REST API Documentation

*Version: 1.0  
Date: September 16, 2025*

# Overview

This document describes the REST API endpoints and usage details for the system. All endpoints require HTTP Basic Authentication via the Authorization header.

|  |  |
| --- | --- |
| Field | Description |
| Base URL | http(s)://<host>:<port> |
| Content Type | application/json unless specified |
| Authentication | HTTP Basic (Authorization: Basic <base64(username:password)>) |

# Authentication

All endpoints require HTTP Basic authentication. Include the header:

Authorization: Basic <base64-encoded "username:password">

Example header value for username "admin" and password "secret":

Authorization: Basic YWRtaW46c2VjcmV0

Typical headers:

Content-Type: application/json  
Accept: application/json

# Error Handling & Status Codes

|  |  |
| --- | --- |
| Field | Description |
| 200 OK | Request succeeded. |
| 201 Created | Resource created (when applicable). |
| 400 Bad Request | Malformed request or missing/invalid parameters. |
| 401 Unauthorized | Missing or invalid credentials. |
| 403 Forbidden | Authenticated but not allowed. |
| 404 Not Found | Resource not found. |
| 415 Unsupported Media Type | Wrong Content-Type. |
| 422 Unprocessable Entity | Semantically invalid data. |
| 500 Internal Server Error | Server encountered an error. |

Responses may include JSON objects with error details and messages when requests fail.

# REST API Endpoints

## 1. /api/Ping

|  |  |
| --- | --- |
| Field | Description |
| Method | GET |
| Description | Checks server connectivity. |
| Authentication | Required (HTTP Basic) |
| Path | /api/Ping |

### Request Headers

|  |  |
| --- | --- |
| Field | Description |
| Authorization | Basic <base64(username:password)> |
| Accept | application/json |

### Response

{  
 "Success": "Y",  
 "Message": "Ping successful"  
}

### curl Example

curl -i -u "username:password" -H "Accept: application/json" -X GET "<BASE\_URL>/api/Ping"

## 2. /api/User/Authenticate

|  |  |
| --- | --- |
| Field | Description |
| Method | POST |
| Description | Authenticates a user. |
| Authentication | Required (HTTP Basic) |
| Path | /api/User/Authenticate |

### Request Headers

|  |  |
| --- | --- |
| Field | Description |
| Authorization | Basic <base64(username:password)> |
| Content-Type | application/json |
| Accept | application/json |

### Request Body

{  
 "Id": "username",  
 "Password": "password"  
}

### Response

{  
 "IsAuthenticated": true,  
 "Role": "User"  
}

### curl Example

curl -i -u "username:password" -H "Content-Type: application/json" -d '{"Id":"username","Password":"password"}' -X POST "<BASE\_URL>/api/User/Authenticate"

## 3. /api/Site/TrainPresence

|  |  |
| --- | --- |
| Field | Description |
| Method | GET |
| Description | Returns whether a train is present. |
| Authentication | Required (HTTP Basic) |
| Path | /api/Site/TrainPresence |

### Request Headers

|  |  |
| --- | --- |
| Field | Description |
| Authorization | Basic <base64(username:password)> |
| Accept | application/json |

### Response

{  
 "TrainPresent": true,  
 "Timestamp": "MM/DD/YYYY HH:MM:SS AM/PM"  
}

### curl Example

curl -i -u "username:password" -H "Accept: application/json" -X GET "<BASE\_URL>/api/Site/TrainPresence"

## 4. /api/Site/TrainHistoryFromDB

|  |  |
| --- | --- |
| Field | Description |
| Method | GET |
| Description | Retrieves train history from the database. |
| Authentication | Required (HTTP Basic) |
| Path | /api/Site/TrainHistoryFromDB |

### Request Headers

|  |  |
| --- | --- |
| Field | Description |
| Authorization | Basic <base64(username:password)> |
| Accept | application/json |

### Response

[  
 /\* train history objects \*/  
]

### curl Example

curl -i -u "username:password" -H "Accept: application/json" -X GET "<BASE\_URL>/api/Site/TrainHistoryFromDB"

## 5. /api/Site/Config

|  |  |
| --- | --- |
| Field | Description |
| Method | GET or POST |
| Description | Gets or updates site configuration. |
| Authentication | Required (HTTP Basic) |
| Path | /api/Site/Config |

### Request Headers

|  |  |
| --- | --- |
| Field | Description |
| Authorization | Basic <base64(username:password)> |
| Content-Type | application/json |
| Accept | application/json |

### Request Body

{  
 /\* configuration data to update \*/  
}

### Response

GET Response:  
{  
 /\* configuration data \*/  
}  
  
POST Response:  
{  
 "result": "Success"  
}

### curl Example

# GET  
curl -i -u "username:password" -H "Accept: application/json" -X GET "<BASE\_URL>/api/Site/Config"  
  
# POST  
curl -i -u "username:password" -H "Content-Type: application/json" -d '{ /\* configuration data to update \*/ }' -X POST "<BASE\_URL>/api/Site/Config"

## 6. /api/Site/ConfigNetwork

|  |  |
| --- | --- |
| Field | Description |
| Method | GET or POST |
| Description | Gets or updates network configuration. |
| Authentication | Required (HTTP Basic) |
| Path | /api/Site/ConfigNetwork |

### Request Headers

|  |  |
| --- | --- |
| Field | Description |
| Authorization | Basic <base64(username:password)> |
| Content-Type | application/json |
| Accept | application/json |

### Request Body

{  
 /\* network configuration data to update \*/  
}

### Response

GET Response:  
{  
 /\* network configuration data \*/  
}  
  
POST Response:  
{  
 "result": "Success"  
}

### curl Example

# GET  
curl -i -u "username:password" -H "Accept: application/json" -X GET "<BASE\_URL>/api/Site/ConfigNetwork"  
  
# POST  
curl -i -u "username:password" -H "Content-Type: application/json" -d '{ /\* network configuration data to update \*/ }' -X POST "<BASE\_URL>/api/Site/ConfigNetwork"

## 7. /api/Site/UpdateDateTime

|  |  |
| --- | --- |
| Field | Description |
| Method | POST |
| Description | Updates the system date and time. |
| Authentication | Required (HTTP Basic) |
| Path | /api/Site/UpdateDateTime |

### Request Headers

|  |  |
| --- | --- |
| Field | Description |
| Authorization | Basic <base64(username:password)> |
| Content-Type | application/json |
| Accept | application/json |

### Request Body

{  
 "Timestamp": "MM/DD/YYYY HH:MM:SS AM/PM"  
}

### Response

{  
 "result": "Success"  
}

### curl Example

curl -i -u "username:password" -H "Content-Type: application/json" -d '{ "Timestamp": "08/25/2025 10:15:00 AM" }' -X POST "<BASE\_URL>/api/Site/UpdateDateTime"

## 8. /api/Train/RunTestTrain

|  |  |
| --- | --- |
| Field | Description |
| Method | POST |
| Description | Runs a test train operation. |
| Authentication | Required (HTTP Basic) |
| Path | /api/Train/RunTestTrain |

### Request Headers

|  |  |
| --- | --- |
| Field | Description |
| Authorization | Basic <base64(username:password)> |
| Content-Type | application/json |
| Accept | application/json |

### Request Body

{  
 "Axles": 4,  
 "Broadcast": "Y",  
 "AtoB": "Y"  
}

### Response

{  
 "result": "Success"  
}

### curl Example

curl -i -u "username:password" -H "Content-Type: application/json" -d '{ "Axles": 4, "Broadcast": "Y", "AtoB": "Y" }' -X POST "<BASE\_URL>/api/Train/RunTestTrain"

## 9. /api/Train/Detail

|  |  |
| --- | --- |
| Field | Description |
| Method | GET |
| Description | Retrieves train details. |
| Authentication | Required (HTTP Basic) |
| Path | /api/Train/Detail |

### Request Headers

|  |  |
| --- | --- |
| Field | Description |
| Authorization | Basic <base64(username:password)> |
| Accept | application/json |

### Query Parameters

|  |  |
| --- | --- |
| Field | Description |
| TrainID | integer (required) |

### Response

{  
 /\* train detail data \*/  
}

### curl Example

curl -i -u "username:password" -H "Accept: application/json" -X GET "<BASE\_URL>/api/Train/Detail?TrainID=1234"

## 10. /api/Train/Vehicles

|  |  |
| --- | --- |
| Field | Description |
| Method | GET |
| Description | Retrieves vehicles for a train. |
| Authentication | Required (HTTP Basic) |
| Path | /api/Train/Vehicles |

### Request Headers

|  |  |
| --- | --- |
| Field | Description |
| Authorization | Basic <base64(username:password)> |
| Accept | application/json |

### Query Parameters

|  |  |
| --- | --- |
| Field | Description |
| TrainID | integer (required) |

### Response

{  
 /\* vehicles data \*/  
}

### curl Example

curl -i -u "username:password" -H "Accept: application/json" -X GET "<BASE\_URL>/api/Train/Vehicles?TrainID=1234"

## 11. /api/Train/Axles

|  |  |
| --- | --- |
| Field | Description |
| Method | GET |
| Description | Retrieves axles for a train. |
| Authentication | Required (HTTP Basic) |
| Path | /api/Train/Axles |

### Request Headers

|  |  |
| --- | --- |
| Field | Description |
| Authorization | Basic <base64(username:password)> |
| Accept | application/json |

### Query Parameters

|  |  |
| --- | --- |
| Field | Description |
| TrainID | integer (required) |

### Response

{  
 /\* axles data \*/  
}

### curl Example

curl -i -u "username:password" -H "Accept: application/json" -X GET "<BASE\_URL>/api/Train/Axles?TrainID=1234"

## 12. /api/Site/RunCommands

|  |  |
| --- | --- |
| Field | Description |
| Method | POST |
| Description | Runs a system command. |
| Authentication | Required (HTTP Basic) |
| Path | /api/Site/RunCommands |

### Request Headers

|  |  |
| --- | --- |
| Field | Description |
| Authorization | Basic <base64(username:password)> |
| Content-Type | application/json |
| Accept | application/json |

### Request Body

{  
 "command": "your-command-here"  
}

### Response

{  
 "result": "Success"  
}

### curl Example

curl -i -u "username:password" -H "Content-Type: application/json" -d '{ "command": "your-command-here" }' -X POST "<BASE\_URL>/api/Site/RunCommands"

### Notes

Ensure appropriate server-side validation and authorization to prevent command injection or misuse.

## 13. /api/Maintenance/UploadSoftware

|  |  |
| --- | --- |
| Field | Description |
| Method | POST (multipart/form-data) |
| Description | Uploads a software file to the server. |
| Authentication | Required (HTTP Basic) |
| Path | /api/Maintenance/UploadSoftware |

### Request Headers

|  |  |
| --- | --- |
| Field | Description |
| Authorization | Basic <base64(username:password)> |
| Content-Type | multipart/form-data |
| Accept | application/json |

### Request Body

<Multipart form with a file field named "file">

### Response

{  
 "result": "Successfully updated"  
}

### curl Example

curl -i -u "username:password" -F "file=@/path/to/your\_file.bin" -X POST "<BASE\_URL>/api/Maintenance/UploadSoftware"

# Security Considerations

• Always use HTTPS to protect credentials in transit.

• Use least-privilege accounts and rotate credentials regularly.

• Validate and sanitize inputs, especially for endpoints that accept commands or configuration.

• Return appropriate HTTP status codes and avoid leaking sensitive details in error messages.

• Consider implementing rate-limiting and audit logging for administrative endpoints.

# Appendix: Creating a Basic Authorization Header

To generate the value for the Authorization header:

# Pseudocode  
token = base64\_encode(username + ":" + password)  
header = "Authorization: Basic " + token