

What is IoT?

Refers to the systems of physical devices embedded with electronics such as sensors, and uses connectivity to enable these physical devices to connect and exchange data on a single platform.

SPTel Internet of Things (IoT)-as-a-Service provide IoT Platform, edge computing platform, IoT gateway (WiFi and LoRa) and backhaul connectivity with adjacent service (data processing) to support IoT service provider's operational requirements for application hosting and bandwidth-demanding tasks. SPTel's IoT-as-a-Service is designed to support IoT service providers so that they can focus on developing industry-specific solutions for their clients, without the hassle of infrastructure deployment and management.

What SPTel IoT Offers?

IoT Central Management Unified and central platform for device management, device data collection and application enablement.

IoT MEC Platform for edge computing with GPU support. Provide container-based computing resources to application deployment and storage for data collection. MEC is short for Multi-access Edge Computing, hardware appliance that provides container based compute resources at the edge for customer applications via vMECs.

IoT Edge Secured hardware for different types of sensors data aggregation at various locations, i.e. Wifi and/or LoRa Access Points.

IoT Backhaul Connectivity Connectivity service from Edge to Hub and between different edge sites for data flow according to business needs.

IoT NiFi Provide data pipe-lining and processing as part of data preparation for further analytics.

Why SPTel IoT?

End to end IoT Services From application hosting, device management, data processing, and IoT connectivity services, all on subscription model.

Speed to Market Secured and seamless IoT deployment. Enables faster speed to market and elevating SME's IoT capabilities to participate in "Smart Nation".

Edge Computing with diverse network Leverage on SPTel truly diverse network that consists of thousands of hubs across Singapore to perform pervasive multi-edge computing.

Scalability and Lower Costs Leverage on SPTel digital IoT-as-a-Service platform to achieve lower cost of deployment, with built-in scalability that allows SMEs to start small.

Intelligent Customer Portal A digital journey, offering interactive reporting, policy and performance management, and modification of protection coverage on the fly with on-demand service activation.

Application Friendly and Self-healing IoT Platform Outage on container-based platform will trigger alert and activate platform recovery system.

Data Sovereignty Platform and application are hosted in Singapore, as such data never leave Singapore, ensuring data sovereignty and compliance.

Technical Specifications

IoT

Attributes	Specification
IoT Central Manager	<ul style="list-style-type: none"> • Secure device enrolment and authentication • Device management (e.g. view detailed device information, edit device configuration) • 1 x Public IP Address for customer application deployment • Data storage: 30 days • Service Plans <ul style="list-style-type: none"> ○ Startup (up to 500 devices) ○ Business (up to 1000 devices) ○ Enterprise (up to 4000 devices)
	<ul style="list-style-type: none"> • Device Activation: Over-the-Air Activation (OTAA), Activation by Personalization (ABP) • Security: TLS • Supported Wireless Technology: LoRaWAN, Wi-Fi • Supported Communication Protocol: HTTPS, MQTT, Restful API
IoT MEC	<ul style="list-style-type: none"> • Service Plans to cater for computing resources and storage <ul style="list-style-type: none"> ○ XS, S, M, L, XS+, S+, M+, L+ • Number of MEC nodes: 2
	<ul style="list-style-type: none"> • Application requirement: <ul style="list-style-type: none"> ○ Kubernetes version: 1.14.2 and/or above ○ Docker version: 18.9.4 and/or above • GPU (Dedicated) <ul style="list-style-type: none"> ○ NVIDIA TESLA P4 8GB (Ayer Rajah Substation) ○ NVIDIA TESLA T4 8GB (New Armenian Substation)
IoT Edge	<ul style="list-style-type: none"> • Shared Gateway (LoRaWAN / Wi-Fi) • Options: <ul style="list-style-type: none"> ○ Dedicated Gateway* ○ Bring Your Own (BYO) Gateway* <p>*Customers to purchase IoT Backhaul Connectivity for connectivity between IoT Central Manager and Dedicated/BYO gateway</p>
	<ul style="list-style-type: none"> • LoRaWAN <ul style="list-style-type: none"> ○ Incorporate LoRa TM bidirectional communications technology(RX : 915-928MHz, TX: 920-928MHz) ○ Sensitivity: up to -141dBm ○ Tx conducted power from 0dBm to + 30dBm ○ 49 LoRa Demodulators over 9 channels ○ More than 15km range in direct sight ○ Around 2km range in urban situation • Wi-Fi <ul style="list-style-type: none"> ○ Standards: IEEE 802.11a/b/g/n/ac Wave 2 ○ Supported Channels: • 2.4GHz: 1-13 • 5GHz: 36-64, 100-144, 149-165] ○ Channelization: 20, 40, 80MHz ○ Security: WPA-PSK, WPA-TKIP, WPA2 AES, 802.11i, Dynamic PSK; WIPS/WIDS ○ Client Capacity: Up To 512 clients per AP ○ SSID: Up to 16 per AP ○ Other Wi-Fi features: • WMM, Power Save, Tx Beamforming, LDPC, STBC, 802.11r/k/v • Hotspot • Hotspot 2.0 • Captive Portal • WISPr

IoT Backhaul Connectivity	<ul style="list-style-type: none">• Standard IPVPN service for connectivity from Dedicated/BYO gateway to IoT Central Manager
IoT NiFi	<ul style="list-style-type: none">• NiFi_Standard (8 vCPU, 16GB, 100GB Storage)
	<ul style="list-style-type: none">• Visually programmed tool that automates the movement and transformation of IoT data between systems.• Data Pipelining connects various third-party systems and platforms to create insightful data by ingesting from all connected systems and process with pre-defined data pipelines.• Customers can also ingest data from existing systems other than the data generating from the IoT device, transform this data and output to other destinations seamlessly.