# Making IoT Reachable & Affordable



Managed Services: IoT Platform as a Service (PaaS)

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## hIOTron as an IOT Company

The Internet of Things isn't all about technology, it's about your business. When you connect your business with IoT, the opportunities are endless.

Hiotron Pvt. Ltd (hIOTron) is an Indian technology corporation focused on development and implementation of Internet of Things based Products and Solutions. It develops, manufactures, supports, licenses IoT Platforms and sells IoT based consumer, industrial electronics & software services.

It provides an ecosystem for IoT solutions right from training, design, hardware manufacturing, integration, platform, analytics and support to any business or individual to make their IoT journey simple and smarter.

Most challenging part of any IoT business is to choose right solution components such as Sensors, IoT (Embedded) gateways, communication protocols & architecture, software frameworks and most importantly IoT platform for running any business model. Most business use established IoT platform to ensure the success of their IoT deployment instead of "reinvent the wheels" themselves. However, with plethora of IoT platforms in the market, many caterings to specific industries, it become challenging to evaluate the options and find the right solution.

Hence, accelerate your IoT journey with fully managed solutions that take the hassle out of creating, managing, and operating your industry-specific IoT solutions, or tailor a customized IoT application that enables fine-grain control. Either way, hIOTron IoT platform offers powerful and secure IoT solutions that will meet all your needs today and into the future.



## hIOTron IOT Platform as a Service (PaaS)

hIOTron IoT Platform is not merely a system that allows you to manage connected assets. Our engineers have carefully chosen the state-of-the-art technologies to build the most advanced and high-performing IoT platform that helps you connect things quickly, build a data-driven business, generate new insights, and drive actions. hIOTron IoT Platform as a Service (PaaS) that facilitates device communication and management, data storage, and app creation, while adhering to robust security protocols.

Bring your business together in new and insightful ways with the Internet of Things, from increasing process efficiencies to delivering better customer experiences to generating new revenue streams.



The ability to track products and services in use means your business can respond to customer behavior. In turn, this innovative connectivity can lead to new analytics and services for more effective forecasting, process optimization, and customer service experiences.



## Applications **Custom Applications** Manufacturing Asset & Logistics Healthcare Energy & Environment Oil & Gas Transport

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Others ...

Smart City

Pre-built Products & Solutions

Home Automation 

Hotel Automation



Experience the simplicity of PaaS for IoT (Internet of Things), with no cloud expertise requiredhIOTron IoT Platform is a fully managed global IoT PaaS (Platform-as-a-service) solution that makes it easy to connect, monitor and manage your IoT assets at scale. Bring your connected products to market faster while staying focused on your customers.

A comprehensive suite of services integrated with hIOTron IoT Platform to seamlessly connect your devices and gain insights from the collected data to make better business decisions. Its services include device registry for recognizing devices, batch and stream processing, auto-scaling, role-based access control, Rules engine for inbound message evaluation, and more. Some of them are:

#### **Edge Analytics Model**

IoT Platform supports multiple Anomaly Detection Models to filter data based on event or time & perform some actions (if assigned any) at edge before it reaches to cloud to eliminate the round-trip latency of an actionable insight. In a production environment, same filtered events can be mapped with notifications/switching models to make the process automatic through cloud.

#### Advance Analytical Model

IoT Platform provides a spectrum of analytics that enable you to start quickly and realize value immediately and visualize your device real time or historical Raw, Formatted & Formulated (Application category based) data in charts/graphs/bars in wellorganized way with multiple filters like project/data/ time/threshold/download options.

#### **Device Connectivity**

Web based Platform manages seamless device connectivity & configuration from IoT Platform to gateway (OutBound Connectivity Protocols: Wi-Fi, Ethernet & 2G/3G/4G/LTE modem) & gateway to wireless/wired end node [InBound Connectivity Protocols (Wired – Serial, I2C, SPI, RS232/485, ModBus & CAN) & (Wireless – BLE4.0, ZigBee, ZWave, LoRa, Sub-1, RF)] & Vice versa.

#### **Device Management**

IoT Platform Device Management makes it easy for you to manage your connected devices at any scale with right authentication & authorization process. Organize & manage your Hub (gateway) & Nodes in hierarchical structure based on its category which help to search/edit/remove devices in bulk.

#### Data Storage

IoT Platform stores last 90 days device generated data for any application which is directly in-sync with heart-beat interval (data update period from device to iot platform) period (default 10 minutes). For example- if Heart-beat interval kept 5 minutes then storage duration will also become half 45 days. For

#### **Reporting Tools**

IoT Platform allows user to visualize real time & historical data along with time/event-based mail reporting feature for overall (combined) or each & every pattern of data in PDF format. [Excel format reporting also available with data filtering option]

#### FOTA (Firmware over the Air)

IOT Platform maintains the record of every version (Newly or Previous) of firmware of devices associated to it which allows you to update gateways & its associated nodes new firmware one by one or all in one in single click.



## **IoT Solution Accelerators**

Use built-in templates to create fully customizable solutions for industry specific Internet of Things (IoT) scenarios. Bring your business together in insightful new ways - from increasing process efficiencies to delivering better customer experiences and generating new revenue streams. The available solution templates are:



## hIOTron Platform's Enterprise Offerings

White Label Custom URL Branding: Partners can also serve hIOTron IOT platform as their own IOT platform with completely white label branding option right from their custom logo to URL.

**Logo/Theme Branding:** Partners can serve hIOTron IOT platform as their own IoT platform to their clients with logo & theme branding features.

> **Open API's for Custom Models:** Access of Rest APIs in JSON/string format allows you to embed raw data anywhere in the form custom visualizing model as per business logics or branding requirement.

#### Turnkey Projects in 6 to 12 weeks

#### Sample Project Plan



## Why hIOTron's IoT Platform?

Technical Features	AWS IoT Platform	IBM Bluemix Watson IoT Platform	Microsoft IoT Suite	Google IoT Platform	hIOTron IoT Platform
Device Connectivity	✓	$\checkmark$	$\checkmark$	~	$\checkmark$
Device Management	~	✓	$\checkmark$	~	$\checkmark$
User Management	$\checkmark$	~	$\checkmark$	~	$\checkmark$
Basic Edge Analytics Model	✓	✓	$\checkmark$	×	$\checkmark$
Advance Edge Analytics Model	×	×	$\checkmark$	✓	$\checkmark$
Basic Analytical Model	$\checkmark$	~	$\checkmark$	~	$\checkmark$
Advance Analytical Model	✓	$\checkmark$	×	×	×
Data Storage	$\checkmark$	~	$\checkmark$	✓	$\checkmark$
Reporting & Notification Tools	✓	✓	$\checkmark$	~	$\checkmark$
FOTA (Firmware over the Air)	×	×	×	×	$\checkmark$

Enterprise Features	AWS loT Platform	IBM Bluemix Watson IoT Platform	Microsoft IoT Suite	Google IoT Platform	hIOTron IoT Platform
Scalability and security	✓	√	~	✓	✓
Open API's for Custom Models	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$
Logo/Theme Branding	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$
White Label Custom URL Branding	*	×	×	×	~

## **IoT Platforms Pricing Summary**

#### Microsoft

Microsoft IoT Hub pricing is based on the total number of messages per day. A message is defined as 4KB in size, so if you have an 7KB message it counts as 2 messages. There are two tiers of pricing based on functionality: Basic and Standard. Within each tier there are edition types that are based number of messages per day, sustained throughput and sustained send rate.

#### amazon

AWS IOT Core pricing is based on four components: connectivity, messaging, device shadow usages, and rules engine. AWS has the most complicated pricing model based on connection time, number of messages, device shadow requests and rules engine actions.

### Google

Google IoT Core pricing is based on data volume. The first 250MB per month is free but then there is a tiered pricing table based on total monthly data. Google does have a set of quotas and limits for each IoT project hosted on IoT Core.

#### IBM

IBM IoT Platform pricing is also based on data but it is segment into data exchanged, data analyzed and data analyzed at the edge. For each data rate, there is a discounted pricing based on data volume.



- Other IoT Platforms Pay for IoT Services Based on Number of Devices, Messages & their intervals.
- hIOTron IoT Platform Pay only for cloud hosting charges used for data storage & data streaming.

hIOTron IoT Platform pricing doesn't restrict for number of Devices connections, Messages, Messages size, Messages Interval, Number of Rules, Events, Edge analytics model and other IoT services. it is purely based on cloud hosting charges with some basic Monthly/Yearly subscription cost.

## **Pricing Comparison**

	Scenario-1	Scenario-2	Scenario-3	
PRICING COMPARISON	Devices: 1000; Message Size: 8KB; Message Rate:2 messages/minute	Devices: 200; Message Size: 50KB; Message Rate: 2 messages/minute	Devices: 1000; Message Size: 4KB; Message Rate: 60 messages/minute	
	Total Monthly Messages: 86,400,00; Total Data (MB): 691,200	Total Monthly Messages: 17,280,00; Total Data (MB): 864,000	Total Monthly Messages: 2,592,000,000; Total Data (MB): 1036800	
Microsoft Azure IoT [Source: https://azure.microsoft.com/en- in/pricing/details/iot-hub/]	<ul> <li>Total Daily Messages: 5,760,000;</li> <li>Each message count as 2 due to 4KB metered size;</li> <li>Require S2 pricing with limit of 6,000,000 messages/day</li> </ul>	<ul> <li>Total Daily Messages: 7,488,000;</li> <li>Each message count as 13 due to 4KB metered size;</li> <li>Require S2 pricing with limit of 6,000,000 messages/day</li> </ul>	<ul> <li>Total Daily Messages: 86,400,000;</li> <li>Each message count as 1 due to 4KB metered size;</li> <li>Require S2 pricing with limit of 6,000,000 messages/day</li> </ul>	
	Total Cost: \$250/month	Total Cost: \$250/month	Total Cost: \$2500/Month	
AWS IOT Platform [Source: https://aws.amazon.com/iot- platform/pricing/]	<ul> <li>Connection Cost: \$3.46;</li> <li>Message Cost: \$173;</li> <li>Device Shadow (100 request/day/unit) 1K size: \$3.75;</li> <li>Rules Engine (400 rules &amp;actions/day/device) 8KB message: \$3.6</li> </ul>	<ul> <li>Connection Cost: \$0.69;</li> <li>Message Cost: \$173;</li> <li>Device Shadow (100 request/day/unit) 1K size: \$0.75;</li> <li>Rules Engine (400 rules &amp;actions /day/device) 8KB message: \$3.6</li> </ul>	<ul> <li>Connection Cost: \$3.46;</li> <li>Message Cost (rate \$0.80): \$2074;</li> <li>Device Shadow (100 request/day/unit) 1K size: \$3.75;</li> <li>Rules Engine (400 rules &amp;actions/day/device) 8KB message: \$3.6</li> </ul>	
	Total Cost: \$183.60/month	Total Cost: \$174.96/month	Total Cost: \$2084.41/month	
Google IoT Platform [Source: https://cloud.google.com/iot/pricing]	<ul> <li>691,200 MB data volume per month.</li> <li>Price per MB is \$0.0020.</li> </ul> Total Cost: \$1382.40/month	<ul> <li>864000 MB data volume per month.</li> <li>Price per MB is \$0.0020.</li> </ul> Total Cost: \$1728/month	<ul> <li>10.368TB data volume per month.</li> <li>Price per MB is \$0.00045.</li> </ul> Total Cost: \$4665.60/month	

IBM BIUEMIX WATSON	<ul> <li>Data Exchanged (691,200MB); Rate tier: \$0.0007; Total: \$483.84</li> </ul>	<ul> <li>Data Exchanged (864000MB); Rate tier: \$0.0007; Total: \$604.80</li> </ul>	<ul> <li>Data Exchanged (10.368TB); Rate tier: \$0.00014; Total: \$1451.52</li> </ul>
https://www.ibm.com/internet-of- things/nl-nl/platform/pricing/]	<ul> <li>Data Analyzed (assume 10% message analyzed); Rate tier: \$0.003; Total: \$207.38</li> </ul>	<ul> <li>Data Analyzed (assume 10% message analyzed); Rate tier: \$0.003; Total: \$1259.20</li> </ul>	• Data Analyzed (assume 10% message analyzed); Rate tier: \$0.0021; Total: \$2177.28
	<ul> <li>Analyzed at Edge (assume half message analyzed): Rate tier: \$0.0005; Total: \$172.80</li> </ul>	<ul> <li>Analyzed at Edge (assume half message analyzed): Rate tier: \$0.0005; Total: \$216</li> </ul>	<ul> <li>Analyzed at Edge (assume half message analyzed): Rate tier: \$0.00035; Total: \$1814.40</li> </ul>
	Total Cost: \$864/month	Total Cost: \$1080/month	Total Cost: \$5443.20
hIOTron IoT Platform [Source: https://www.hiotron.com/hiotron- iot-platform/]	<ul> <li>White Label Monthly Subscription fee: \$500</li> <li>T2. Large EC2 cloud instance; size 8GB will be required;</li> <li>\$0.0992/hour or \$71/Monthly for Mumbai</li> </ul>	<ul> <li>White Label Monthly Subscription fee: \$500</li> <li>T2. Large EC2 cloud instance; size 8GB will be required;</li> <li>\$0.0992/hour or \$71/Monthly for Mumbai Region Instance</li> </ul>	<ul> <li>White Label Monthly Subscription fee: \$500</li> <li>T2. 2xLarge EC2 cloud instance; size 32GB will be required;</li> <li>\$ 0.3968 /hour or \$285/Monthly for Mumbai</li> </ul>
	Region Instance	Total Cost: \$571/month	Region Instance



**Conclusion:** Overall, hIOTron appears to be the low-cost provider of the vendors compared. Based on three scenarios ranging from 200–1000 devices, message size 4kb-50kb and message rate 2–60/minute, hIOTron cost per month range \$571-\$785.

The costing difference between hIOTron & other platform vendors is very high & it will go increasing as number of devices or their messages increases.

## hIOTron IoT Center of Excellence

To accelerate development and production deployment of customer-specific data, predictive analytics, and IoT applications across an enterprise, hIOTron offers a highly experienced team of software engineers, embedded engineers, product specialists, and project managers up to work collaboratively with customer teams responsible for applications in a jointly established Center of Excellence (CoE).

The objective of the hIOTron IoT CoE team is to understand customer pain areas, design an optimized specific solution for their business problem. Whole aim is providing specialized team of IoT developer to minimize the time and efforts taken by customer to choose the right solution for their business. Also, the CoE team will assist the customer throughout the development lifecycle of the solution and support up to a certain period of time.

The CoE team train the customer to handle the device mgmt., analytics, monitoring and controls part of the platform.

## hIOTron IoT Professional Services

Apart from the platform, hIOTron offers a complete range of professional service of consulting, hardware design and manufacturing, integration, analytics and software development for any business or individual. These services include consultation of figuring out right solution approach, solution roadmap design, project management, system design, sensor management, hardware design & prototyping, data integration, business intelligence and analytics services, platform administrative support and Onsite training.

## **Operating Environments**

To date, most IoT customers have elected to deploy the IoT PaaS and SaaS solutions on the AWS elastic cloud. hIOTron's services are offered through AWS on-demand elastic cloud (EC2) Instance. With On-Demand instances you only pay for EC2 instances you use for IoT data streaming & Storage. The use of On-Demand instances frees you from the costs and complexities of planning, purchasing, and maintaining hardware and transforms what are commonly large fixed costs into much smaller variable costs

On-Demand instances let you pay for compute capacity by the hour or second (minimum of 60 seconds) with no prior investment or long-term commitments policy.

## hIOTron Clientele





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