


Surveillance System - IoT

Our client is one of the leading companies providing custom solutions for security surveillance. With a focus on increasing business reach, the company revolutionized industrial automations by administering remotely located devices using Machine-to-Machine communication.



This required administering hardware devices installed at specific locations through remotely placed console

- Initiated a solution to develop a universal console

This required Hidden Brains' expertise in implementing IOT under security and surveillance domain


We considered 2 important parameters while defining the base architecture

- How fast events comes to the Operator after it has been generated from the installed hardware
- How smooth events can be presented to Operator without flickering

Screen test

A quick screening test made on the base architecture to measure the communication rate and quality from different acquisitions such as Intrusions and fire alarms using Zwave protocol and IP Cameras using WIFI / Ethernet.

- The main reason to perform speeds test for data insertion when database is on cloud. Also to test the faulty connections
- Below major parameters are considered while defining the architecture
 - Event receive rate
 - Avoid Flickering in UI
 - Server side polling
 - Multiple Server connection from single client
 - Security while connecting with cloud
 - Communication breakup

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- Control sensors located under different locations which communicates with specific frequency under specific range [Zwave]
 - Control all the controllers through controlled located console to retrieve latency of connections between devices and controllers

Challenges

- Custom the entire input from Zwave controllers to specific format to push it on cloud
- Complete automated procedures to record data on cloud
- Notify user on immediate faults connections or damages
- Integrate with 3rd party Zwave controllers that communicates with several local client [sensor that are supported with Zwave protocol]
- Unique platform that collaborates with any third party controllers and drivers for all type of panels
- IP based cameras connected to central located DVRs for video streaming to transform live video from security cameras to server
- Define a Multi-server Multi-client Architecture that functions over huge data transmission rates in milliseconds
- Handled Large data transfer with optimized compression techniques along with strapping security over Internet
 - We worked on several compression techniques such as
 - Huffman
 - LZW
 - SevenZip
 - LZMA
 - GZip
- Finally concluded on LZMA and GZip algorithms with support of AES encryption technique as the security was also a parameter to be addressed
- Every hardware driver that interacts with software to receive commands for functions, using the same approach. We performed reverse engineering to use the same drivers installed to fetch every event and working status of the device installed
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- Push notification service for desktop based applications [similar to Mob app]
 - Explored WCF push service to provide notifications for real time updates
- Query Analyser
 - Custom report [statistics] tool for user to create his own reports
- Access with Multi-licensing
 - Created a multi-license permissions to allow access based on license purchased

We successfully launched universal supervision modular software with a mobility feature to control and manage several types of integrated security systems such as:

- Intrusion, fire access control, video surveillance, and building automation systems.

Impact on HB

- Hidden Brains had extended its learning curves in below areas
 - Firmware level coding to create APIs and interface to control the machines
 - Industry automated solutions for security surveillance
 - Multi-server and multi-client architectures
 - High speed data transmissions over milliseconds in secure tunnel
 - Data Compressions techniques along with Security algorithms
 - Live video streaming techniques to deliver on any DVR devices
 - Exploration on different IoT Data Link Protocol such as Bluetooth, Zigbee, ZigBee smart, Z-Wave, LTE-A, 802.11ah, 802.154