access
- BYOD (Bring your own device)
- Daily / Hourly pass
- Roaming



With B2B support, venue owners will more easily accept to deploy Wi-Fi infrastructure because they will gain in their own business by doing it.



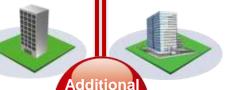
Business-to-business Opportunities for Operators

Enterprise

- Managed Wi-Fi Guest Internet Access
- Bring Your Own Device (BYOD) Services
- Provide secure SIM-based authentication for employees devices

Hospitality & Healthcare

- Managed Wi-Fi services for guests at hotels, conference centers, shops, restaurants, stadiums or hospitals.
- Integration with the venue's billing system.



SSID for Offloading

Municipality

- Managed Wi-Fi Services
- Separation between public and private (Police etc) use.
- Provide secure and automatic SIM-based authentication for users (can also be provided to an existing municipal Wi-Fi network, automatic login means offloading of 3G/4G)



Airport / Transportation

- Managed Wi-Fi Services
- Extensive Roaming
- Differentiated portals for special branding for e.g. Airlines, Shops
- Separation between public and private use.



Benefit from Aptilo's vast experience with verticals

Enterprise





Multitude of provisioning flows



- Guest self-registration multiple options
- Guest pre-registration multiple options
- Group accounts for events



- SMS delivery of codes
- Deployed by Fortune 500











Many more enabled f through Aptilo's Service Provider Customers

Hospitality (Hotel,Healthc.)

- PMS Billing Integration
- Integration with TV system
- Traffic prioritization for e.g. conference rooms
- Deployed by large hotel chains
- Multiple large hotel chains in US
 via PSAV Catholic Healthcare West

Municipality



Separation between Public vs Private (Police etc) use.





Different portals for different locations















Airport / Transportation

- Wholesale support for different stake holders Airlines, shops etc
- Separation between Public and Private use
- Roaming integration with leading providers such as iPass & Boingo
- Deployed at large airports



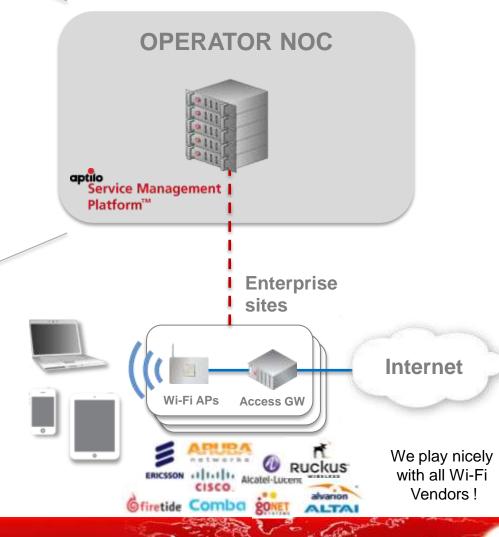




Operator Managed Services to Retail Customers



- Proven Guest Internet flows and portals
 - Deployed with Fortune 500 companies
 - Site specific portals for branding
- Advanced delivery of access codes
 - Including delivery through SMS
- Support all leading Wi-Fi vendors
- BYOD support





WEB Portals



Guest Provisioning Portal



Online guest account creation and access codes for company staff

Guest Login Portal



Interface towards the guest (customer, biz. partner, tenant etc.)



Addressing all aspects of Guest Internet Access service deployments



IT Service Dashboard



Service monitoring, reporting and support for company IT-staff



Standard Enterprise Guest Provisioning Flows

Guest Self-Registration Flow

The guest request an access code (voucher or SMS) and register online for a personal Internet account. Typically for short-term guest accounts.







Staff Pre-Registration Flow

Staff register the guest and provide access code or UN/PW via voucher, SMS or e-mail. Typically for long-term guest accounts.





Aptilo Guest Provisioning Portal



Web based application reachable via corporate Intranet for employees to create guest accounts and distribute Access Codes via Vouchers, SMS or E-mail.

Guest Pre-Registration

- Pre-registration of guest accounts
- Typically long-term accounts
 (1 week, 1 month, 3 month, 1 year etc)
- Service flow: Staff Pre-Registration

SMS Access Code

- Distribution of access codes via SMS
- Typically short-term accounts (e.g. 24 hours)
- Service flow: Staff Pre-Registration

Batch Voucher

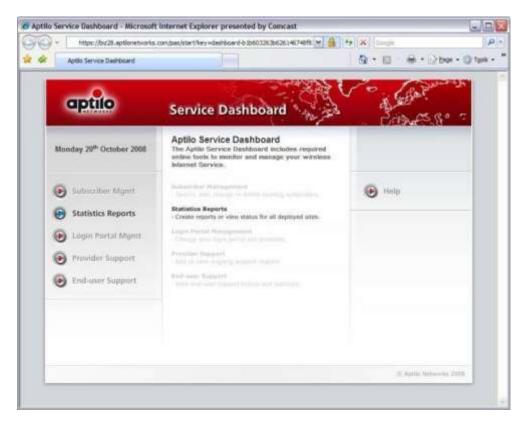
- Batch creation of vouchers and access codes
- Typically short-term accounts (e.g. 24 hours)
- Service flow: Guest Self-Registration

Supporting Documents / Information

- End-user instructions
- Frequently Asked Questions
- Employee Feedback Form
- Support information



IT Service Dashboard



Web based Service Dashboard reachable via corporate Intranet for the company IT-staff

Guest Login Portal

Link to "Guest Portal" to check service availability

Guest Provisioning Portal

 Link to Provisioning Portal for creation of guest accounts and access codes

Service Portal

 Monitoring: Status and alarm handling for all sites with Guest Internet incl. statistics such as number of users, sessions, time, date, location etc. for all or individual sites

Support

 Online Support Center with overview of all support requests for all sites deployed

End-User Support (optional)

 Online trouble ticketing system for end-user support incl. categorization of issues and resolutions

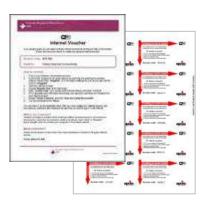


Other things to consider...

Login Portal Design



Internet Vouchers (Design & Information)



End-user Instructions



Marketing / Branding



Terms of Service (Legal)



Greetings and UN/PW reminders via e-mail



F.A.Q



Employee/Customer Feedback



Automated Statistics & Reporting



Helpdesk /Support









Monetization with Advert Revenue

- Advertisement revenue can come from 3 sources First party, Second party and Third party data of the customer
- Examples of first party data are location and personal data collected from the captive portal during the network access
- Customer Demographics Information collected from social media authentication is a good example of second party data by selling user information and usage pattern to third party companies
- Third party data revenue is more related to selling ads offline
- Ad based WiFi monetization is applicable to venues such as stadiums, arenas, shopping malls and beach fronts where large groups of people congregate
- Aptilo SMP has been already deployed in the field with Social Media aware advertising

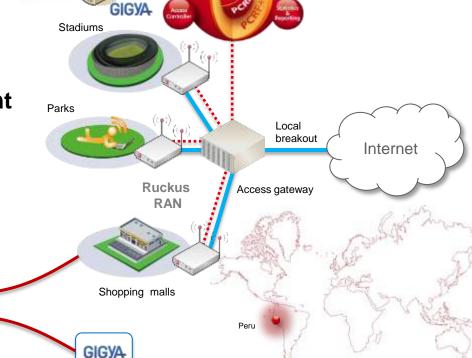


Digital Way – Monetizing free Wi-Fi service



- Digital Way's WiGo Wi-Fi available where people are
 - Stadiums, Parks, Shopping malls
- Login through Social media
 - Aptilo SMP integrates with Gigya
 - User profile, age, interest
- Monetization of free Wi-Fi with Ads
 - Ads displayed every 30 minutes
 - Ads can be 20 sec video clips
- Aptilo SMP makes Ads more relevant
 - Wi-Fi AP location mapping, displaying Ads relevant to location
 - Integration with Gigya to show ads related to user's age and interests





Service Management Platform

facebook twitter

Google YAHOO!

Linked in

Location: MegaPlaza

User: 24 years old

Women



Monetize with Advertisements

 Social Media Integration to collect and aggregate user information

+

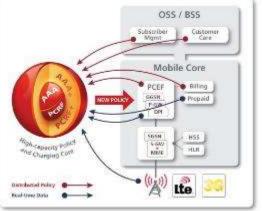
–Location aware APs

+

Integrated with advertising platform

 Ability to offer targeted hyper local call to action advertising and other location based services







Social and Location Aware WiFi Advertising

Everyone Loves Free Wi-Fi Target Audience use Social Media

Paid or Free Service

Hyper Local Contextual Ads









1st Time

Returning



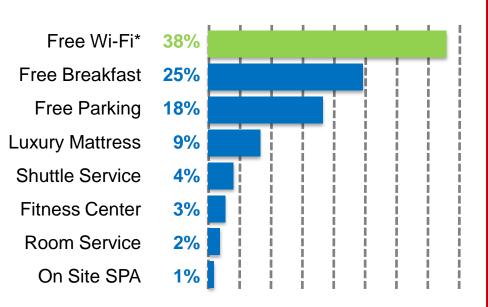




Wi-Fi is King in the Hospitality Industry

Recent www.hotels.com study

Which amenity is a must when choosing hotel accommodations?



http://www.burbahayes.com

Its not the bed.....

What's the most popular or desirable amenity in a hotel room?

Number 1 answer: Free Wi-Fi

Number 2: Good TV

Close Third: A comfortable bed





^{*} For respondents older than 60 the Free Breakfast (34%) passed the Free Wi-Fi (27%).

Aptilo Hospitality Segment Experience

- Deployed in major Hotels, Resorts & Casinos worldwide
- 180 hotels deployed in US including Hyatt's hotels

- Charge my Room
- Out of these 180, a total of 140 have PMS integration with Fidelio, Opera, Micro4700
- Credit card, Voucher and Affinity (Loyalty)
- Guest Access Module for the Reception
- Same account works for wired & wireless
- Support for Multiple devices including Gaming devices under the same Guest
- Multiple Captive Portals within the same venue
- Meeting Room Manager for conference events
- Integration with TV systems for on demand bandwidth and charging
- Roaming Support

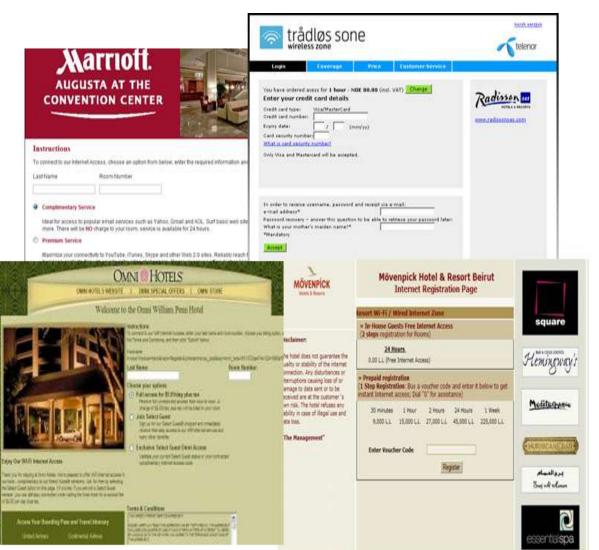








Aptilo Hospitality WiFi Deployments





Territoria Territoria Support

SHIT ISLA VERDE AVENUE - SAN JUAN, SSHITS - PUERTO RICO.



PSAV

Operator Hospitality & Healthcare Wi-Fi Services



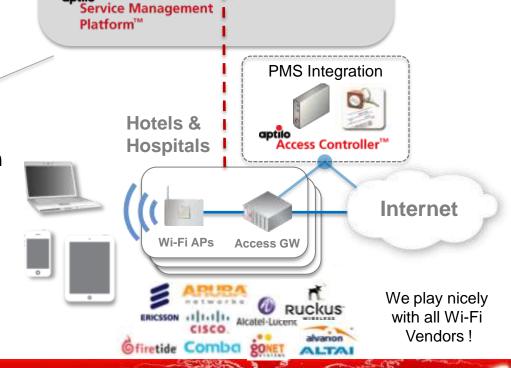
Free **Guest Internet** Access for Contractors and **Employees**



Multitude of **Payment Options**

Proven Hospitality & Healthcare solution

- Deployed with large Hotel chains
- Both free guest Internet and paid services
- Integration with Hotel billing (PMS)
 - Fidelio, Micros 4700, Marriot etc
- Advanced QoS handling
 - Premium services for additional fee



OPERATOR NOC

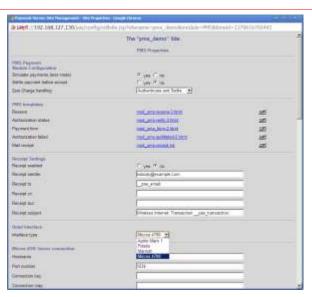


Aptilo PMS Interface Specification

- Aptilo SMP supports the PMS interface specification for PMS vendors Fidelio, Opera, Micro4700/9100
- SMP supports Serial and IP PMS
- Where serial PMS integration is required Aptilo AC will be deployed locally in a small Server (e.g. Dell R200) for the serial interface connection
- PMS module is in the central SMP
- In US alone Aptilo SMP has been deployed with more than 140 Hospitality properties for PMS billing



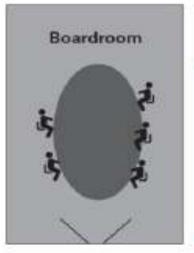


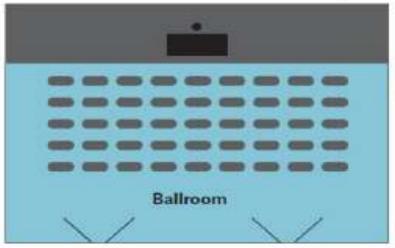


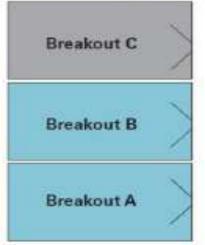
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Example of how BW & QoS profiles can be assigned and managed with SMP

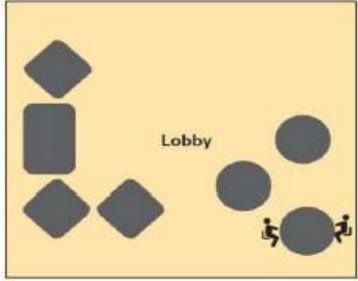














Aptilo Venue Portal

Easy generation of customer reports

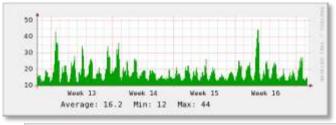
- Quick to create new report
- Assign to customer

Generate custom portals

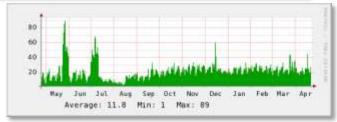
- Individual portals for customers
- Includes custom and pre-set reports

Report formats

- Graphical
- Textual
- -CSV export











Aptilo Venue Portal

- Web-based user interface
- Hierarchical site representation
 - Simple geographic organization
 - Site status summary
- Detailed reporting
 - Per site
 - Groups of sites
 - Whole system
- Alert viewer







Stadium/Arena Deployments

Large Venues

– 50,000 concurrent users per stadium.

Multiple WiFi RAN/GW vendors

Telco Customers

- WISPr , EAP-SIM/AKA authentication for Mobile Operator Customers
- Uname/pwd for Fixed BB customers

Video adverts for Public Users

- Non Telco subscribers register via Portal
- Name, email address capture via Portal and pushed to Telco for offline advertising such as special Telco offers via email
- Aptilo SMP redirect user to video advert
- Non Telco users get time limited free access for watching the video

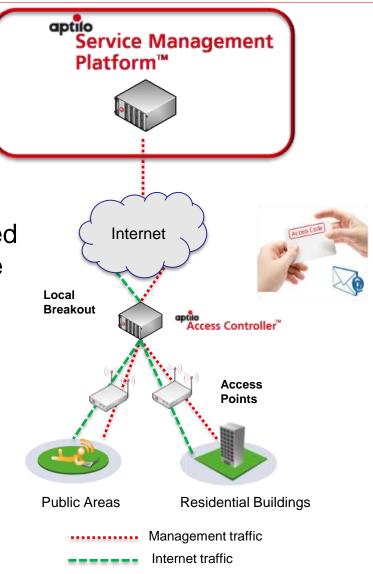
Pay per-view Replays

 On-demand QoS/BW bolt-on for Pay per-view Video Streaming



MDU/College Campus Solution

- Simplified end-user experience
- Minimized manual steps used by Property management and Automate manual processes
- Minimize calls from tenants to Operator call center, by providing self-account management for tenant and other web based tools for Property Manager to handle 1st line of support
- Property Manager will have 2nd and 3rd line support with the Operator
- Standard Package included with Rent
- Upgrade Package Online by Credit Card Payment









Roaming Support in Aptilo SMP

WISPr

- Eliminate WiFi GW dependencies
- Add Locattion specific information (e.g SVR and Boingo) from the locally stored disctionaly files
- -Advanced error handling with the Roamimg Exchange Platform
- Append device info from User Agent field into Accounting/KPI

WRIX

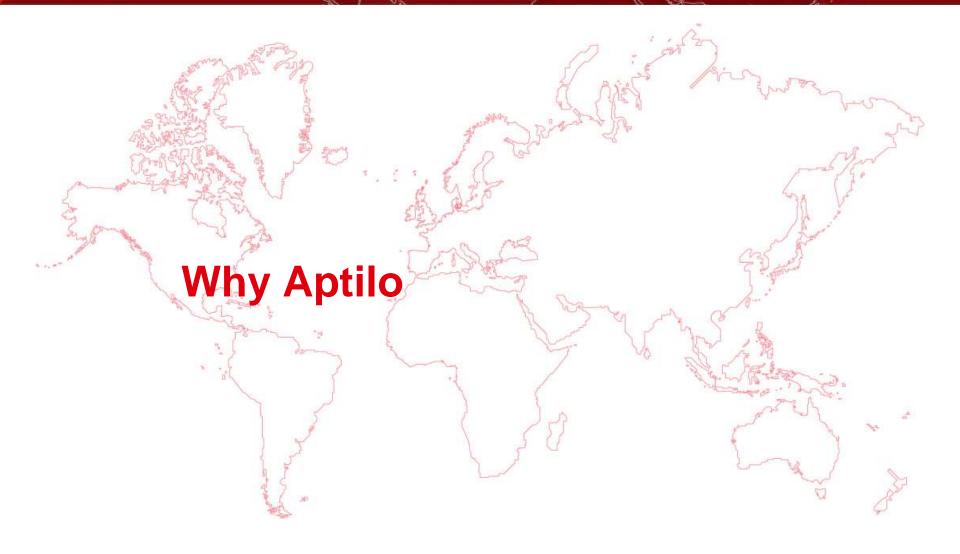
- EAP-SIM, EAP-AKA and other EAP methods
- –WRIX- i: RADIUS, WLAN session mediation, UDR creation and service levels; VPN connection has to be done outside Aptilo
- WRIX-I: Add Location specific information

Other Methods

- -GTP tunnel from VNP (WiFi Gw) to HSP (GGSN/P-Gw)
- Query MSISDN status in VLR and create GRX like CDRs







We dare to say



No one knows carrier Wi-Fi better than we do!

- Widely deployed
 - 140 customers in 60 countries
- Market-driven features
 - 12 years of conforming to requirements of demanding customers
- A wealth of carrier business models and access options
- Wi-Fi AP vendor agnostic; Wide range of third party Gateway certified
- vendors

- Vast B2B verticals experience
 - Venues
 - Hospitality
 - Healthcare
 - Municipalities
 - Airports
 - Enterprise
- Proven in large-scale carrier Wi-Fi deployments
- Control SIM and non-SIM devices



