

# **Integration Objects'**

**Seamless & Secure IT-OT-IIoT Integration  
Platform**

**Smart IoT Highway**

Version 2.4.3

**ADMINISTRATION GUIDE**

Integration Objects' Smart IoT Highway Administration Guide Version 2.4.3

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# PREFACE

## About This User Guide

This guide:

- Present Integration Objects' Smart IoT Highway Administration Configuration.
- Describe the functions provided by Integration Objects' Smart IoT Highway for Administration Configuration.
- Explain each step of the configuration process.

## Target Audience

This document is intended for users, application engineers, and IT/OT integrators who are responsible for configuring Integration Objects' Smart IoT Highway, with a particular focus on the administration configuration.

## Document Conventions

Convention	Description
<b>Bold</b>	Bolded text indicates user interface elements, such as buttons, menu items, and dialog names.
<b>(!) Note</b>	Information to be noted



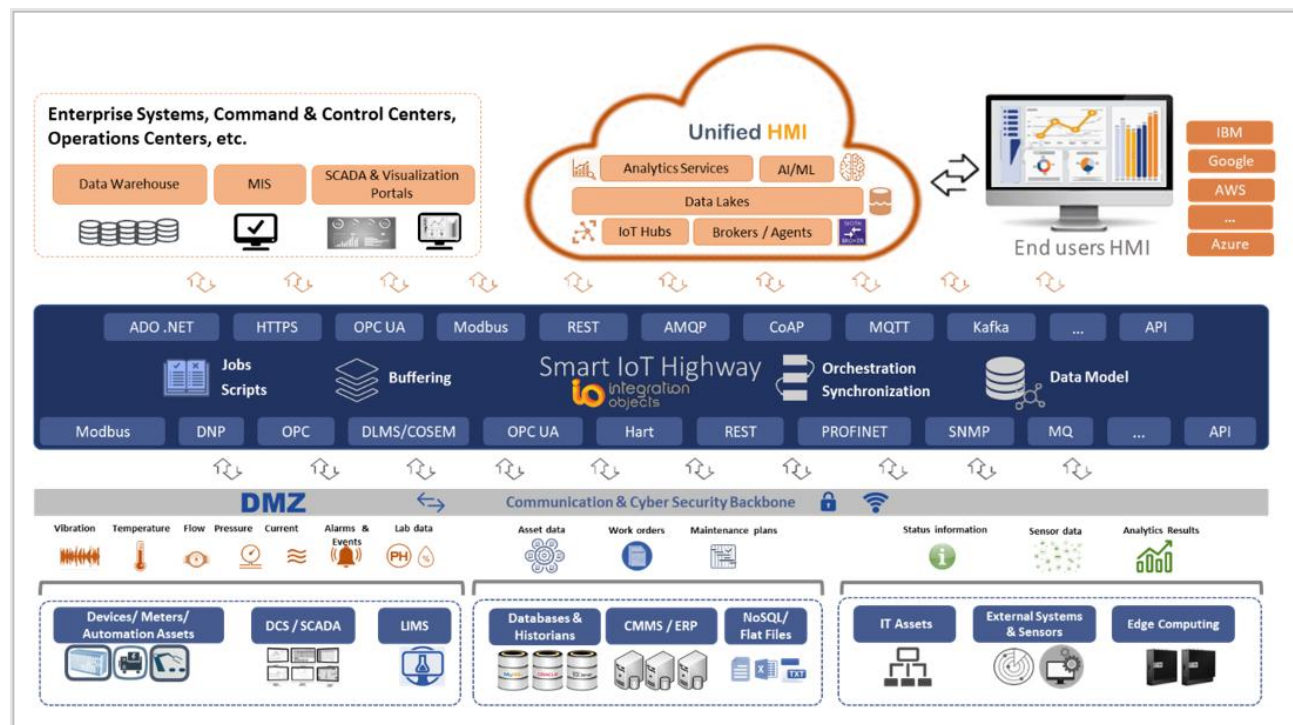
## Customer Support Services

Phone	Email
<b>Americas:</b>  +1 713 609 9208	Support: <a href="mailto:customerservice@integrationobjects.com">customerservice@integrationobjects.com</a>
<b>Europe-Africa-Middle East</b>  +216 71 195 360	Sales: <a href="mailto:sales@integrationobjects.com">sales@integrationobjects.com</a>  Online: <a href="http://www.integrationobjects.com">www.integrationobjects.com</a>

# INTRODUCTION

Smart IoT Highway (SIOTH®) is an advanced IT-OT integration platform designed to facilitate secure data exchange and transformation. It establishes secure end-to-end pipelines to collect and store data from edge IoT devices and various other sources. SIOTH® enables organizations of all sizes to easily connect applications, systems, and services in a managed, scalable, and secure environment. This comprehensive integration solution allows for seamless connectivity between IT and OT, enabling the conversion of industrial data into actionable intelligence and valuable insights.

The SIOTH® platform operates on robust functional architecture, as illustrated in the figure below:



**Figure 1: SIOTH® Platform Overview**

This Guide focuses on the configuration and ongoing management of the platform's core system services and operational parameters. It provides administrators with the tools and procedures required to control licensing, define system-level settings, monitor platform health, and secure access to the environment.

# CONFIGURATION

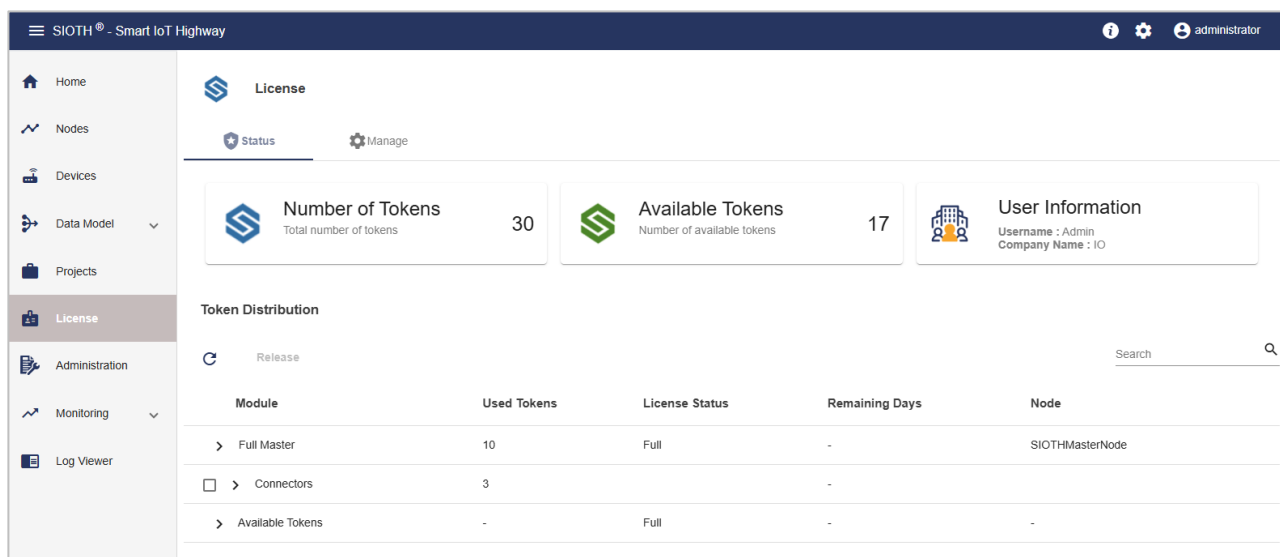
## 1. License

The **SIOTH® License** module defines the **legal authorization** that allows users or organizations to **install, access, and use** the platform in accordance with the specified **terms and conditions**.

This module ensures that the software is used in compliance with the licensing policies established by the software provider. Depending on the license type, periodic renewal or updates may be required to maintain uninterrupted functionality.

The License module is divided into the following sections:

- License Status
- License Management



The screenshot displays the 'License' management interface within the SIOTH Smart IoT Highway administration console. The interface includes a sidebar with navigation options: Home, Nodes, Devices, Data Model, Projects, License (selected), Administration, Monitoring, and Log Viewer. The main content area is titled 'License' and features a 'Status' tab and a 'Manage' icon. It presents key metrics: 'Number of Tokens' (Total number of tokens: 30) and 'Available Tokens' (Number of available tokens: 17). A 'User Information' box shows 'Username : Admin' and 'Company Name : IO'. Below these, a 'Token Distribution' table lists the usage of tokens across different modules.

Module	Used Tokens	License Status	Remaining Days	Node
> Full Master	10	Full	-	SIOTHMasterNode
<input type="checkbox"/> > Connectors	3	-	-	-
> Available Tokens	-	Full	-	-

**Figure 2: License Management View**

## 1.1. License Status

The **License Status** section displays detailed information related to the current license and token usage within the SIOTH® platform.

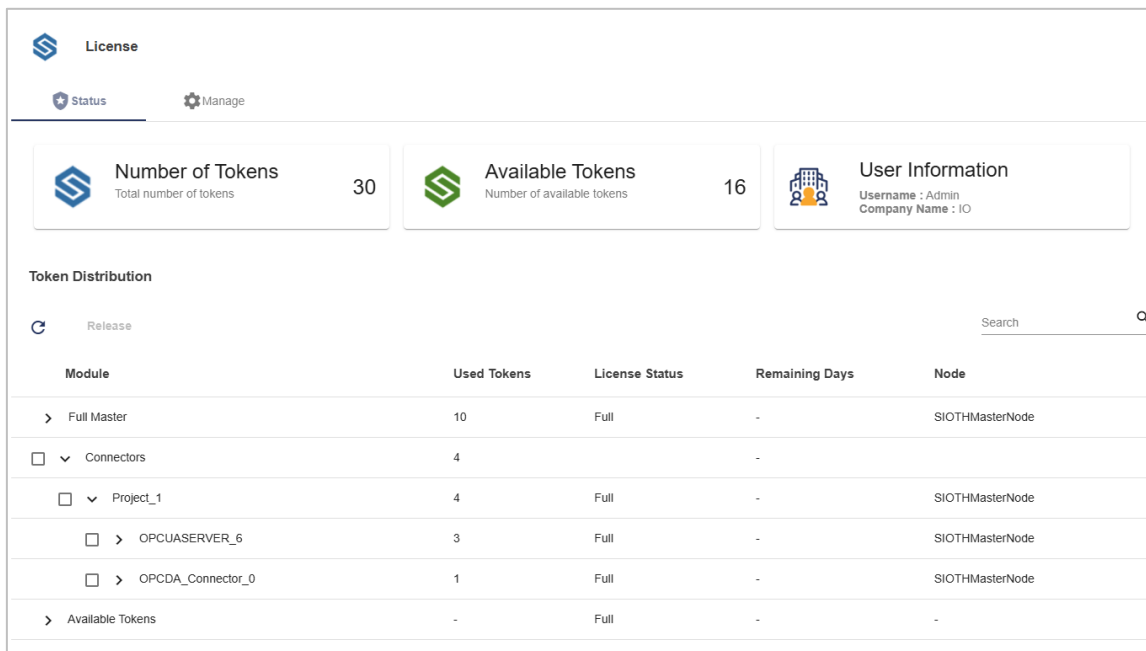
Parameter	Description	Default Value
<b>Number of Tokens</b>	Total number of tokens available under the license.	30
<b>Available Tokens</b>	Number of tokens currently available. Note that the Full Master module consumes 10 tokens.	20
<b>User Information</b>	<ul style="list-style-type: none"> <li><b>Username:</b> The username assigned to the license.</li> <li><b>Company Name:</b> The company name assigned to the license.</li> </ul>	
<b>Token Distribution</b>		
<b>Refresh</b>	Refreshes the token distribution to display the most recent license status.	
<b>Release</b>	Releases tokens from a selected module.	
<b>Module</b>	Lists the modules that consume tokens, such as Connectors, UHMI, and JE.	
<b>Used Tokens</b>	Number of tokens consumed by each module.	10
<b>License Status</b>	Indicates the license type: <ul style="list-style-type: none"> <li><b>Demo:</b> Limited to a 15-day period.</li> <li><b>Full:</b> Unlimited duration.</li> <li><b>Expired:</b> The license validity period has</li> </ul>	Demo

	<p>ended, and the software functionality is restricted.</p> <ul style="list-style-type: none"> <li>• <b>Backdated:</b> The system date is earlier than the license issue or validation date, resulting in an invalid license state.</li> <li>• <b>Corrupted:</b> The license information does not correspond to the machine information, resulting in an invalid license state.</li> </ul>	
<b><i>Remaining Days</i></b>	Number of days remaining before the license expires.	15
<b><i>Node</i></b>	Name of the node on which the license is applied.	SIOTHMasterNode

**Table 1: License Status**

In the example shown below, two connectors are running:

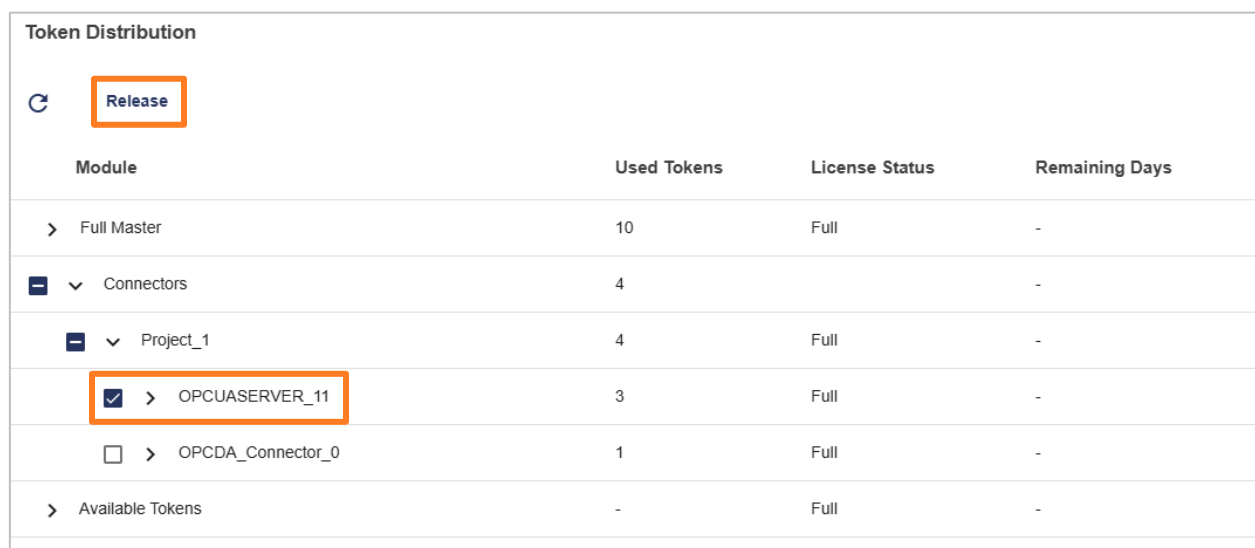
- **OPC UA Server**, which consumes **3 tokens**.
- **OPC DA**, which consumes **1 token**.



**Figure 3: License Status**

Follow these steps to release tokens from a module:

1. Select the target module from the list.
2. Click the **Release** button.
3. A confirmation message will pop up, prompting you to confirm the action.
  - a. Click **Yes** to confirm and release the token.
  - b. Click **No** to abort and keep the token for the selected module.



**Figure 4: License Status - Release Token**

## 1.2. License Manage

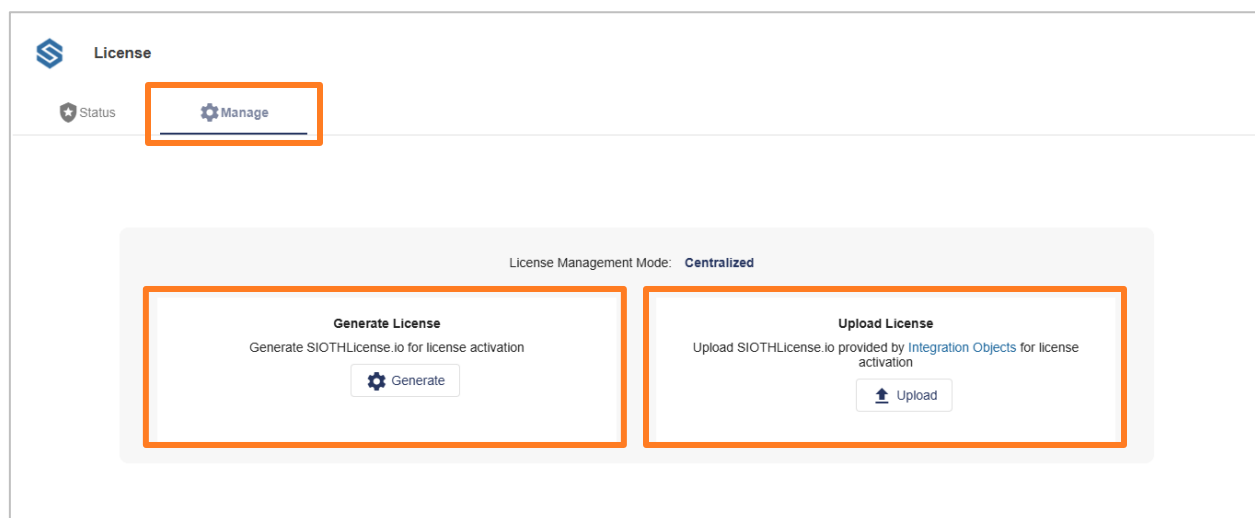
In this section, there are two steps which are like below:

- **Generate License:** Generate SIOTHLICENSE.io file for license activation or extension purpose.
- **Upload License:** Upload SIOTHLICENSE.io file provided by Integration Objects for license activation or extension.

The License Management section allows to generate and activate license files required to enable or extend the SIOTH<sup>®</sup> platform. This process consists of the following steps:

- **Generate License:** Generates the **SIOTHLICENSE.io** file required for license activation or extension.
- **Upload License:** Uploads the updated license file provided by Integration Objects to complete the license activation or extension process.

This section also displays the License Management Mode, which is defined during the installation procedure.

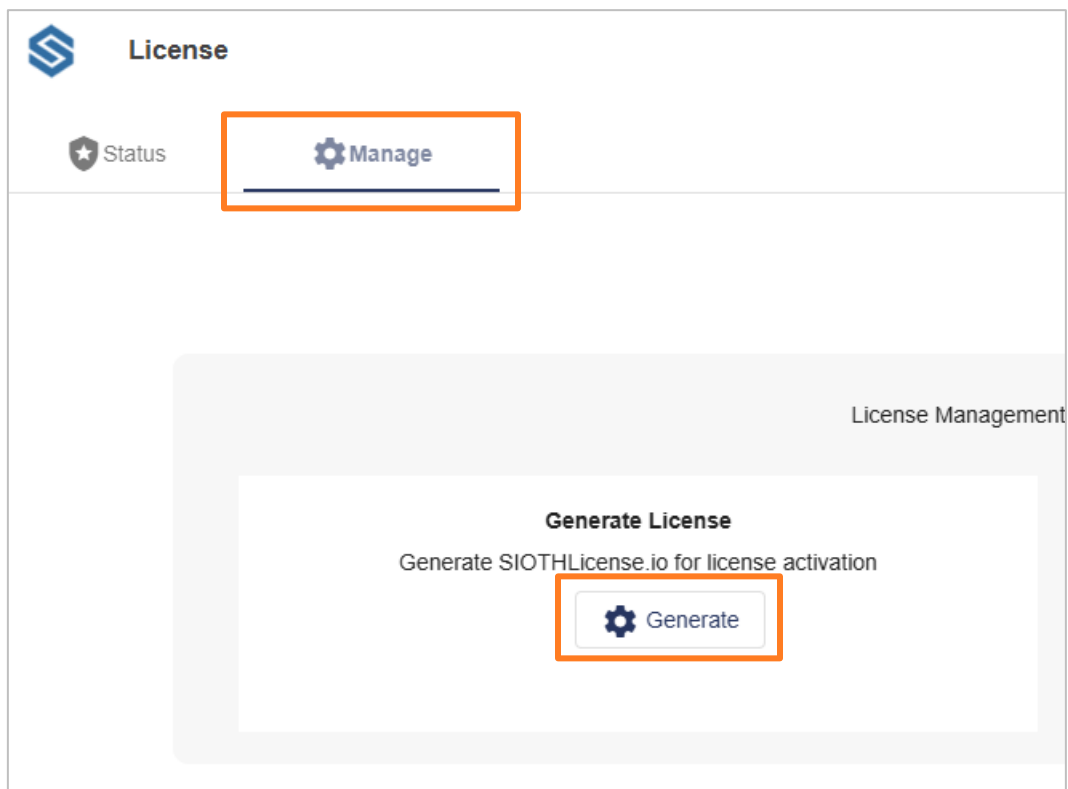


**Figure 5: License Manage View**



### 1.2.1. Generate License

1. Click the **Generate** button to generate and download **SIOTHLICENSE.io** file.
2. Send the generated file to the **Integration Objects' Customer Support** team along with the required information about the activation or extension, including:
  - Number of tokens.
  - License type (Full or extended, including the number of days).
  - Installation type (Full Master or other).
  - License Management Mode (Centralized or Decentralized).

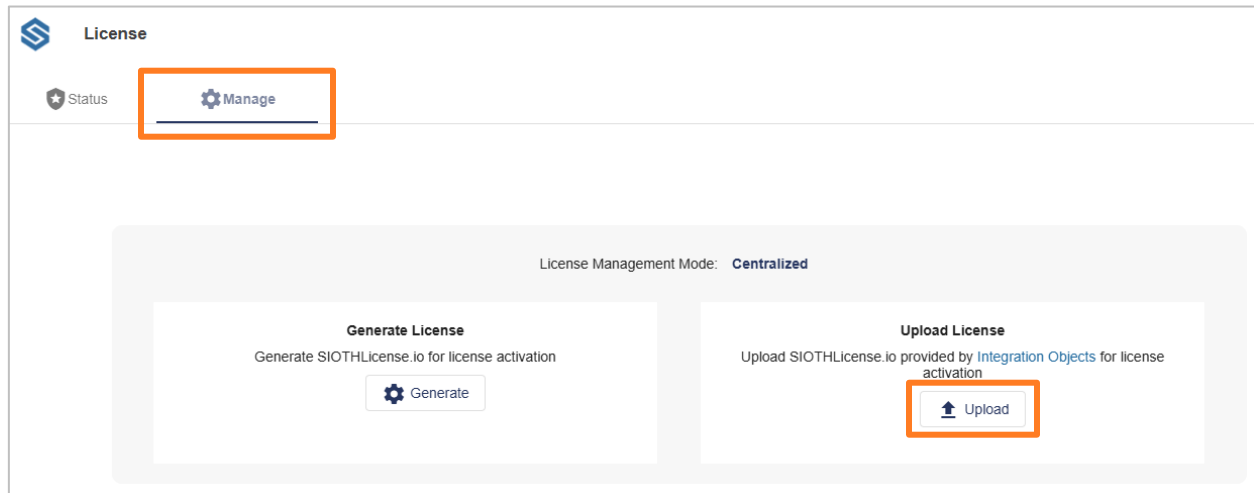


**Figure 6: License Manage - Generate License File**

### 1.2.2. Upload License

Once the license file has been activated or extended by Integration Objects, complete the process as follows:

1. Click the **Upload** button.
2. Select the updated **SIOTHLICENSE.io** file and click **Open**.



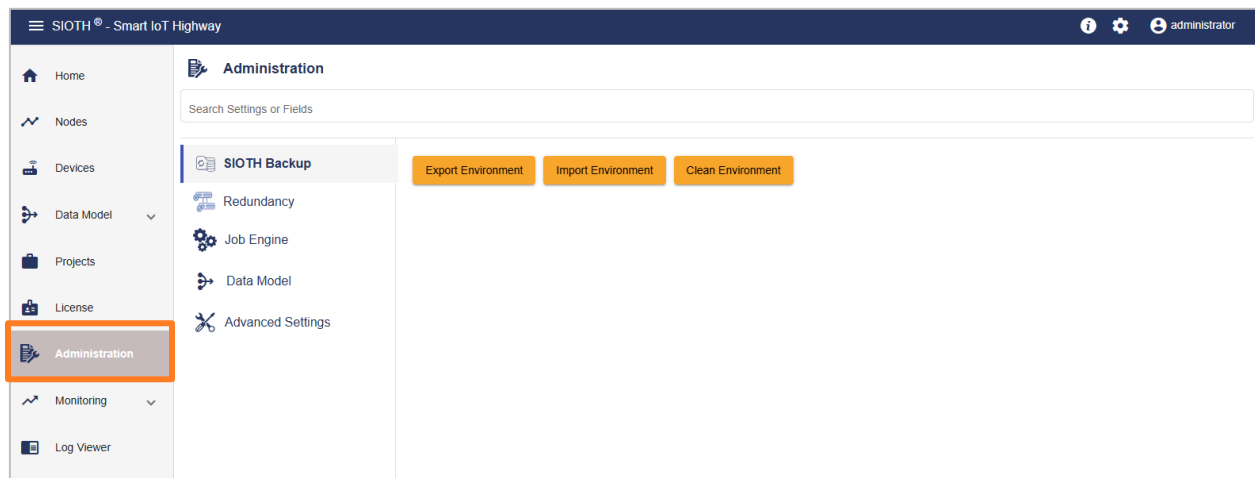
**Figure 7: License Manage - Upload License**

Once the upload process is complete, click the Status section to verify the updated **License Status**.

## 2. Administration

The **Administration** section provides system-level configuration and maintenance tools for managing the SIOTH<sup>®</sup> platform.

To access the **Administration** page, Click **Administration** from the left sidebar menu.

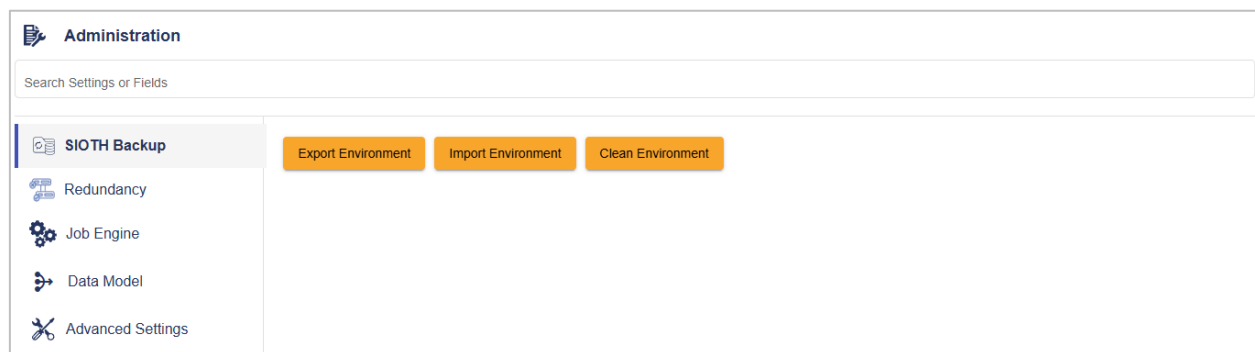


**Figure 8: SIOTH Administration Page**

## 2.1. SIOTH Backup

The **SIOTH Backup** section provides tools for managing environment backup and restoration within the SIOTH® platform. The following options are available:

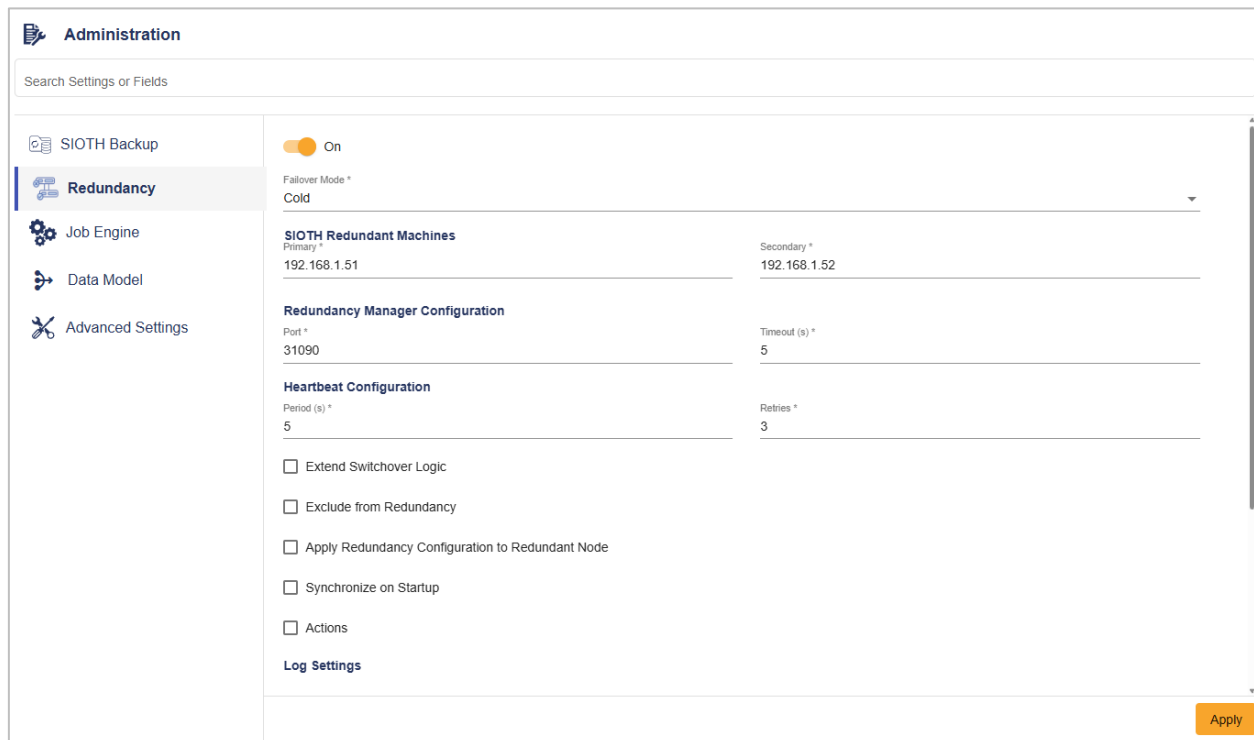
- **Export Environment:** Creates and exports a backup of the current SIOTH environment.
- **Import Environment:** Imports a previously saved backup of a SIOTH environment.
- **Clear Environment:** Resets the SIOTH environment to its default state.



**Figure 9: Administration - SIOTH Backup Configuration View**

## 2.2. Redundancy

The **Redundancy** section enables the configuration of redundancy between two SIOTH® installations to ensure continuous and uninterrupted operation in the event of a primary system failure. This feature is essential for maintaining high availability and fault tolerance by automatically switching operations to the secondary SIOTH® instance when the primary system becomes unavailable.



The screenshot shows the 'Administration' section with a sidebar containing 'SIOTH Backup', 'Redundancy', 'Job Engine', 'Data Model', and 'Advanced Settings'. The 'Redundancy' section is active, displaying the following configuration:

- SIOTH Backup:** On (toggle)
- Failover Mode \*:** Cold (dropdown)
- SIOTH Redundant Machines:**
  - Primary \*:** 192.168.1.51
  - Secondary \*:** 192.168.1.52
- Redundancy Manager Configuration:**
  - Port \*:** 31090
  - Timeout (s) \*:** 5
- Heartbeat Configuration:**
  - Period (s) \*:** 5
  - Retries \*:** 3
- Options:**
  - ☐ Extend Switchover Logic
  - ☐ Exclude from Redundancy
  - ☐ Apply Redundancy Configuration to Redundant Node
  - ☐ Synchronize on Startup
  - ☐ Actions
- Log Settings** (link)
- Apply** (button)

**Figure 10: Administration - Redundancy Configuration View**

### (!) Note

For more details about how to configure the redundancy, refer to the **SIOTH Redundancy Guide**.

## 2.3. Job Engine

The **Job Engine** section allows you to configure key parameters related to the Job Engine component.

Administration

Search Settings or Fields

SIOTH Backup
Redundancy
**Job Engine**
Data Model
Advanced Settings

Log Settings

Log Level \*

Info

Workflow

Database History Reset Period (m)

10

☒ Use SQL Database for Execution

Server Name

databaseServerName

Server Port

1433

Database Name

activiti

Username

sloth

Password

.....

Download files

Apply

**Figure 11: Administration - Job Engine Configuration View**

Parameter	Description	Default Value
<b>Log Settings</b>		
<b>Log Level</b>	<p>Defines the logging level for the Job Engine.</p> <p>Available options:</p> <ul style="list-style-type: none"> <li>Trace.</li> <li>Info.</li> <li>Error.</li> </ul>	Info
<b>Download Files</b>	Allows users to download log files from the system.	
<b>Workflow</b>		
<b>Database History Rest Period (m)</b>	Specifies the interval (in minutes) for database history reset.	10

<b><i>Use SQL Database for Execution</i></b>	Enables or disables the use of an SQL database for workflow execution.	Disabled
<b><i>Server Name</i></b>	Name of the SQL server used for workflow execution.	
<b><i>Server Port</i></b>	Port number for the SQL server connection.	
<b><i>Database Name</i></b>	Name of the SQL database used for workflow execution.	
<b><i>Username</i></b>	Username for connecting to the SQL database.	
<b><i>Password</i></b>	Password for connecting to the SQL database.	

**Table 2: Administration - Job Engine Configuration Parameters**

## 2.4. Data Model

The **Data Model** section allows you to configure key parameters related to the Data Model Service, API and Archiver components.

Administration

Search Settings or Fields

SIOTH Backup

Redundancy

Job Engine

**Data Model**

Advanced Settings

**Data Model Service**

Download files

☒ Auto Append

Log Level \*

Information

Buffer Size (MB) \*

100

Maximum Files \*

10

Log File Max Size (MB) \*

10485760

Auto Save TimeOut (s) \*

5

**Data Model API**

Download files

☒ Auto Append

Log Level \*

Information

Buffer Size (MB) \*

100

Maximum Files \*

10

Log File Max Size (MB) \*

10485760

Auto Save TimeOut (s) \*

5

**Data Model Archiver**

Download files

☒ Auto Append

Log Level \*

Error

Apply

**Figure 12: Administration - Data Model Configuration View**

Parameter	Description	Default Value
<b><i>Data Model Service - Data Model API - Data Model Archiver</i></b>		
<b><i>Auto Append</i></b>	Enables automatic insertion or appending of log entries to the current log file.	Enabled
<b><i>Log Level</i></b>	<p>Specifies the minimum severity level of log messages to be recorded. Available levels include:</p> <ul style="list-style-type: none"> <li>• Verbose</li> <li>• Debug</li> <li>• Information</li> <li>• Warning</li> <li>• Error</li> <li>• Fatal</li> </ul>	Information

<b><i>Buffer Size (MB)</i></b>	Defines the amount of data temporarily stored in memory before being written to the log file.	100
<b><i>Maximum Files</i></b>	Specifies the maximum number of log files that can be generated. A value of <b>0</b> indicates no limit.	10
<b><i>Log File Max Size (MB)</i></b>	Defines the maximum size of each log file before a new file is created.	10
<b><i>Auto Save Timeout (s)</i></b>	Specifies the time interval, in seconds, after which the system automatically saves log data or configuration changes.	5
<b><i>Download Files</i></b>	Allows users to download log files from the system.	

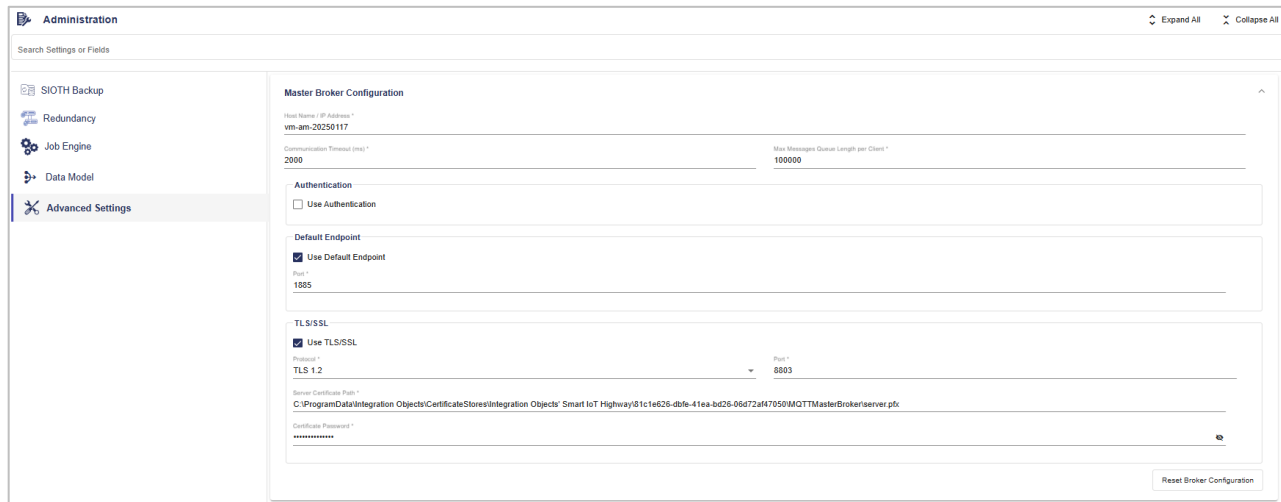
**Table 3: Administration - Data Model Configuration Parameters**

## 2.5. Advanced Settings

### 2.5.1. Master Broker Configuration

The **Master Broker Configuration** section allows you to configure parameters for the default **MQTT master broker** used by SIOTH®. This broker facilitates communication and interconnection between SIOTH® connectors when **MQTT** is selected as the communication protocol in the connector configuration.





**Figure 13: Administration - Master Broker Configuration View**

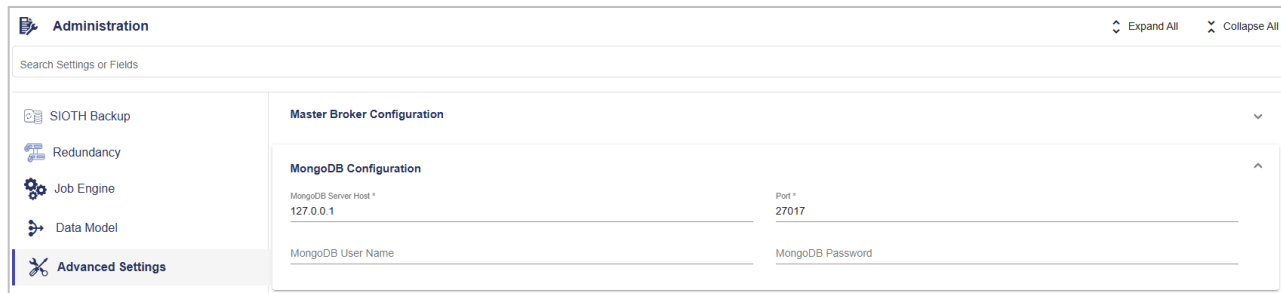
Parameter	Description	Default Value
<b>Host Name / IP Address</b>	Host name or IP address of the MQTT master broker.	127.0.0.1
<b>Communication Timeout (ms)</b>	Timeout value, in milliseconds, for communication with the MQTT master broker.	2000
<b>Max Messages Queue Length per Client</b>	Maximum number of messages that can be queued per client in the MQTT master broker.	100000
<b>Use Authentication</b>	Enables or disables authentication for clients connecting to the broker.	Unchecked
<b>Username</b>	Username used for broker authentication.	SIOTHMasterBroker
<b>Password</b>	Password used for broker authentication.	-
<b>Use Default Endpoint</b>	Enables or disables the use of the default SIOTH endpoint.	Unchecked
<b>Port</b>	Port number used for incoming TCP connections	1885

	to the MQTT master broker.	
<b><i>Use TLS/SSL</i></b>	Enables or disables TLS/SSL encryption for MQTT communication.	Unchecked
<b><i>Protocol</i></b>	Specifies the TLS version used for encryption: <ul style="list-style-type: none"> <li>• None</li> <li>• TLS 1.1</li> <li>• TLS 1.2</li> </ul>	TLS 1.2
<b><i>Port</i></b>	Port number used for incoming TLS-secured connections to the MQTT master broker.	8803
<b><i>Server Certificate Path</i></b>	Path to the PFX certificate used to secure MQTT communication.	C:\ProgramData\Integration Objects\CertificateStores\Integration Objects' Smart IoT Highway\<Generated ID>\MQTTMasterBroker\server.pfx
<b><i>Certificate Password</i></b>	Password associated with the PFX certificate.	
<b><i>Reset Broker Configuration</i></b>	Restores the MQTT master broker configuration to its default settings.	

**Table 4: Administration - Master Broker Configuration Parameters**

### 2.5.2. MongoDB configuration

The **MongoDB Configuration** section in the SIOTH<sup>®</sup> Administration allows you to define the connection settings for the MongoDB database used by SIOTH<sup>®</sup> as its primary data store.



**Figure 14: Administration - MongoDB Configuration View**

Parameter	Description	Default Value
<b><i>MongoDB Server Host</i></b>	Host name or IP address of the MongoDB server.	127.0.0.1
<b><i>Port</i></b>	Port number used for incoming connections to the MongoDB server.	27017
<b><i>MongoDB Authentication</i></b>	Username and password used to authenticate with the MongoDB server. Leave this field empty if authentication is not required.	Empty

**Table 5: Administration - MongoDB Configuration Parameters**

### 2.5.3. InfluxDB Configuration

The **InfluxDB Configuration** section in the SIOTH® Administration allows you to define the connection and storage parameters for the SIOTH® **Log and Monitoring historization** database, which is based on InfluxDB.

Administration
Expand All
Collapse All

Search Settings or Fields

SIOTH Backup
Redundancy
Job Engine
Data Model
Advanced Settings

Master Broker Configuration
MongoDB Configuration
InfluxDB Configuration

InfluxDB URL \*  
http://127.0.0.1:8086
InfluxDB User Name  
SIOTHAdmin
Log Measurement Name \*  
SIOTHLog
Influx Retention Duration \*  
2
InfluxDB Password  
.....
Monitoring Measurement Name \*  
SIOTHMonitoring
Unit \*  
h

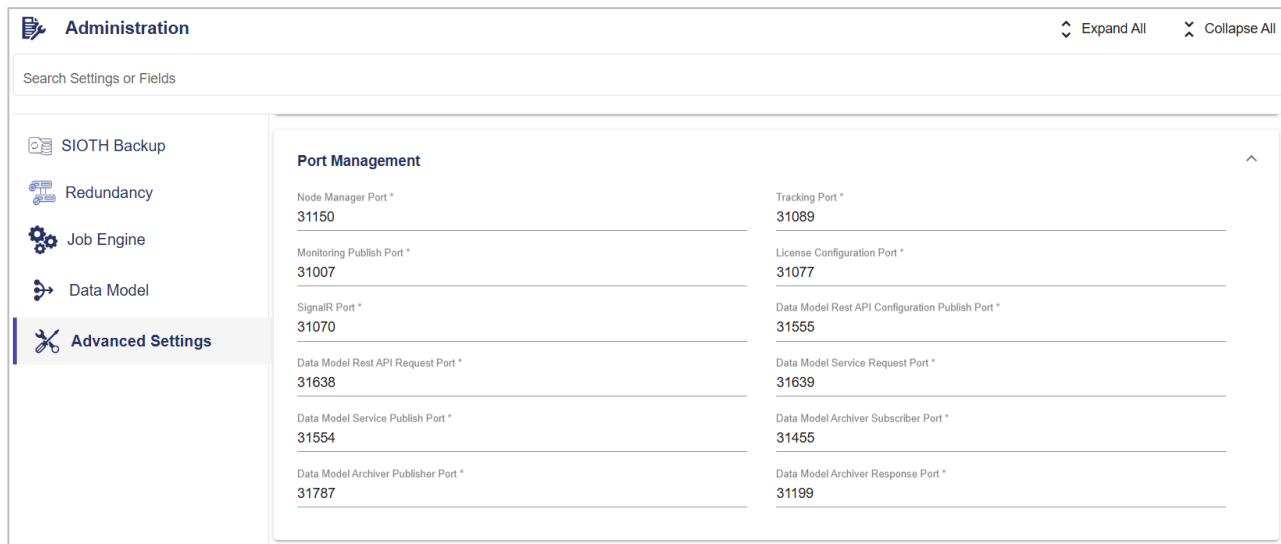
**Figure 15: Administration - InfluxDB Configuration View**

Parameter	Description	Default Value
<b><i>InfluxDB URL</i></b>	URL of the InfluxDB server.	http://127.0.0.1:8086
<b><i>InfluxDB Authentication</i></b>	Username and password used to authenticate with the InfluxDB server. Leave this field empty if authentication is not required.	SIOTHAdmin
<b><i>Log Measurement Name</i></b>	Measurement name used to store log data in the InfluxDB database.	SIOTHLog
<b><i>Monitoring Measurement Name</i></b>	Measurement name used to store monitoring data in the InfluxDB database.	SIOTHMonitoring
<b><i>Influx Retention Duration</i></b>	Defines the data retention period in the InfluxDB database. Supported units are hours (h), days (d), or weeks (w).	2h

**Table 6: Administration - InfluxDB Configuration Parameters**

## 2.5.4. Port Management

The **Port Management** section in the SIOTH® Administration allows you to configure the network ports used by various SIOTH® services and components. These ports support communication for node management, tracking, monitoring data publishing, license configuration, SignalR communication, and interactions with the Data Model REST API and Data Model Service.



**Figure 16: Administration - Ports Management View**

Parameter	Description	Default Value
<b><i>Node Manager Port</i></b>	Port used to communicate with the Node Manager.	31150
<b><i>Tracking Port</i></b>	Port used to communicate with the Tracker Service.	31089
<b><i>Monitoring Publish Port</i></b>	Port used to publish monitoring data.	31007

<b><i>License Configuration Port</i></b>	Port used to communicate with the License Manager Server.	31077
<b><i>SignalR Port</i></b>	Port used for SignalR-based communication.	31070
<b><i>Data Model Rest API Configuration Publish Port</i></b>	Port used to publish Data Model REST API configuration updates.	31555
<b><i>Data Model Rest API Request Port</i></b>	Port used to handle requests to the Data Model REST API.	31638
<b><i>Data Model Service Request Port</i></b>	Port used to handle requests to the Data Model Service.	31639
<b><i>Data Model Service Publish Port</i></b>	Port used to publish data from the Data Model Service.	31554
<b><i>Data Model Archiver Subscriber Port</i></b>	Port used to subscribe to data from the Data Model Archiver.	31455
<b><i>Data Model Archiver Publisher Port</i></b>	Port used to publish data from the Data Model Archiver.	31787
<b><i>Data Model Archiver</i></b>	Port used to interact with the Data Model	31199

<b>Response Port</b>	Archiver.	
----------------------	-----------	--

**Table 7: Administration - Ports Management Parameters**

### 2.5.5. Process Management

The **Process Management** section allows administrators to define how SIOTH handles process termination. When **Force Exit** is disabled, SIOTH attempts to stop processes gracefully. If a process does not terminate within the specified **Wait Period**, SIOTH forcibly terminates the process to ensure proper handling of unresponsive services.

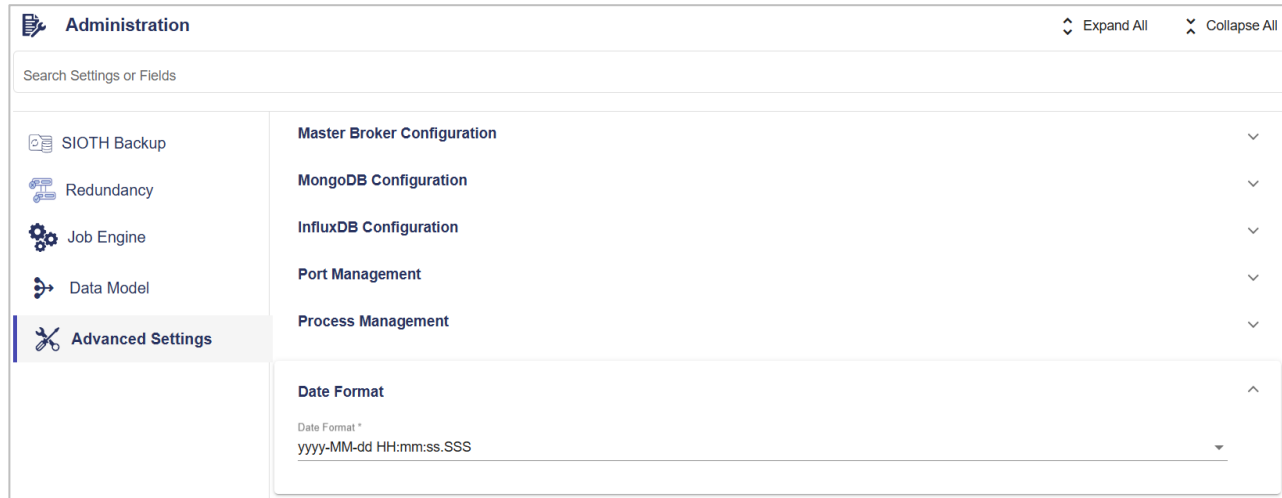

**Figure 17: Administration - Process Management Configuration View**

Parameter	Description	Default Value
<b>Force Exit</b>	Determines the process termination behavior: <ul style="list-style-type: none"> <li><b>Unchecked:</b> The process is stopped gracefully.</li> <li><b>Checked:</b> The process is forcibly terminated if it does not stop gracefully.</li> </ul>	Unchecked
<b>Wait Period (ms)</b>	Time, in milliseconds, that SIOTH waits for a process to terminate gracefully before forcing termination.	30000

**Table 8: Administration - Process Management Configuration Parameters**

## 2.5.6. Date Format

The **Date Format** section allows administrators to define the standard date and time format used for communication between SIOTH components. This ensures consistency and compatibility when exchanging time-related data across the platform.



**Figure 18: Administration - Date Format Configuration View**

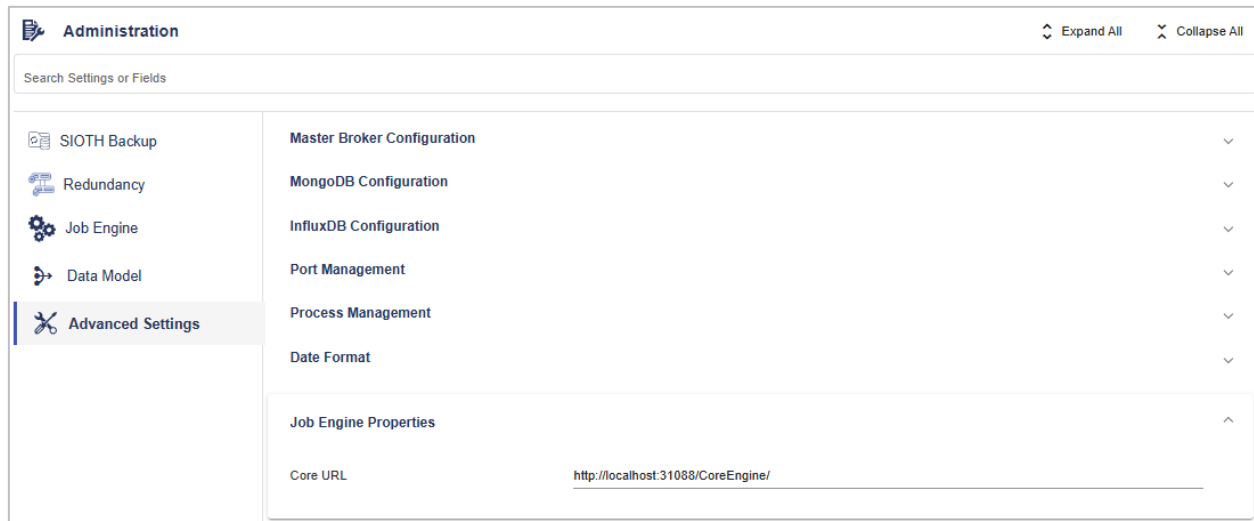
Parameter	Description	Default Value
<b><i>Date Format</i></b>	Specifies the standard date and time format used between SIOTH components.	yyyy-MM-dd HH:mm:ssSSS

**Table 9: Administration - Date Format Configuration Parameters**

## 2.5.7. Job Engine Properties

The Job Engine Properties section allows administrators to configure core service parameters required for Job Engine communication and operation.





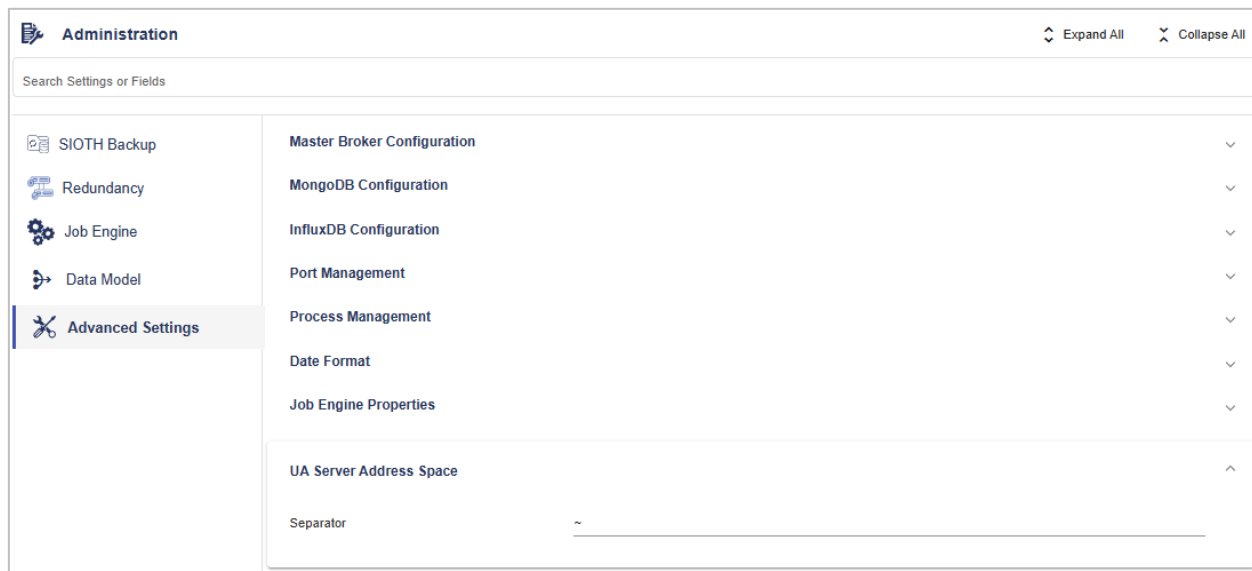
**Figure 19: Administration - Job Engine Properties Configuration View**

Parameter	Description	Default Value
<b>Core URL</b>	URL of the Job Engine Core service used for internal communication.	http://localhost:31088/CoreEngine/

**Table 10: Administration - Job Engine Properties Configuration Parameters**

### 2.5.8. UA Server Address Space

The **UA Server Address Space** section allows you to configure the separator used by SIOTH OPC UA Servers when constructing the OPC UA address space. This setting ensures consistent node naming and hierarchy representation across OPC UA servers.



**Figure 20: Administration - OPC UA Server Address Space Configuration View**

Parameter	Description	Default Value
<b><i>Separator</i></b>	Character used by SIOTH OPC UA Servers to build and separate elements within the OPC UA address space.	~

**Table 11: Administration - OPC UA Server Address Space Configuration Parameters**

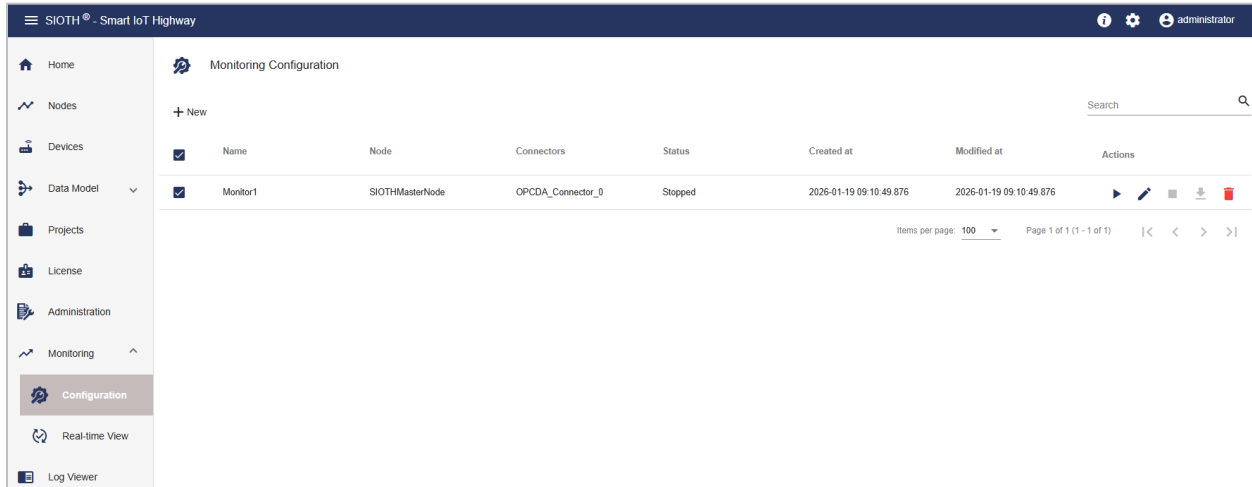
## 3. Monitoring

The **Monitoring** interface enables you to observe and track various aspects of the SIOTH® platform. It provides real-time or near-real-time data and visualizations to monitor system performance, operational status, and runtime behavior.

### 3.1. Monitoring Configuration

The **Monitoring Configuration** section provides centralized control over monitor management. From this section, you can create, edit, start, stop, export, and remove monitors as required. This centralized management simplifies the maintenance, optimization, and management of monitoring configurations across the system.






When accessing the **Monitoring** page, an explorer is displayed listing all configured monitoring items, with each item shown on a separate line.



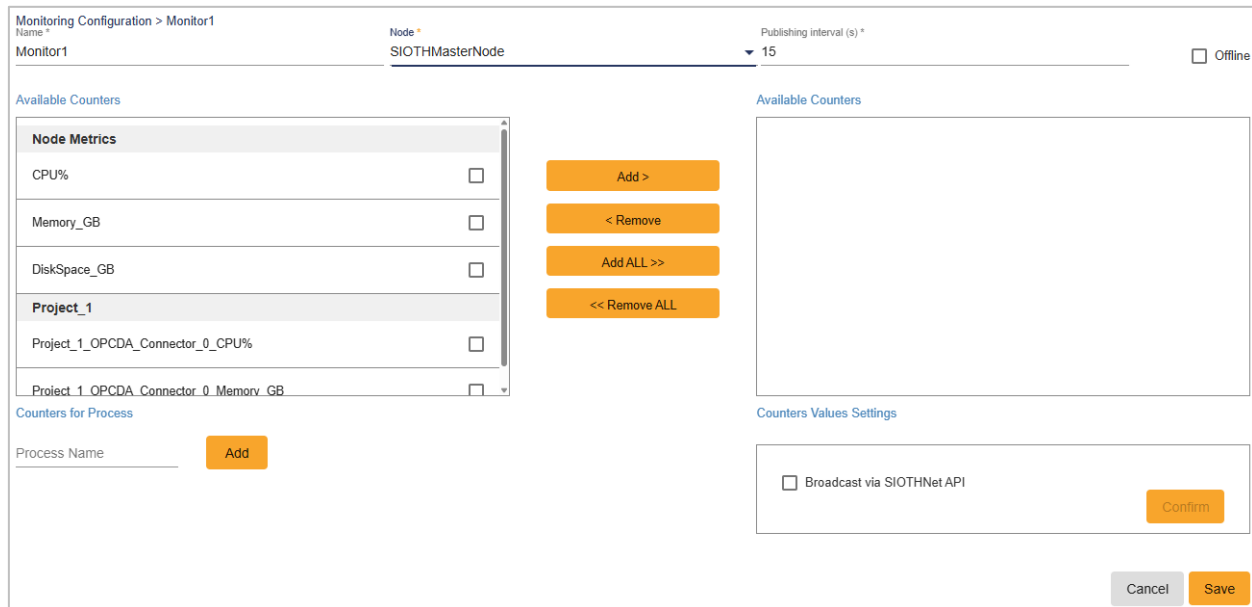
Name	Node	Connectors	Status	Created at	Modified at	Actions
Monitor1	SIOTHMasterNode	OPCDA_Connector_0	Stopped	2026-01-19 09:10:49.876	2026-01-19 09:10:49.876	Start, Edit, Stop, Download Configuration, Delete

**Figure 21: Monitoring Configuration Explorer**

The following actions can be performed on each monitoring item:

-  **Start:** Activates the selected monitor and begins data collection.
-  **Edit:** Allows modification of the monitor's configuration parameters.
-  **Stop:** Stops a running monitor and suspends data collection.
-  **Download Configuration:** Exports the monitor configuration to be deployed on remote nodes.
-  **Delete:** Permanently removes the selected monitor and its associated configuration from the system.

Click **New** button to add a new Monitor. A monitor configuration page will be displayed.



Monitoring Configuration > Monitor1

Name \* Monitor1

Node \* SIOTHMasterNode

Publishing interval (s) \* 15

☐ Offline

Available Counters

Node Metrics	
CPU%	<input type="checkbox"/>
Memory_GB	<input type="checkbox"/>
DiskSpace_GB	<input type="checkbox"/>
Project_1	
Project_1_OPCDA_Connector_0_CPU%	<input type="checkbox"/>
Project_1_OPCDA_Connector_0_Memory_GB	<input type="checkbox"/>

Counters for Process

Process Name

Counters Values Settings

☐ Broadcast via SIOTHNet API

**Figure 22: Monitoring Configuration - New Monitor Page**

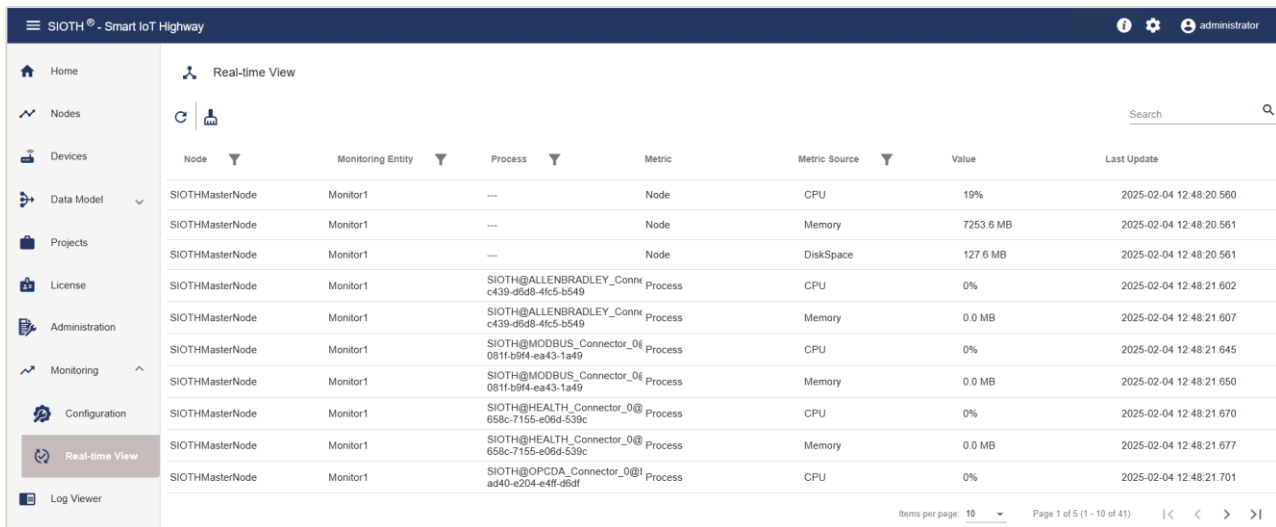
To configure a new monitor, proceed as follows:

- Enter a name for the monitor.
- Select the **Node** from the drop-down list.
- Select the **Publishing Interval**.
- Configure the metrics to be published. The selected metrics are displayed in the **Added Counters** list.
  - Select metrics from the **Available Counters** list click **Add**.
  - Click **Add All** to add all available metrics.
  - Select metrics from the **Added Counters** list and click **Remove** to remove specific metrics.
  - Click **Remove All** to remove all selected metrics.
- Enter the **Process Name** and click **Add** to monitor an external process.
- Enable the **Offline** option to deploy the monitor configuration in offline mode.
- Enable **Broadcast via SIOTHNet API** to receive default SIOTH® KPIs.
- Click **Save** to store the monitor configuration.

## 3.2. Real-time View

Once a monitor is started, the collected metrics can be visualized in the **Real-time View**. This view provides live insight into system activity and enables you to analyze metrics as they are updated.

Metrics displayed in the Real-time View can be filtered using the following criteria: **Node**, **Monitoring Entity**, **Process**, **Metric Source** (Process or Node), **Value**, **Last Update**, and **Project Name**.



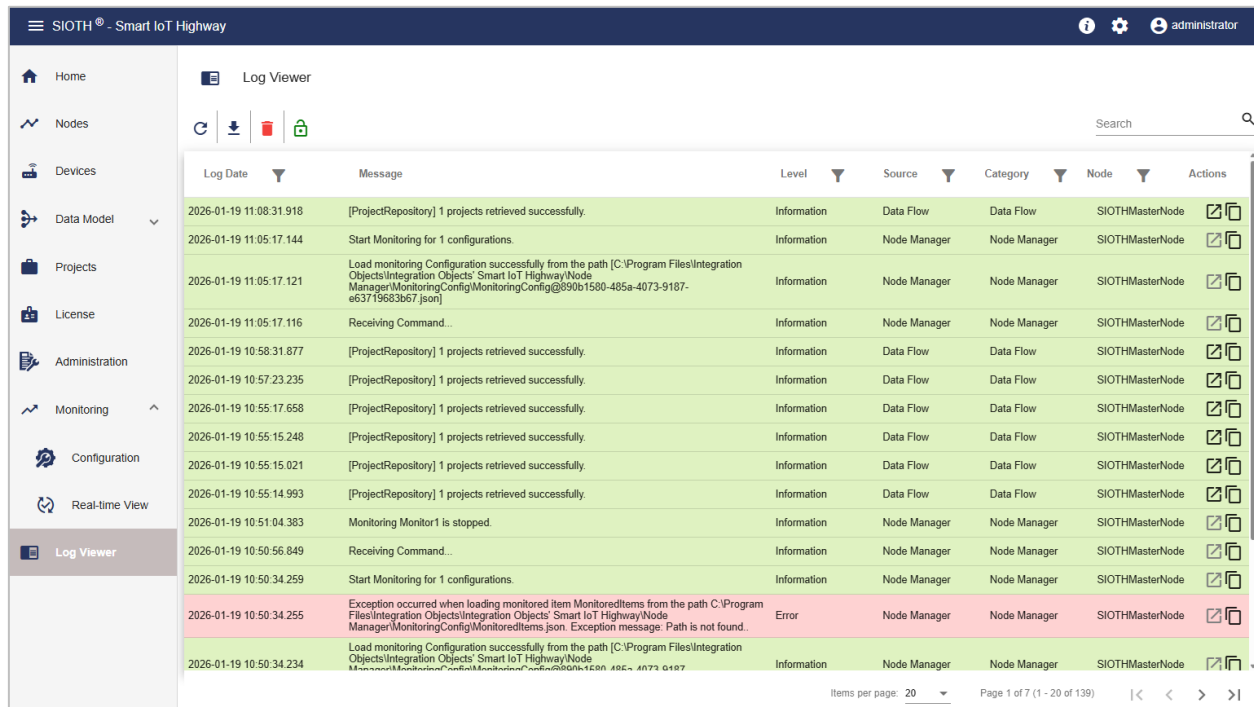
Node	Monitoring Entity	Process	Metric	Metric Source	Value	Last Update
SIOTHMasterNode	Monitor1	---	Node	CPU	19%	2025-02-04 12:48:20.560
SIOTHMasterNode	Monitor1	---	Node	Memory	7253.6 MB	2025-02-04 12:48:20.561
SIOTHMasterNode	Monitor1	---	Node	DiskSpace	127.6 MB	2025-02-04 12:48:20.561
SIOTHMasterNode	Monitor1	SIOTH@ALLENBRADLEY_Connec c439-d5d8-4fc5-b549	Process	CPU	0%	2025-02-04 12:48:21.602
SIOTHMasterNode	Monitor1	SIOTH@ALLENBRADLEY_Connec c439-d5d8-4fc5-b549	Process	Memory	0.0 MB	2025-02-04 12:48:21.607
SIOTHMasterNode	Monitor1	SIOTH@MODBUS_Connector_0@ 081f-b594-eaf3-1a49	Process	CPU	0%	2025-02-04 12:48:21.645
SIOTHMasterNode	Monitor1	SIOTH@MODBUS_Connector_0@ 081f-b594-eaf3-1a49	Process	Memory	0.0 MB	2025-02-04 12:48:21.650
SIOTHMasterNode	Monitor1	SIOTH@HEALTH_Connector_0@ 658c-7155-e05d-539c	Process	CPU	0%	2025-02-04 12:48:21.670
SIOTHMasterNode	Monitor1	SIOTH@HEALTH_Connector_0@ 658c-7155-e05d-539c	Process	Memory	0.0 MB	2025-02-04 12:48:21.677
SIOTHMasterNode	Monitor1	SIOTH@OPCDA_Connector_0@ ad40-e204-e4ff-d5df	Process	CPU	0%	2025-02-04 12:48:21.701
















Figure 23: Monitoring - Real-time View

## 4. Log Viewer

The **Log Viewer** interface of the SIOTH® platform provides a centralized tool for accessing, viewing, and managing logs generated by the system. It is designed to support efficient monitoring, troubleshooting, and analysis of platform activity through structured and searchable log data.






The Log Viewer enables you to retrieve logs from multiple sources by defining a time range and applying filtering criteria. Log entries are displayed in clear and organized format, making it easier to review and analyze information.



Log Date	Message	Level	Source	Category	Node	Actions
2026-01-19 11:08:31.918	[ProjectRepository] 1 projects retrieved successfully.	Information	Data Flow	Data Flow	SIOTHMasterNode	
2026-01-19 11:05:17.144	Start Monitoring for 1 configurations.	Information	Node Manager	Node Manager	SIOTHMasterNode	
2026-01-19 11:05:17.121	Load monitoring Configuration successfully from the path [C:\Program Files\Integration Objects\Integration Objects\ Smart IoT Highway\Node Manager\MonitoringConfig\MonitoringConfig@859b1500-485a-4073-9187-e63719683b67.json]	Information	Node Manager	Node Manager	SIOTHMasterNode	
2026-01-19 11:05:17.116	Receiving Command...	Information	Node Manager	Node Manager	SIOTHMasterNode	
2026-01-19 10:58:31.877	[ProjectRepository] 1 projects retrieved successfully.	Information	Data Flow	Data Flow	SIOTHMasterNode	
2026-01-19 10:57:23.235	[ProjectRepository] 1 projects retrieved successfully.	Information	Data Flow	Data Flow	SIOTHMasterNode	
2026-01-19 10:55:17.658	[ProjectRepository] 1 projects retrieved successfully.	Information	Data Flow	Data Flow	SIOTHMasterNode	
2026-01-19 10:55:15.248	[ProjectRepository] 1 projects retrieved successfully.	Information	Data Flow	Data Flow	SIOTHMasterNode	
2026-01-19 10:55:15.021	[ProjectRepository] 1 projects retrieved successfully.	Information	Data Flow	Data Flow	SIOTHMasterNode	
2026-01-19 10:55:14.993	[ProjectRepository] 1 projects retrieved successfully.	Information	Data Flow	Data Flow	SIOTHMasterNode	
2026-01-19 10:51:04.383	Monitoring Monitor1 is stopped.	Information	Node Manager	Node Manager	SIOTHMasterNode	
2026-01-19 10:50:56.849	Receiving Command...	Information	Node Manager	Node Manager	SIOTHMasterNode	
2026-01-19 10:50:34.259	Start Monitoring for 1 configurations.	Information	Node Manager	Node Manager	SIOTHMasterNode	
2026-01-19 10:50:34.255	Exception occurred when loading monitored item MonitoredItems from the path C:\Program Files\Integration Objects\Integration Objects\ Smart IoT Highway\Node Manager\MonitoringConfig\MonitoredItems.json. Exception message: Path is not found.	Error	Node Manager	Node Manager	SIOTHMasterNode	
2026-01-19 10:50:34.234	Load monitoring Configuration successfully from the path [C:\Program Files\Integration Objects\Integration Objects\ Smart IoT Highway\Node Manager\MonitoringConfig\MonitoringConfig@859b1500-485a-4073-9187-e63719683b67.json]	Information	Node Manager	Node Manager	SIOTHMasterNode	

**Figure 24: Log Viewer**

The following actions are available in the Log Viewer:

-  **Search and Filtering:** Locate specific log entries or refine displayed logs using filters such as Date, Level, Source, Category, or Node.
-  **Reload log of last 2 hours:** Refresh the view to display logs generated during the last two hours.
-  **Export CSV:** Export the retrieved log data to a CSV file for backup, reporting, or further analysis.
-  **Delete All Log Messages:** Permanently remove all log entries from the viewer.
-  **Lock Messages:** Lock selected log messages to prevent them from being deleted or modified.

## 5. Multi-Factor Authentication (MFA) Configuration

Although the SIOTH® platform is secured using **username** and **password** authentication and access to features is strictly controlled through **user privileges and roles**, overall security can be significantly enhanced by enabling **Multi-Factor Authentication (MFA)**.

MFA requires users to verify their identity using two or more authentication factors before accessing the system, thereby adding an additional layer of protection against unauthorized access.

Follow the steps below to enable and use MFA for your account:

1. Open a web browser and navigate to the following address:

`http://<Hostname>:31503`

### (!) Note

For the **Hostname** field, specify either the machine name or the IP address, based on how the system is configured during installation.

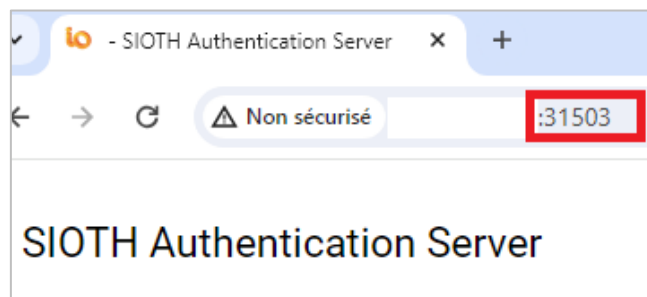
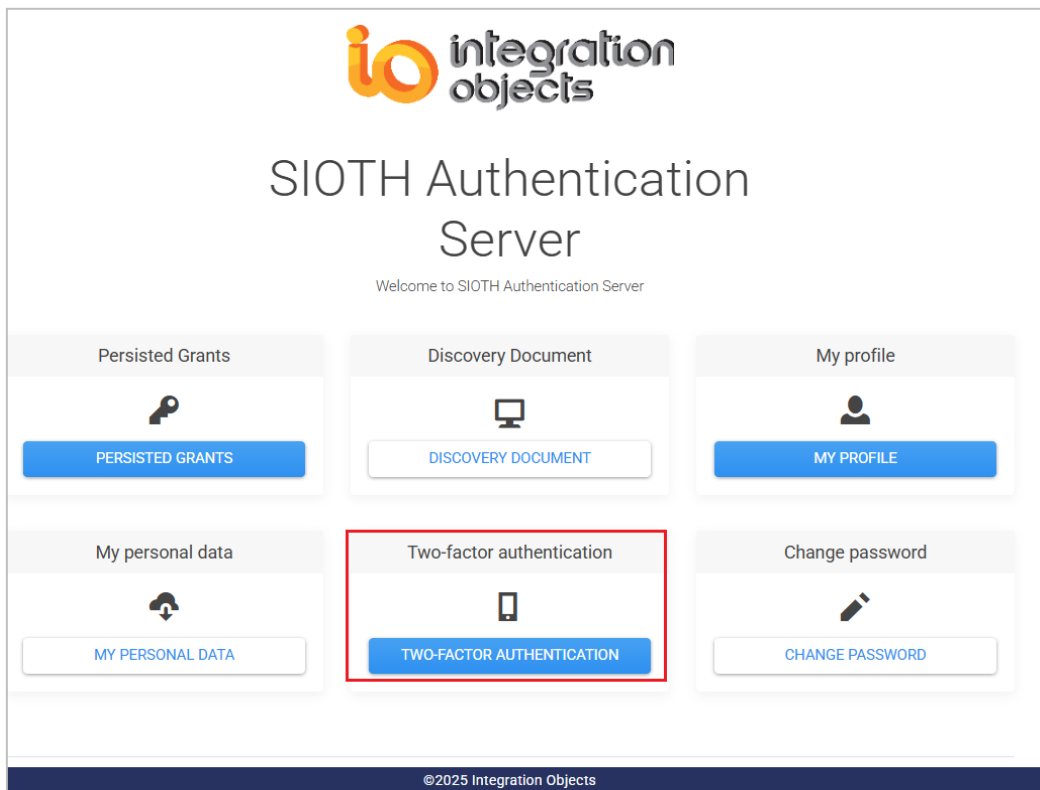


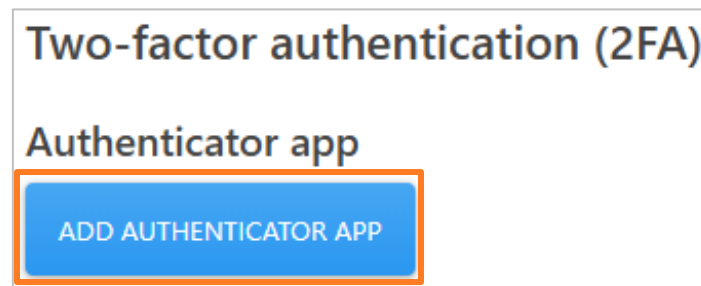
Figure 25. SIOTH® Authentication Server

2. Click the **Two Factor Authentication** button.



**Figure 26: SIOTH® - Two Factor Authentication**

3. Click the **ADD AUTHENTICATION APP** button.



**Figure 27: Two-Factor Authentication - ADD AUTHENTICATION APP Button**


4. Follow the on-screen instructions to configure the two-factor authentication.  
When required, enter the verification code provided by the authentication app, then click **Verify**.



### Configure authenticator app

To use an authenticator app go through the following steps:

1. Download a two-factor authenticator app like Microsoft Authenticator for [Windows Phone, Android, iOS](#). Google Authenticator for [Android, iOS](#).
2. Scan the QR Code or enter this key `326x ce3s wwt h2xo 25c1 213w wcej exwa` into your two factor authenticator app. Spaces and casing do not matter.



3. Once you have scanned the QR code or input the key above, your two factor authentication app will provide you with a unique code. Enter the code in the confirmation box below.

Verification Code

VERIFY

**Figure 28: Two-Factor Authentication - Configure Authenticator App**

Once verification is complete, recovery codes will be displayed. Store these recovery codes in a secure location, as they can be used to regain access if your authentication device is unavailable.

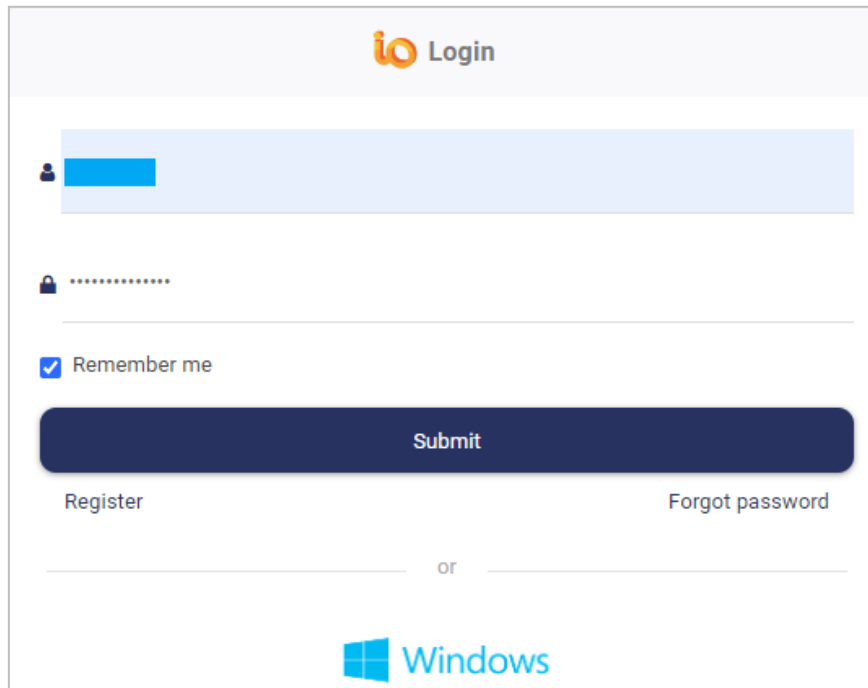
### Recovery codes

⚠ Put these codes in a safe place.

If you lose your device and don't have the recovery codes you will lose access to your account.

**Figure 29: Two-Factor Authentication - Recovery Codes**

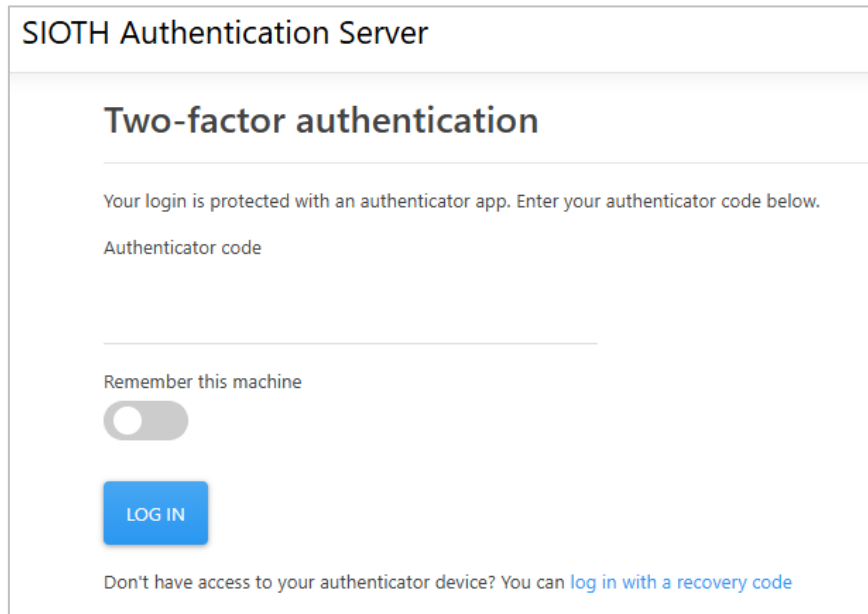
5. Access the authentication page, type your credentials and click **Submit**.



The login page features the 'io Login' header. It includes a username field with a person icon, a password field with a lock icon and masked characters, a checked 'Remember me' checkbox, and a dark blue 'Submit' button. Below the button are links for 'Register' and 'Forgot password', separated by an 'or' divider. At the bottom is the Windows logo.

**Figure 30: SIOth Authentication Page**

6. Type the code provided by the Authenticator application and click **LOG IN**.



The page is titled 'SIOth Authentication Server' and 'Two-factor authentication'. It contains the text 'Your login is protected with an authenticator app. Enter your authenticator code below.' followed by an 'Authenticator code' label and an input field. Below this is a 'Remember this machine' label with a toggle switch. A blue 'LOG IN' button is positioned below the toggle. At the bottom, a link reads 'Don't have access to your authenticator device? You can [log in with a recovery code](#)'.

**Figure 31: Two-Factor Authentication Page**

## 6. HTTPS Communication Configuration

By default, the SIOTH<sup>®</sup> platform uses the HTTP protocol for communication. To enhance security and protect data in transit, the platform can be configured to use **HTTPS**, which relies on **SSL/TLS** encryption. This ensures secure communication between clients and servers and helps prevent unauthorized access or data interception.

To enable HTTPS and ensure secure communication between clients and the server, follow the steps below:

### Prerequisites

1. Install OpenSSL on the target machine.

### Certificate Generation

2. Navigate to the **Open SSL** installation directory. The path should resemble:  
"...\Program Files\OpenSSL-Win64\"
3. Right-click the **start.bat** file and select **Run as Administrator**. A Command Prompt window will open.
4. Execute the following command.  
"<SIOTH\_Installation\_Folder>\Components\Tools\HTTPS\CreateCertificate\createOpenSSL Certif.bat"
5. Follow the on-screen instructions to generate the certificates (.pfx and crt):
  - Enter the SIOTH<sup>®</sup> installation folder path.
  - Provide a password for the certificate.
  - Specify whether the installation uses an IP address (type **IP**) or a machine name (type **MN**).
  - By default, the generated certificate files are saved on the Desktop.

Once the script completes, press any key to continue.

```
Administrator: Win64 OpenSSL Command Prompt - "C:\Program Files\Integration Objects\Integration Objects' Smart IoT Highway\Components\Tools\HTTPS\CreateCertificate\createO...
Seeding source: os-specific

C:\Users\Administrator>"C:\Program Files\Integration Objects\Integration Objects' Smart IoT Highway\Components\Tools\HTTPS\CreateCertificate\createOpenSSLCertif.bat"
-----Generating self signed certificate with OpenSSL-----
Enter the SIOTH Installation folder path:"C:\Program Files\Integration Objects\Integration Objects' Smart IoT Highway"
Enter the certificate password:
*****
Did you use an IP address or a machine name for installation? (IP/MN): MN
Generating private key...
.....+++++
.....+++++
Generating self-signed certificate...
Generating a RSA private key
.....+++++
.....+++++
writing new private key to 'private.key'
-----
Exporting certificate to PKCS#12 format...
Certificate files generated successfully.
CRT file saved on Desktop: C:\Users\Administrator\Desktop\vm-khs-20250227_certificate.crt
PKCS#12 file saved on Desktop: C:\Users\Administrator\Desktop\vm-khs-20250227_certificate.pfx
Press any key to continue . . .
```

Figure 32: HTTP to HTTPS - start.bat

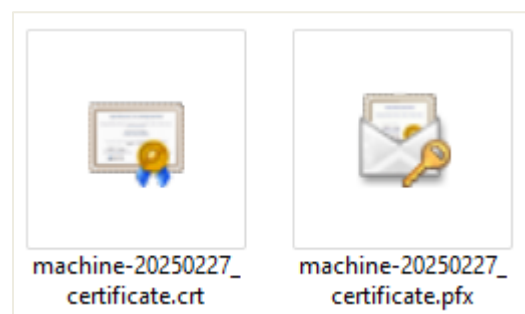


Figure 33: HTTP to HTTPS - Generated Certificates

## HTTPS Enablement

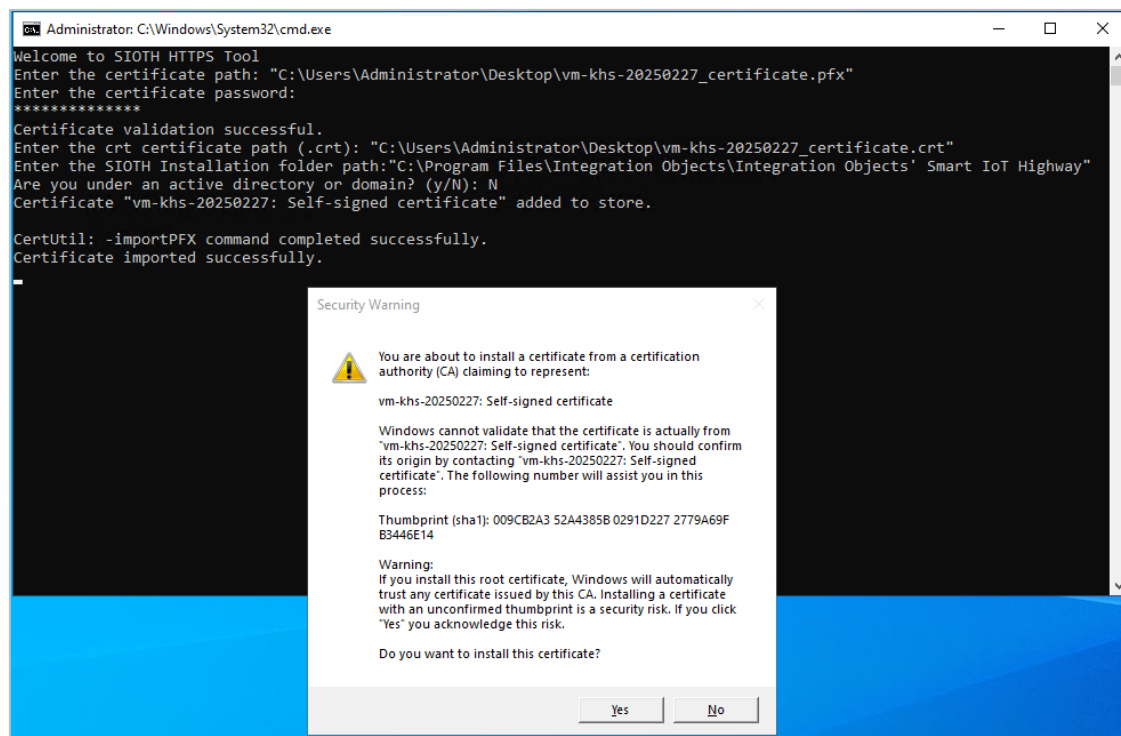
6. Navigate to the **SIOTH HTTPS** tool directory. The path should resemble:  
"<SIOTH\_Installation\_Folder>\Components\Tools\HTTPS\"
7. Right-click the **https.bat** file and select **Run as Administrator**. A Command Prompt window will open.

8. Follow the tool instructions to switch from HTTP to HTTPS:

- Enter the certificate path.
- Enter the certificate password.

*Certificate validation will be performed, after which you will be prompted to re-enter the .crt certificate path.*

- Re-enter the certificate path.
- Enter the SIOTH® installation folder path.
- Specify whether the machine is part of an Active Directory or domain (y/N).
- If **y** is selected, provide the domain account credentials.
- Proceed with installing the certificate.



**Figure 34: HTTP to HTTPS - HTTPS Tool**

**Verification**

After completing the configuration, open a web browser and navigate to:

`https://<hostname>:31080`

Replace <hostname> with the machine name or IP address to verify that HTTPS is enabled and operating correctly.

For additional information on this guide, questions or problems to report, please contact:

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