Collect, Organize, Deliver.

One BitBox, limitless possibilities.
Collect, Organize, Deliver.

Data is now everywhere, from manufacturing to homes, offices, stores, healthcare, and on the go. With this mass amount of data, comes endless possibilities. The problem is how to gather all of this data. Masses of protocols, bridges, custom application development, and future ambitions make getting all the data in one place and usable massively tricky and costly. The explosion of IoT technology as furthered our breadth of technological options, but the same problem remains.

No place is this more evident than commercial facilities. Commercial office, healthcare, Edge data centers, retail establishments, and quick service restaurants all have the same problem. A massive amount of locations, each with many critical systems running within each site to perform vital business functions. Each of these systems usually offers data, but it is disjointed, in different formats, and not easily accessible.

Enter the simplicity of BitBox:

**Collect.** Gone are the days of a myriad of bridging, custom-development, programming, and proprietary technology. BitBox USA resolves all of the connectivity issues associated with sub-systems of data with a single BitBox in each facility.

**Organize.** Data within business and facilities comes in all shapes and sizes, and from potentially thousands of geographic locations. The BitEngine makes quick work of taking all this data in sorting it, and storing it. Additionally the BitEngine allows for quick and easy cloud setup of data sources across the globe.

**Deliver.** With all your data organized a single source API, the BitAPI, allows a secure location for your data to be mined by analytics, UI tooling, facility management applications, or any 3rd party toolset with ease.

Your facility data is yours, quietly waiting for a purpose. Harness it with BitBox and turn it into action.
An Explosion of Information

Facilities on average have 8-10 subsystems running within them. Air Conditioning, heating, fire/smoke detection, access control, security, lighting, energy monitoring, water, internet, refrigeration to name just a few; and this is only what is available in traditional buildings. Advanced technology now entering commercial enterprises offer new data sources that further enrich the possibilities. Indoor location services, video analytics, and on-premise alternative energy (solar and wind) are enhancing the data offering every day. Each of these systems supplies data via some means including BacNet, ModBus, Ethernet APIs, serial connectivity, LonWorks, analog inputs, and hundreds of other potential options.

Gathering this data has traditionally been a challenge. Micro-service analytics services are increasing in the software space to analyze this data from different stakeholder angles. Collecting the necessary data to make these services productive, however, has driven ad-hoc, expensive, and labor methodologies to achieve the end results. Hence, harnessing these micro-service solutions generally has relied on knowing what you want to do with the data when you build the infrastructure from day one.
BitBox takes a different approach to this problem. Enabled by ‘The Bitbox’ every facility is equipped with a single piece of hardware for data collection. No custom programming, numerous pieces of equipment, and no weeks of on-site commissioning. The Bitbox communicates with the BitEngine which allows an enterprise to provision the units in the cloud remotely and organize it for use in one location. This allows the enterprise to define how they want their data accessed and by which third parties via the Single-Source BitAPI.

With this single API, a myriad of analytics services can be used or applications developed on a single data set of information. Most importantly, there is no need to define the purpose ahead of time. As your company needs evolve or the geographical footprint increases; your use of the BitEngine and the BitAPI can change and grow with you.
Elimination of complexity and enablement of data are at the heart of the BitBox platform. To achieve this, BitBox USA supplies three key ingredients.

**Collect with the BitBox**
A discrete industrial IoT appliance that easily installs in any facility or Edge location that takes IoT data in from subsystems and protocols onsite, and securely transfers them to the BitEngine via hardwire Ethernet via the internet, wifi, or 4G Cellular Technology. Once put in place and wired to the interior protocol connections, no configuration is required on-site for provisioning or setup.

**Organize with the BitEngine**
A secure cloud-based service that allows any enterprise to setup and provision remote BitBox units for their company and choose where and how to store the data within the BitEngine as a data-collection or optionally for 3rd party cloud services such as Microsoft Azure, Amazon AWS, the Google Cloud, or internal enterprise storage.

**Deliver with the BitAPI**
The BitAPI offers authorization based access to the enterprise data-collection in a single documented API for use by 3rd party analytics companies, user interface providers, or developers for mobile, desktop, and web-based applications.
The BitBox: Collecting

The BitBox performs the often complex and tedious function of data aggregation from all typical building automation technology as well as specialized local site data using a simple piece of hardware deployed at each site or Edge location. Common connections include, but are not limited to: HVAC systems, access control systems, weather station data, power meters, generators, refrigeration monitoring, SCADA systems, camera feeds, and a host of others.

The BitBox supports a variety of network and low voltage electrical I/Os allowing it to be a central wiring source, and then internally sports a variety of protocol conversations including BacNet, ModBus, SNMP, analog, and other serial protocols to rationalize and package the data through a single outbound IP port to the BitEngine.

Wiring of the BitBox is simple with broken out connectors to sub-systems, and coupled with a single outbound internet capable IP port allows the packaged data to be transported to the BitEngine cloud platform.

With the exception of the data wiring, power to the BitBox, and an outbound internet connection zero programming or commissioning is required on-site to deploy a BitBox. All configuration and provisioning can be done offsite via the BitEngine.

Local Data Acquisition

- Rest API, Modbus RTU / TCP, SNMP, MySQL,
- BACnet MS/TP & IP,
- Serial RS232/422/485
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LAN1 Building Network
- Building Management
- Controller (HVAC) BacNet/IP
- Access Control System - RestAPI
- SNMP

**Common Protocols Supported:**
- BacNet IP
- BacNet MS/TP
- ModBus RTU
- ModBus IP
- LonWorks
- SNMP
- RESTAPI
- MQTT
- EnOcean
- KNX
- Layer 2 Serial Strings
- (RS-232, RS-422, RS-485)
- Layer 1 Analog and Digital I/O
- GRPC

**Common Bitbox Connected Sub-Systems:**
- Building Management
- HVAC Equipment (RTUs, VAVs, PTACs, etc)
- SCADA
- Video Surveillance
- Network Infrastructure for monitoring
- Solar, generation, & alternative energy systems
- Power metering
- Security systems
- Refrigeration safety monitoring
- Lighting systems, devices, and panels
- Water metering
- Access control solutions
- Local User interface and HMI sub-systems

And many others including custom proprietary protocols
The BitEngine: Organize

The BitEngine offers a central cloud provisioning location for all the enterprise BitBox Edge devices and a repository for all of the subsystem data.

**Cloud Provisioning** - Zero software commissioning is needed when deploying BitBox Edge units in the field. All setup is performed on the intuitive and easy to use cloud portal provided by the BitEngine. Configure your network settings, communications options, and then rapidly setup what information from the subsystems and IoT devices you want to harvest back to your private enterprise data collection.

**Repository** - Data is collected from the configured devices connected to the BitBox devices throughout the world and stored in your private BitEngine Collection; or optionally spun off to a 3rd party storage providers such as Azure, GCP, Digital Ocean, or AWS. Additionally, collections can be ported to in-house I.T. infrastructure.

**Organization** - The BitEngine allows you to sort/tag and package data-collection in a format that makes sense to your specific needs. All data is then accessible via the BitAPI for single-source access, on your security terms, and in your data format for data analytics by third-party micro-service analytics companies or visualization engines. Common applications include:

- Energy Reporting
- Outlier Detection
- Marketing Analytics
- Sustainability Management
- Factory Automation Analysis
- Unmanned Remote Facility Monitoring
Bit Engine and Data Collections

What is an enterprise data collection?

Data is everywhere, and comes in lots of shapes and sizes in the I.T. and building automation space. An enterprise data collection is a well-organized repository of all connected BitBox fed data as well as any other data that is seen necessary to store for meaningful business purposes. The BitEngine manages all of the data fed from BitBox units as well as other meaningful data from 3rd party APIs.

BitBox data collections not only can be spun off to 3rd party storage providers, but often data that is of interest to analytics may reside outside of the physical premises such as from databases, or via web-based APIs. The BitEngine offers the ability to pull in data from any RESTful interface directly and add that to a data collection furthering the ability to offer a single API source of truth to any 3rd party.

Examples include:

- Google Weather information for locations
- Recent Access log from Access Control system Cloud
- Database access for Generator Service calendar
The BitAPI: Deliver

Traditionally building data was captured in subsystems that made true holistic development of actionable analytics exceptionally difficult given the number of various protocols, data types, subsystems and formats. Massive customization, commissioning, and often hardware was required by analytics micro-service providers to gather all of the data to perform meaningful analytics. Any changes in the design of remote locations or data types would break this communication ability and require costly redesigns of the digital architecture or on-site visits to repair. The BitAPI coupled with the BitEngine solves this complexity.

The BitAPI supplies a single source RESTful API to any 3rd party micro-service analytics companies, visualization engines or application with authenticated access. This simplicity allows any data driven technology to get both live data and historical information to analyze the data on their terms and in their specialty to make true business changing outcomes possible without the common integration hassle. Multiple analytics providers can be on-boarded by the enterprise to use the same collection of data for different business purposes all in an industry accepted format that anyone can use.
3rd Party Micro Analytics and Visualization

Micro-service analytics and visualization of data are becoming vastly more popular in all facets of a business. The building infrastructure is often overlooked as simply an asset that is the sole purview of facility management. This misconception has left considerable amounts of valuable data being left silent in the bigger picture of analytics.

Significant insight from the growing ecosystem of IoT and communicating building technologies can impact far outside of the realm of facility managers. Web-based micro-services analytics coupled with visualization to make easy sense of data for different stakeholders enables a business to impact both the top and bottom line; offering actionable outcomes to a wide variety of internal stakeholders from the same data collections.
13th Party Applications

Operations, Leasing
IBM Tririga
Real Estate Management

Facility Management, Accounting
Lucid BuildingOS
Energy Management & Insight
Work Order Management

Sustainability, Facility Manager
DGLux
Facility Management
Sustainability Dashboarding

Operations, Asset Managers, Sustainability
Cortex
Energy Operation
Efficiency

Marketing Operations, Sales
Domo
Business Analytics
Marketing Insight
Custom Application Integration

Beyond just third party micro-service analytics, the BitAPI provides a wealth of information and capabilities to internal development efforts. From desktop application development efforts for internal operations to customer facing mobile applications, data collections from the BitAPI offer insightful real-time insight for custom applications deployed across a wide range of platforms.

- Mobile Application Development
- Web-based SPAs
- AppEngine Deployments
- Websites
- Desktop Environments

Additionally the BitAPI easily feeds:

- Microsoft Azure IoT
- Google Cloud Platform IoT
- Amazon AWS IoT
Pricing Information

The BitBox platform offers an exceptional cost of entry for any enterprise, which is easily offset by typical integration costs associated with other connectivity options which often lock enterprises into long-term contracts and proprietary data collection and storage technology.

The BitBox, BitEngine, and BitAPI work seamlessly to perform all data acquisition, storage and organization. As such they are sold as one, allowing you to scale over time.

Following the initial purchase, an enterprise customer may purchase additional BitBox units for more locations in quantities of 5. Single BitBox units with the BitEngine and BitAPI access are available to 3rd party analytics companies, OEM manufacturers, and integrators for non-deployment use upon signed NDA agreement and at a developer cost structure. OEM agreements are available for equipment manufacturers seeking BitEngine services without the BitBox hardware. Unlimited data collection pertains to data acquired through the BitBox Edge devices only. 3rd party API integration directly into the bitEngine that requires historical storage of over 1GB per month is subject to a storage fee. Usage of a third party data storage responsibility, and the cost associated with this are the responsibility of the customer.
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ENTERPRISE CUSTOMERS

Consisting of a minimum of 100 Edge locations

Requirements:
• Minimum initial commitment of 100 BitBox units per year.

Initial purchase includes:
• BitBox Hardware Edge Gateways
• One year service licensing of BitEngine with an enterprise data collection and BitAPI access to an unlimited number of outbound API consumers.
• Unlimited data collection from BitBox devices.
• 2-day onsite deployment assistance and training at two individual locations on BitBox integration onsite, and BitEngine configuration.
• 30 hours Bit API Support phone support.

After the first year:
• Monthly service fee for BitEngine & BitAPI per BitBox.
• 20 hours ongoing support

INTEGRATOR CUSTOMERS

Master system integrators seeking a solution to data collection solutions for multiple customers and looking to establish multiple data-collections.

Requirements:
• Minimum contractual commitment of 100 BitBox Units per calendar year.

Initial purchase includes:
• BitBox Hardware with 1 year service licensing of BitEngine with 10 enterprise data collections and BitAPI access to an unlimited number of outbound API consumers per data collection.
• Unlimited data collection from BitBox devices.
• 2-day company training on BitBox Platform.
• BitEngine graphical branding for integrator.
• Access to marketing referrals for integration projects and non-enterprise customers.

After the first year:
• Service fee for BitEngine & BitAPI per BitBox.
The deployment of Edge based data centers has exploded driven by IoT 5g, and distributed cloud based applications. These Edge facilities have brought new challenges to the unmanned datacenter space. Edge data center management requires facility and data monitoring of thousands of locations often spread across the globe, sometimes in geographically difficult and expensive to access locations.

Managing this critical infrastructure without onsite employees requires consolidated information access with fault tolerant communications to protect the asset as well as limit service costs and monitor operational expense.

BitBox solves this by consolidating all operational information.

BitBox offers hard-wired ethernet connectivity as well as a cellular backup to maintain constant connections to the BitEngine. BitEngine enables rapid provisioning of newly deployed datacenters without the need for onsite commissioning, and offers the single source BitAPI for all the analytics required by any Edge data-center provider.
Martha
Asset Manager
- Access control
- Work order management
- Outlier detection
- Security

Pat
Finance Operations
- Energy spend

Mike
Distribution Planning
- Facility deployment

Sam
Network Operations
- Usage analytics
- Equipment maintenance
Small Footprint Retail

Retail and QSR have often overlooked their facility as a central repository of data that can be harvested to grow the top-line; in favor of just seeing the building as a bottom-line asset required to operate. Multisite retail establishments have a multitude of analytics at their fingertips if harvested.

Beyond the typical HVAC, fire alarm, security, and surveillance systems; refrigeration, inventory, and even kitchen equipment is becoming ‘smart’. Connecting all of this cohesively is a challenge with hundreds or thousands of locations. New technologies have also become invasive such as location services, and mobile customer applications, which bring the customer and the retailer closer through the connectivity of information.

BitBox offers a straightforward path to harness local data across a portfolio and generate actionable outcomes for both controlling operational building expenses, and meeting the evolving demands of customers, operators, and enterprises alike.
Arthur
Regional Facilities Manager
• Hot/Cold call mitigation
• Excess energy spend through outlier detection
• Branding tolerance compliance for in-store experience
• Work order management

Nave
Operations
• Employee staffing based on need
• Delivery of stock management based on localized factors
• Site utility expenses to baselines and upgrade planning

Paul
Customer
• Push notifications to store loyalty app
• Known sustainability / green story live by location
• Wait time insights

Borys
Marketing / Promotions
• Promotion correlation to traffic, weather and other localized factors

3rd Party Applications
Promotions, Database in Azure

Google Weather API
Google Traffic API

BitAPI
BitEngine

Electricity Meters
Environmental HVAC
NG Meters
Location Services
Water Meters
WIFI BLE, LiFi
Signage Controls

Google Traffic API
3rd Party Applications
Promotions, Database in Azure

Discussions and collaborations among different departments and applications.
Property management on scale offers unique challenges to owners and operators. Buildings are most often brought into portfolios over generations of equipment, contractors, and often pass through many iterative equipment changes over time. This has traditionally posed significant problems with gathering actionable data across portfolios. Even if the sub-systems in the building can offer insight of some sort through manufacturer provided software, it is often confined to that single trade of information that only offers refined analytics about its core competency.

The BitBox platform breaks down this barrier to the entry of meaningful analytics, by allowing a portfolio owner or operators to deploy a single network device into each building, and liberate these existing datasource to enable meaningful analytics to stakeholders. As buildings change equipment or infrastructure over time, sources can be added to the building ecosystem by simply connecting the data source to the BitBox and configuration can be done back at HQ via the BitEngine.

Even though different buildings may offer varying system data, the BitEngine can sort this data allowing it to be used for outcome based analytics in many facets of the business. Additionally, centrally collecting this data allows for benchmarks to be set for in-building upgrades based on insights drawn from individual building systems.
Collect, Organize, Deliver.

Data empowerment is only an email away.

From one site to thousands we have a channel to help you make sense of the data you are entitled to!

BitBoxUSA.com  @BitBoxUSA
info@bitboxusa.com  tel:+1.833.248.2691
1017 16th Ave S, Suite B, Nashville, TN 37212