Indio Networks

Telecom

Carrier WiFi and Critical Infrastructure Management
Solutions.

Introduction

The Telecom companies were initially aversive to the idea of pervasive WiFi because they did not see the business case in it. However, as mobile cellular networks have continued to grow, telcos are finding it increasingly difficult to manage network congestion while ensuring seamless connectivity. Network congestion is one of the key problems which telcos face today.

So what are telcos looking at to solve this problem? Pervasive WiFi. Carrier grade, pervasive WiFi is the way telcos can dramatically reduce network congestion by offloading cellular data on to the nearest WiFi deployment that the telco has installed. Carrier grade WiFi deployments can go into hundreds of thousands of Access Points.

Telcos need effective strategies & trustable solutions to target carrier WiFi deployments in order to solve their problems. Another key telco issue is tower management. There are companies which provide passive infrastructure to telecom companies to set up their radio antennas.

These tower infrastructures are high availability structures, they have to keep running 24x7, 365 days a year. There are several critical parameters like grid level electric supply, battery bank capacity among other things which have to be monitored to provide that high availability.

 Critical parameter monitoring is facilitated by input sensitive IoT solutions that work on wireless communication protocols & cellular to relay the information gathered from the monitored devices to operators in real-time.

When it comes to any network management— Fault, Configuration, Accounting, Performance and Security (FCAPS), all aspects must be resolved.

Key Requirements for Carrier WiFi

- Scalability

- Performance

- Configuration

- Accounting

- Security

- Fault detection

- Quality of Experience & Quality of Service

- Security of hardware components

In Depth on WiFi services for Telecom

Let us take a detailed look at what Telecom Providers really require from WiFi.

Scalability

Mobile Network Operators (MNOs) deploy WiFi Access Points in the thousands, their network infrastructure is implemented to serve millions of users through tens of thousands of Access Points. To be able to scale and integrate all of these Access Points into a central console can be daunting. Moreover, if the Access Points are not a plug-and-play configuration, that worsens things because it is simply impractical to even think of a solution that would require Access Points of that magnitude to be configured manually on each location.

Mobility

Users are on the move while being connected at all times. This seamless connectivity can only be facilitated through solutions that provide high mobility and quick transitions over networks.

Data offloading

MNOs want to offload cellular data of their users on to MNO managed WiFi networks to free the cellular network of congestion and keep it running smoothly. In places where 4G interference is dense, where hundreds of people might be utilising 4G can result in overloading of the nearby BSS, in such cases, it is important to offload data to the nearby WiFi hotspot to decongest the network.

Network Features

The WiFi network should be able to tag multiple SSIDs with VLAN management, the network should be secure with quick fault resolution mechanisms.

High Capacity Hardware

Carrier WiFi deployments usually require high capacity, high density handling of users. These deployments require robust, high concurrency, easily deployable Access Points which can work in noisy environments.

Infrastructure monitoring

Telecom infrastructure consists of many hardware elements, SPS, which are critical to maintain & ensure 24x7 connectivity. These elements need be to monitored real-time with operators receiving updates over cloud for them to oversee this infrastructure through a single console. Any discrepancy in the hardware elements should be addressed immediately in order to prevent network failure. These monitoring solutions are approached through comprehensive IoT deployments, with asset tracking to add extra levels of security and asset management.

Protection of hardware elements

Since carrier WiFi deployments are public deployments, it is imperative to ensure that the hardware elements are protected through robust mechanical enclosure, or mounting techniques that secure this hardware from people who might want to engage in unlawful activity.

Secure user onboarding

Users who connect onto the network should be verified though AAA services which secure the network, verify the users onboard and create trusted networking environments.

Deployment Challenges

Carrier WiFi deployments are complex. Here are a few challenges that Carrier WiFi & critical infrastructure management deployments can face:

- FCAPS management

- Capacity Planning

- RF Design

- Central management of network

- Security of the open network

- Ease of deployment and maintenance

- Gathering data for analytics

How we help the Telecom Sphere with our solutions

The solutioning approach we take is meant to serve all your requirements with a single vendor solution to manage all your core network elements.

For Critical Infrastructure Management:

Universal Modem is a device that can be used to communicate with legacy devices like power systems, factory machines, generators, telecom equipment, controllers and other instrumentation devices. It can be interfaced with multiple devices simultaneously to establish two-way communication between the device and the cloud. The Universal Modem helps in automating and monitoring the functioning of remote devices by allowing administrators to collect all the critical parameters from the remote devices periodically and process them in the cloud. Similarly it can also send commands and instructions to these devices from the cloud thus allowing administrators to control any device remotely. Universal Modem communicates with the cloud over a 3G or 4G connection so it can be deployed in wide range of applications and in much bigger area.The Universal Modem can be used to control and monitor various equipments installed at the telecom towers, these include SPS, SMPS, DCEM and other power appliances. These equipments are manufactured by various vendors so the Universal Modem needs to implement vendor specific protocols to read and write to the equipments.

For Carrier WiFi:

WiOS is our cloud-based OSS / BSS software used for central management and control of hotspots distributed anywhere across the world, all through a single console. Our Carrier WiFi solution takes care of core network elements like AAA, DHCP, OSS / BSS, OAM, Firewall, VLAN tagging and other services that are crucial to any network deployment. WiOS working in conjunction with UniMax Access Points, you can control and monitor your entire network, configure network, comply with local regulations, monetise the WiFi service which you provide, generate real-time user activity reports and receive real time updates. WiOS, as with UniMax, comes with a built-in AP controller which functions like a networking monitoring system.

Key Highlights of our Critical Infrastructure Management Solution:

- Tower automation

- Integrates with multiple power systems vendors

- Real time alarms

- Instant notifications

- Rich dashboard

- Fault prediction

- Improve battery health

- Reduce fuel theft

- Central inventory management

- Improve operational efficiency

- Generate actionable intelligence

- Reduce truck rolls.

Key Highlights of our Carrier WiFi Solution:

- Cloud-based hotspot monitoring

- Handling core network elements

- Real-time traffic analysis

- High density support

- Data offloading

- AP controller

- AP health monitoring

- WiFi monetisation

- Captive Portal

- WiFi marketing

- Live heat maps

Implementation

For Critical Infrastructure Management:

The Universal Modem helps in automating and monitoring the functioning of remote devices by allowing administrators to collect all the critical parameters from the remote devices periodically and process them in the cloud. Similarly it can also send commands and instructions to these devices from the cloud thus allowing administrators to control any device remotely.

Universal Modem communicates with the cloud over a 3G or 4G connection so it can be deployed in wide range of applications and in much bigger area. Universal Modem contains various interfaces to communicate with multiple equipments at the same time. It contains two USB, two RS-232, two RS-485 and three Ethernet ports. It can use WiFi, 4G or Ethernet for connectivity with the Internet. It also provides a provision for enabling GPS on the board.

 The Universal Modem is connected with various equipments with respective cables. It comes with tamperproof, IP-55 enclosure that can be easily installed at remote sites.

For Carrier WiFi:

WiOS, our cloud-based hotspot controller controls and monitors the entire network of UniMax Access Points. WiOS can be hosted on a public or a private cloud infrastructure. The public hosting of WiOS gives you access to an instance through which you can control and monitor your network. Using the private hosting, you can white label the software if you wish to do so.

Dual-band UniMax Access Points are intelligent and are designed to handle high concurrency of users. UniMax Access Points support upto 8 SSID configurations per AP, offering max data rates up to 1200 Mbps. UniMax Access Points can be mounted pole mounted or wall mounted, as the requirement fits.

Our Access Points can be powered using our Trinity Series Switches, these are managed switches which come in a 24P and 8P configuration with 450W and 120W power supply each.

Solution Benefits

We have worked with multiple MNOs and vendors who offer passive telecom infrastructure to MNOs for facilitating their connectivity requirements. Our solutions have been adopted by many companies over the years. Here are a few impactful ways in which we have driven growth:

For Critical Infrastructure Management:

• Real-time status of on-site equipment

• Data analysed to identify fault and perform audits

• Operational cost of maintaining sites reduced by over 40%

• Bidirectional communication facilitated easy configuration

For Carrier WiFi:

• Easier provisioning of users

• Higher network visibility

• Facilitated data offloading

• Handling high density of CCU

• Improved subscriber experience

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