

Solution Brief

Critical features

Measurable benefits

Use cases

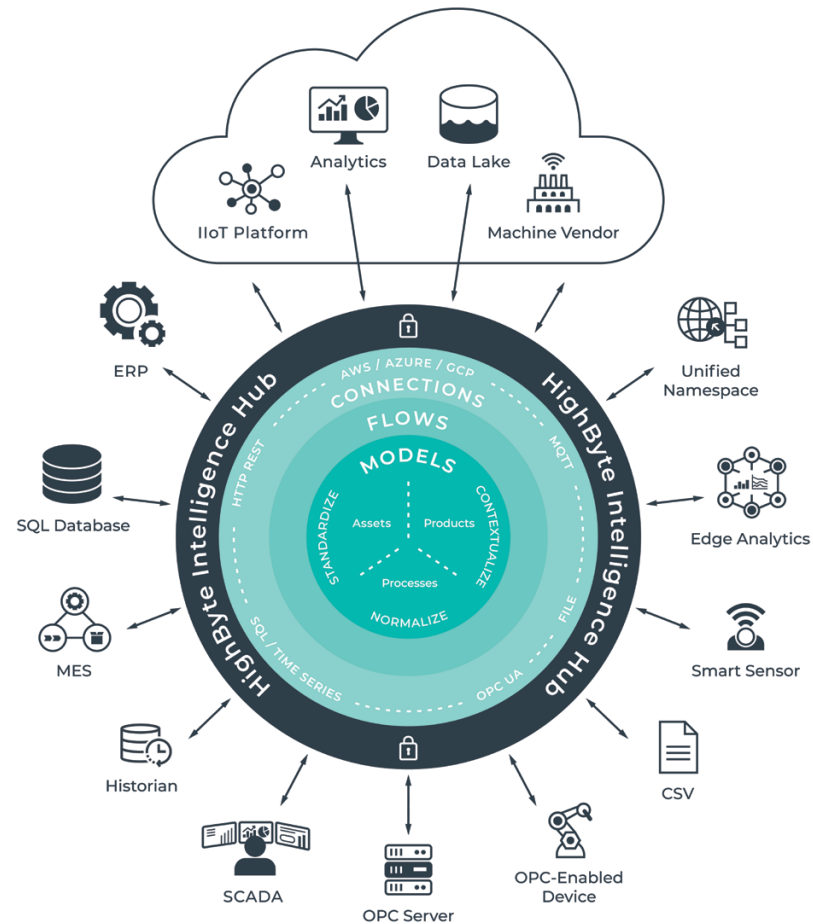
Technical specifications

Make Your Industrial Data Useful

HighByte Intelligence Hub is the first DataOps solution purpose-built for industrial data.

DataOps (data operations) is the orchestration of people, processes, and technology to deliver trusted, ready-to-use data to all who require it. HighByte Intelligence Hub provides industrial companies with an off-the-shelf DataOps solution to accelerate and scale the use of production data throughout the enterprise by contextualizing, standardizing, and securing this valuable information.

The software runs at the Edge, scales from embedded to server-grade computing platforms, connects devices and applications via open standards and native connections, processes streaming data through standardized models, and delivers contextualized and correlated information to the applications that require it. Together, we can make your industrial data more useful for whatever digital transformation project comes your way.



Critical Features for Industrial DataOps

DATA MODELING

Represent machines, products, processes, and systems with key intelligent information suited to your needs. Contextualize thousands of industrial data points by merging them with information from other systems, adding meta data, standardizing data attribute names and lists, and normalizing units of measure.

DATA TRANSFORMATIONS

Use the built-in transformation engine based on JavaScript notation to standardize and normalize data for comparison and application mismatches. The transformation engine enables you to perform calculations, execute logic to define new “virtual property” values, and decompose complex strings at the Edge to improve data usability and reduce transmission volume.

CONNECTION FLOWS

Create data flows for raw data or modeled information between connections at any frequency or event. Manage data flows within HighByte Intelligence Hub monitoring flow state, and enable/disable the flow of information to consuming applications. Enable store and forward to buffer data on disk if target connection is lost.

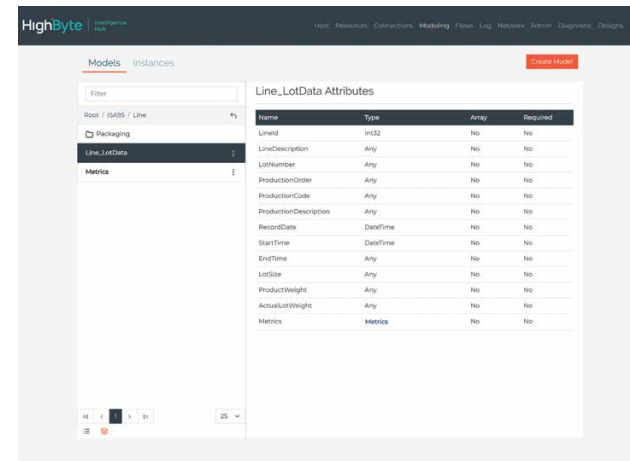


Figure 1: Data Modeling

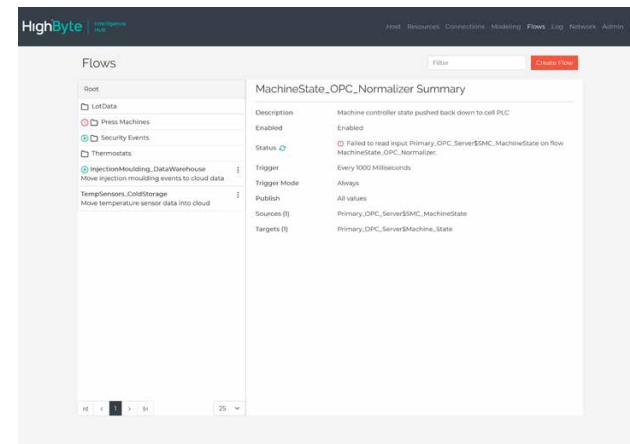


Figure 2: Connection Flows

Critical Features for Industrial DataOps

CODELESS INTEGRATION

Collect and publish data over open standards and native connections—eliminating the need for custom-coded integrations. Easily configure and manage multiple connections and their respective inputs and outputs within the script-free interface. Collect data from SQL and REST source systems using dynamic requests leveraging inputs from other systems. Merge data from multiple systems into a complex modeled payload.

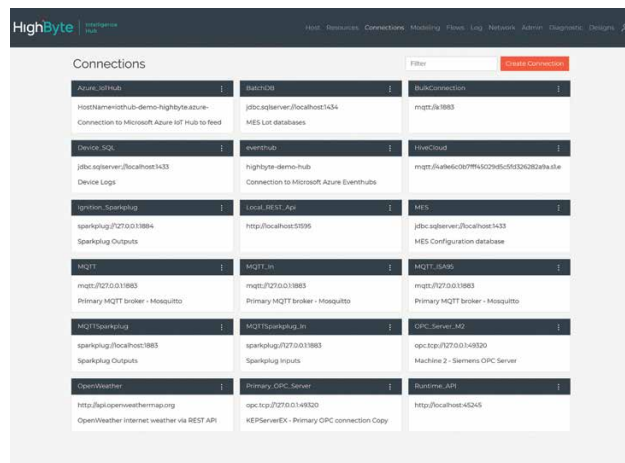


Figure 3: Codeless Integration

SECURITY

Exchange data using the built-in security of connection protocols. By identifying outputs by connection, administrators can implement higher-level management and security than typical pub/sub broker architectures and open, unmanaged API access. Authenticate users and their roles through third party identity providers with Security Assertion Markup Language (SAML).

EDGE NATIVE

Run HighByte Intelligence Hub on your choice of light-weight hardware platforms including single board computers, industrial switches, IoT gateways, and industrial data servers at the Edge. Deploy as an individual software installation or Docker image, which allows you to rapidly deploy and upgrade system software components.

Critical Features for Industrial DataOps

MULTI-HUB CONFIGURATION

Connect multiple hubs to a single host that acts as the central hub. Once connected, administrators can log in to the central hub and easily switch between hubs to configure and monitor individual hub activity and compare configurations for differences. Administrators can also synchronize models, connections, or complete projects between hubs.

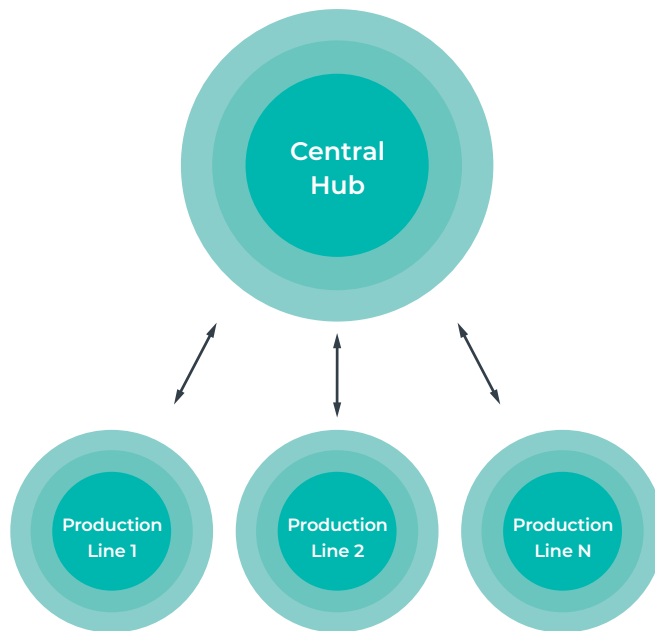


Figure 4: Multi-Hub Configuration

HIGH AVAILABILITY

Deploy redundant Intelligence Hubs for critical data and pair the hubs as a primary and secondary. A secondary hub will be ready in a warm state ready to enable flows when it detects the primary is no longer responding.

ADMINISTRATION

Create unique user names and passwords for each hub user. Assign a user to a role with a pre-defined set of permission claims or assign a user their own unique permission claims. Create and maintain certificates in the hub configuration to authenticate and secure data transfer with other systems.

AUDITING

Enable audit logging to allow all configuration creations, modifications, or deletions to be logged to the event log as AUDIT type events. View all log events through the configuration and filter by type, source, or message text. Automatically back up the runtime's configuration file to a backup directory at a specified frequency and maintain a specified maximum number of these files. These backups will enable you to roll back the configuration if an incorrect change was made that caused problems with the configuration.

Measurable Benefits for Operational Technology (OT) and IT

Accelerate and scale your data lake, IIoT, and analytics initiatives while improving communications between OT and IT.

- Organize, merge, and standardize your industrial data in one solution
- Model, document, and deliver your data more efficiently
- Govern data standards across the enterprise
- Stop writing custom scripts and troubleshooting broken integrations
- Reduce time spent preparing data for analysis
- Reduce Cloud ingest, processing, and storage costs for unusable and unneeded data
- Produce audit logs for system integrity and regulatory traceability
- Improve system-wide security
- Reduce time spent deploying and maintaining system integrations
- Reduce data loss from dropped connections

Use Cases

HighByte Intelligence Hub is an Industrial DataOps solution capable of meeting the requirements of several data preparation and integration use cases for discrete, batch, and process manufacturers.

SYSTEMS INTEGRATION

Accelerate and maintain integrations between on-premises industrial systems and business systems.

EDGE TO CLOUD

Prepare, contextualize, and deliver plant floor data for data lakes, dashboards, analytics, and machine learning (ML) applications in the Cloud.

CLOUD TO EDGE

Deliver setpoint changes or alerts from ML applications and modeled data from third-party sensors back into SCADA systems, HMIs, historians, and OPC servers on the factory floor.

UNIFIED NAMESPACE

Prepare and publish industrial data to a unified namespace (UNS) or subscribe to a UNS and distribute data to enterprise systems.

CROSS-PLANT ANALYSIS

Achieve cross-plant data aggregation, visibility, and production analysis in an enterprise Cloud with a data modeling abstraction layer.

HIGH RESOLUTION DATA ANALYTICS

Collect high resolution, sub-50ms sensor data in batches, contextualize, and publish to analytics applications or the Cloud.

Technical Specifications

CONNECTIVITY

Connector	Inbound	Outbound
AWS		
Amazon Kinesis Data Firehose		✓
Amazon Kinesis Data Streams		✓
AWS IoT SiteWise		✓
Azure		
Azure Event Hubs		✓
Azure IoT Hub		✓
File		
Apache Parquet	✓	
CSV	✓	✓
Google Cloud Platform		
Google Cloud Pub/Sub		✓
HTTP		
REST Client	✓	✓
Webhook	✓	
MQTT		
MQTT JSON	✓	✓
Sparkplug	✓	✓
OPC		
OPC UA TCP	✓	✓

Technical Specifications

CONNECTIVITY

Connector	Inbound	Outbound
SQL		
JDBC Driver	✓	✓
Microsoft SQL Server	✓	✓
MySQL	✓	✓
Oracle Database	✓	✓
PostgreSQL	✓	✓
Time Series		
InfluxDB	✓	✓
OSIsoft PI AF SDK	✓	✓



HighByte Intelligence Hub can also connect bi-directionally to AWS IoT Core and AWS IoT Greengrass through the MQTT connector.

SUPPORTING OPERATING SYSTEMS

- Windows Server 2012/2016/2019
- Windows 8/10
- Linux [any Linux distribution capable of running a JVM; tested with Ubuntu]
- macOS

SOFTWARE DELIVERY

HighByte Intelligence Hub is an on-premises application configured remotely through a web browser or a REST-based API. The software is available as an annual subscription and is priced per instance or per site.

SYSTEM REQUIREMENTS

- Java SE 11 or OpenJDK 14 [or newer]
- HTTP server [for hosting frontend]
- 1.4 GHz processor
- 1 GB RAM
- 500 MB available disk space
- Network capable [TCP]

These are minimal system requirements. Actual requirements will vary based on product configuration.

Next Steps

Interested in learning more? Please contact sales@highbyte.com to request additional information, schedule a demo, or join our free trial program.

About HighByte

HighByte is an industrial software development company in Portland, Maine building solutions that address the data architecture and integration challenges created by Industry 4.0. We've developed the first DataOps solution purpose-built to meet the unique requirements of industrial assets, products, processes, and systems at the Edge. Learn more at highbyte.com.

P.O. Box 17854, Portland, ME 04112

V2.2-122021

© 2021 HighByte, Inc. All rights reserved.

HighByte is a registered trademark of HighByte, Inc.