

Movicon.NExT and Plantweb Optics Data Lake

Integration Guide



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Contents

Chapter 1	Introduction.....	5
	1.1 Purpose.....	5
	1.2 Where to get help.....	6
	1.3 Emerson documentation.....	7
	1.4 System Requirements.....	8
	1.5 Security summary.....	9
Chapter 2	Install Plantweb Optics Data Lake components.....	11
	2.1 Install Plantweb Optics Data Lake.....	13
	2.2 Create a Connector object.....	15
	2.3 Add a data source.....	16
Chapter 3	Configure OPC UA components.....	19
	3.1 Create the OPC UA TCP server.....	19
	3.2 Create OPC UA TCP server endpoint.....	20
	3.3 Configure TCP server endpoint security settings.....	21
	3.3.1 Security settings for Movicon.NExT Web App.....	22
	3.4 Certificate management.....	22
Chapter 4	Install Movicon.NExT	25
	4.1 Obtain Movicon.NExT license and installation file.....	25
	4.2 Install and configure Movicon.NExT software.....	26
	4.3 Add Movicon.NExT UA client certificate	28
Chapter 5	Validate Plantweb Optics Data Lake and Movicon.NExT integration.....	29
	5.1 Create Movicon.NExT project.....	29
	5.2 Use OPC UA Browser to connect data items to project.....	30
	5.3 Movicon.NExT project deployment requirements and one-time actions.....	31
	5.4 Deploy Movicon.NExT project Web Client and Web App.....	32
	5.4.1 Deploy Movicon.NExT Web Client (WPF/HTML5).....	32
	5.4.2 Deploy Movicon.NExT Web App.....	34
Appendix A	Security Recommendations.....	37
	A.1 OPC UA server security.....	37
	A.2 Movicon.NExT security.....	37
Appendix B	Documentation resources.....	39
	B.1 Plantweb Optics Data Lake help.....	39
	B.2 Movicon.NExT documentation.....	40
Glossary	41
Index	45

1 Introduction

This guide provides you with a high-level overview of the steps needed to integrate data in Plantweb Optics Data Lake with a corresponding Movicon.NExT supervisory project. The Movicon.NExT supervisory project can display the project using an HTML5-compliant browser. See Related information for an example Movicon.NExT test project.

Note

This guide provides you links to the relevant documentation sections for:

- [Plantweb Optics Data Lake Help](#)
- [Movicon.NExT QuickStart and Tutorial](#)
- [Movicon.NExT Help](#)

Using these documentation links, you can access detailed instructions to perform each major step of the integration procedure.

The tested HTML5 compatible web client for displaying your Movicon.NExT project is WebClient (WPF/HTML5). It uses Microsoft Internet Information Services (IIS) and displays Movicon.NExT graphics using Windows Presentation Format. It is compatible with several desktop and mobile operating systems.

Related information

[Purpose](#)

[Where to get help](#)

[Emerson documentation](#)

[System Requirements](#)

[Security summary](#)

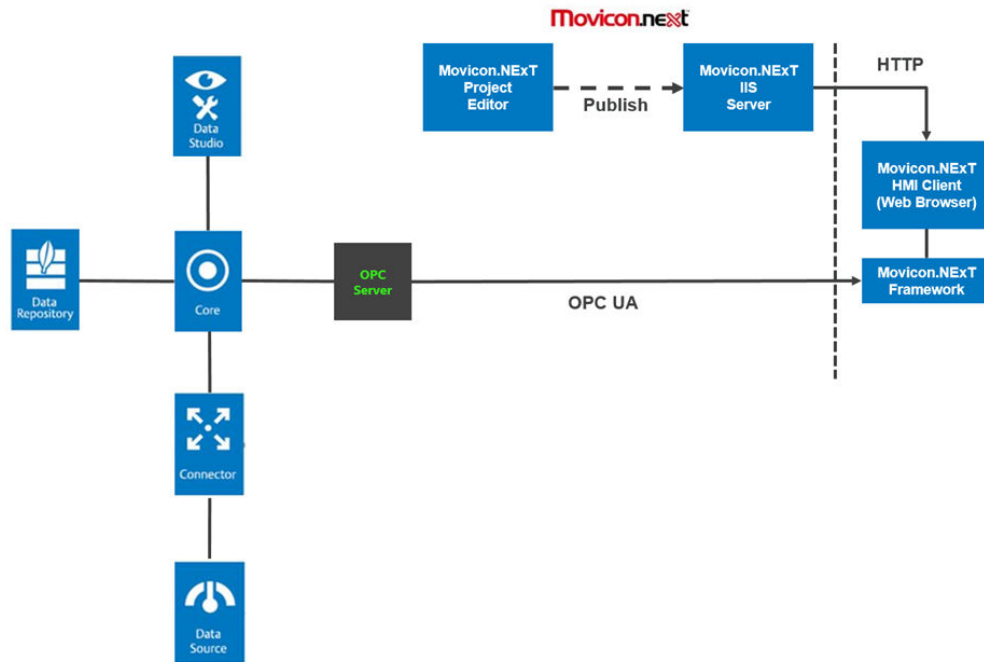
1.1 Purpose

For details about each major step, see Related information.

To provide the data from Plantweb Optics Data Lake to a Movicon.NExT project displayed in an HTML5-compliant browser, you need to:

1. Install the Optics Data Lake product (if not already installed).
2. Configure the OPC UA components.
3. Install the Movicon.NExT software.
4. Validate the Optics Data Lake and Movicon.NExT integration.

Figure 1-1: Optics Data Lake and Movicon.NExT project integration



Related information

- [Install Plantweb Optics Data Lake components](#)
- [Configure OPC UA components](#)
- [Install Movicon.NExT](#)
- [Validate Plantweb Optics Data Lake and Movicon.NExT integration](#)

1.2 Where to get help

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Email	guardian.gsc@emerson.com
Internet	http://www.emerson.com/en-us/contact-us

To search the Emerson website for product documentation, visit <http://www.emerson.com>.

To view toll free numbers for specific countries, visit <http://www.emerson.com/technicalsupport>.

Related information

- [Security Recommendations](#)

[Emerson documentation](#)
[Documentation resources](#)

1.3 Emerson documentation

Documentation groups

Throughout this guide, Emerson refers to several sets of documentation:

- *Plantweb Optics Data Lake Help*—access using the Guardian website as part of the Plantweb Optics documentation set. Once you perform the Optics Data Lake installation, you can access the help anywhere that the Plantweb Optics Data Lake DataStudio client runs (access the **Help** menu).
- *Movicon.NExT*—access using the Emerson website.

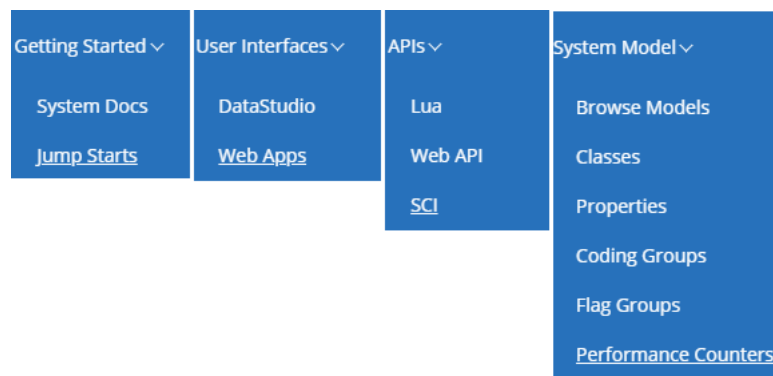
Using Guardian to reach the Plantweb Optics Data Lake documentation.

1. Login to the Guardian site using the URL <https://guardian.emerson.com/>. Sign in with your **Email Address** and **Password**. Select preferred **Language**. Click **SIGN IN**.
2. Click **Support** (telephone icon).
3. Click **Resources** (last on the **Support** menu).
4. Under PLANTWEB OPTICS, select *Plantweb Optics Data Lake Help* to access the *System Docs* portion of the Help.

Tip

To quickly access other key sections of the Plantweb Optics Data Lake Help, use the selection menus on the top, right side of the help browser page.

Figure 1-2: Plantweb Optics Data Lake Help - quick links



Access the Movicon.NExT documentation.

1. Using a browser, click this URL to display the *Movicon.NExT Manuals* page: <https://www.progea.com/manuals/?lang=en>
2. Scroll down the page and click the left downward arrow by the *Movicon.NExT - Quick Start Guide* title.

3. Click the arrow under **Download** to transfer the latest edition to your local PC.
4. Click the left downward arrow by the *Movicon.NExT - Help* title.
5. Click the arrow under **Download** to transfer the latest edition (compressed file) of the help.
6. Using a browser, click this URL to display the *Getting Started with Movicon.NExT* page: <http://www.movicon.info/TutorialNExT/en-US/#t=Introduction%2FIntroduction.htm>

Related information

[Documentation resources](#)
[Security Recommendations](#)

1.4 System Requirements

Plantweb Optics Data Lake Installation

Check that your server meets the requirements stated in the *Plantweb Optics Data Lake Help*.

1. Access the installation requirements using the Guardian link: [System Docs](#)
2. Navigate the Optics Data Lake Help topic tree: System Docs > Installation Guide > Windows Installer Setup > Simple Setup > System Requirements

Use 4.0.1 or a later version for the Movicon.NExT Installation

Check that your server meets the requirements stated in the *Movicon.NExT Quick Start Guide*.

Note

Minimum testing of Movicon.NExT software version 4.1 was done for this integration with Plantweb Optics Data Lake.

You can access this document using these steps:

1. Using a browser, click this following URL to display the *Movicon.NExT Manuals* page: <https://www.progea.com/manuals/?lang=en>
2. Scroll down the page and click the left downward arrow by the *Movicon.NExT - Quick Start Guide* title.
3. Click the arrow under **Download** to transfer the latest edition to your local PC.

Check the Movicon.NExT system requirements found in these tables:

- Server Requirements
- WebClient Requisites (WPF/HTML5)

Plantweb Optics Data Lake System Requirements

For a small number of assets (less than 1,000) and tags, Plantweb Optics Data Lake, its Core services, and the Data Repository (MongoDB) can be co-located on the same server.

As the number of assets increases (more than 1,000) the Optics Data Lake server requires more cores and a separate server to use for the repository (MongoDB).

Table 1-1: System Requirements for less than 1,000 assets and 1,000-10,000 assets

Component (Assets)	Processor	Memory	Disk	Disk Type	Operating System
Plantweb Optics Server (1K)	2.4 GHz, 4-core Intel Xeon (64-bit)	16 GB	100 GB	SSD SAS	Windows Server 2019/2016 Datacenter Windows Server 2019/2016 Standard
OPC Server	2.4 GHz, 4-core Intel Xeon (64-bit)	8 GB	100 GB	SAS	Windows Server 2019/2016 Datacenter Windows Server 2019/2016 Standard Windows Server 2012 R2 Datacenter/Standard
Plantweb Optics Server (1K-10K)	2.4 GHz, 8-core Intel Xeon (64-bit)	32 GB	100 GB	SSD SAS	Windows Server 2019/2016 Datacenter Windows Server 2019/2016 Standard
MongoDB Server	2.4 GHz, 4-core Intel Xeon (64-bit)	16 GB	100 GB	SSD SAS	Windows Server 2019/2016 Datacenter Windows Server 2019/2016 Standard
OPC Server	2.4 GHz, 4-core Intel Xeon (64-bit)	8 GB	100 GB	SAS	Windows Server 2019/2016 Datacenter Windows Server 2019/2016 Standard Windows Server 2012 R2 Datacenter/Standard

Related information

[Security Recommendations](#)

1.5 Security summary

To safely integrate your Movicon.NExT project with Plantweb Optics Data Lake OPC UA server, consider the following recommendations.

Movicon.NExT Project Files

Emerson strongly recommends that you protect Movicon.NExT project files from unauthorized access by providing a project password. By encrypting the project files and resources, you remove a potential point of access.

OPC UA Communication

To adequately secure data transfers with the OPC UA protocol, use the following settings:

- **Security Mode**—Use `Sign` or `Sign And Encrypt`. This ensures that the server enforces authentication at the application level. The `Sign` mode provides communication integrity. Using the `Sign And Encrypt` mode provides both data confidentiality and integrity.

Important

Emerson strongly recommends that you avoid using the `None` mode, a total lack of data protection.

- **Security Policy**—If your OPC UA server supports the `Basic256Sha256` policy, use it for minimum security. A good client connection strategy is to start with the most secure security profile available. Check if the server supports this security policy. Continue to try less secure policies until you find a security policy that works. Emerson strongly recommends avoiding weaker security policies, such as `SHA-1`.
- **Authentication**—Use credential-based or certificate-based authentication. Emerson strongly recommends not using an *Anonymous* connection when accessing critical OPC UA server resources.

Restriction

Due to the `Movicon.NExT` licensing constraints, your OPC Server security settings may not be as restrictive as you want.

Movicon.NExT WebClient (Server Settings)

Emerson has recommended OPC UA Server endpoint settings for the WebClient (WPF/HTML5), an IIS solution with less graphics resolution, but is compatible with multiple desktop and mobile operating systems. (See Related information for details.)

Related information

[Configure TCP server endpoint security settings](#)
[Security settings for Movicon.NExT Web App](#)

2 Install Plantweb Optics Data Lake components

This section briefly touches on installing the Plantweb Optics Data Lake components.

Note

If you have previously installed Plantweb Optics Data Lake, you can proceed to configure the connector data source. In this document, the data source is a Prosys OPC UA simulator that provides data to Plantweb Optics Data Lake. See Related information for details.

Installing the Plantweb Optics Data Lake Server components includes:

- Core service
- DataStudio client application
- MongoDB (repository)
- Web API (interface)
- OPC components

Figure 2-1: Plantweb Optics Data Lake generic components

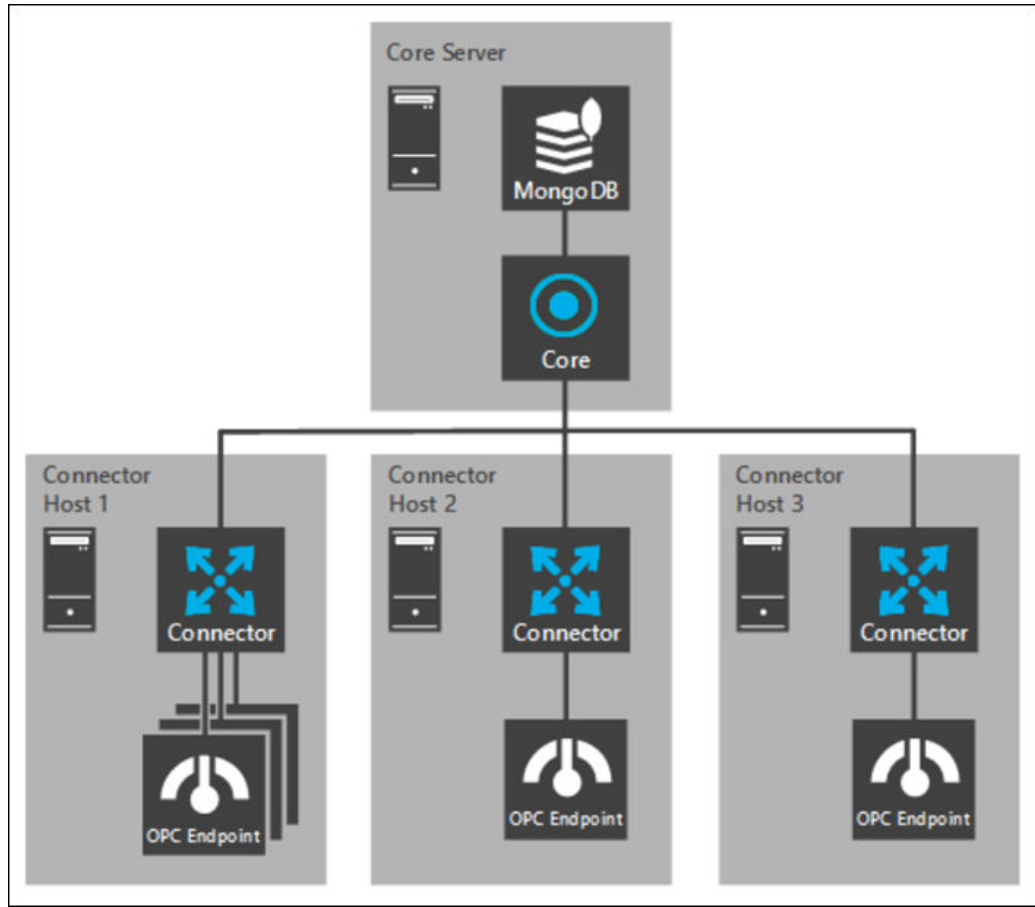
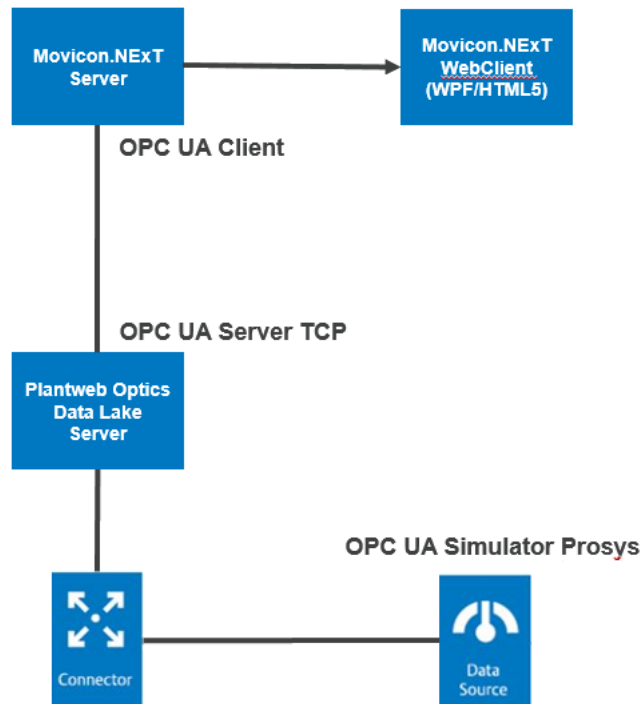


Figure 2-2: Implementation of simulated OPC UA Data for Plantweb Optics Data Lake



In this document, the data source is a Prosys OPC UA simulator that provides data to Plantweb Optics Data Lake. See Related information for details.

To create the OPC UA server that integrates data with Movicon.NExT:

1. Run the Optics Data Lake installation software (unless already done).
2. Add the OPC UA TCP Server to the Optics Data Lake Core through the Plantweb Optics Server service.
3. Add a Server (service) to respond to Movicon.NExT client requests for OPC UA data.

Related information

[Install Plantweb Optics Data Lake](#)

[Create a Connector object](#)

[Add a data source](#)

[Configure OPC UA components](#)

2.1 Install Plantweb Optics Data Lake

Important

This setup should only be used for initial testing, training, and demonstration purposes. For installations in production environments, it is necessary to consider system design and component distribution before installation. Please contact Product Support for advice on production installations.

Prerequisites

- Determine if your Optics Data Lake server meets the minimum requirements defined in the *Plantweb Optics Data Lake Help*.
- Access the *Plantweb Optics Data Lake Help* with a browser by using the Emerson Guardian link: [System Docs](#).
- Navigate the *Plantweb Optics Data Lake Help* topic tree: System Docs > Installation Guide > Windows Installer Setup > Simple Setup > System Requirements.
- Obtain the installation file (P1antwebOpticsOTDLSetup.exe) using the license email you received.

⚠ CAUTION

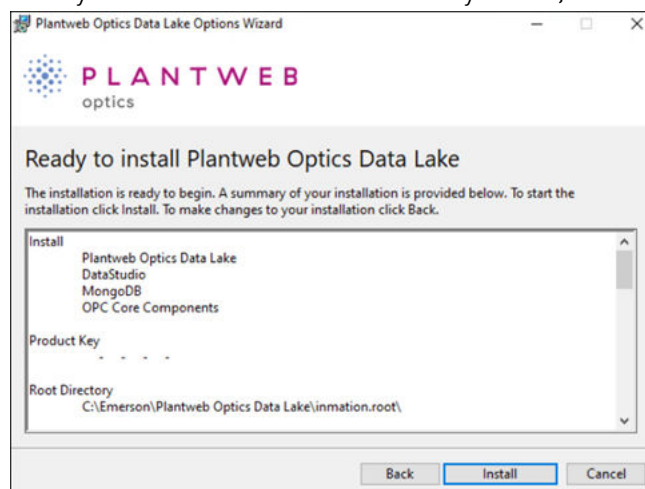
Emerson strongly recommends that you copy the installation setup file to a *local drive* before beginning the installation setup. Running the setup from a network drive may lead to problems during installation. Also, using a network drive can affect your results when attempting to uninstall the Plantweb Optics Data Lake.

Note

The Plantweb Optics Windows Installer automatically adds Microsoft® .NET v4.6.2 software, unless it is already installed on the host machine.

Procedure

1. Copy the installation file to a folder on the Optics Data Lake server.
2. Access the *Plantweb Optics Data Lake Help* with a browser by using the Emerson Guardian link: [System Docs](#).
3. Navigate the *Plantweb Optics Data Lake Help* topic tree: System Docs > Installation Guide > Windows Installer Setup > Simple Setup.
4. Follow the installation instructions in that section of the topic.
5. Once you reach the installation summary screen, click **Install**.



6. Access the *Plantweb Optics Data Lake Help* with a browser by using the Emerson Guardian link: [System Docs](#).
7. Navigate the *Plantweb Optics Data Lake Help* topic tree: System Docs > Installation Guide > Right After First Installation.
8. Follow the instructions in this help topic to set up your username and password.

Related information

[Plantweb Optics Data Lake help](#)

2.2 Create a Connector object

Note

If you created a Connector object, added the data source, and configured the Server service, you can proceed with configuring the data source. See Related information for details.

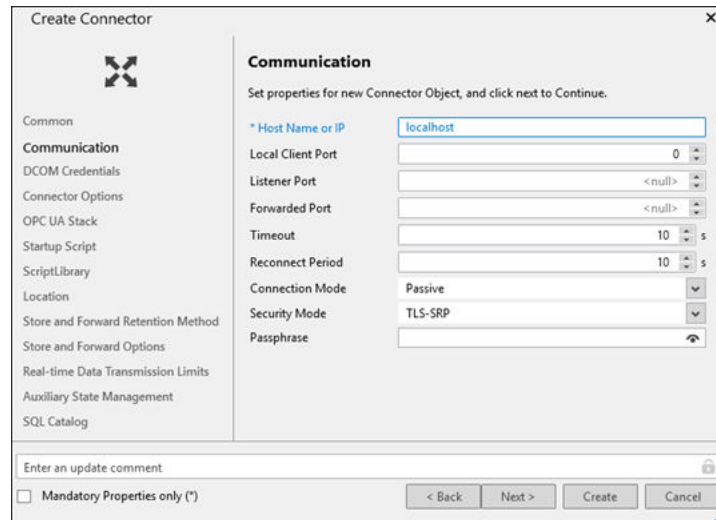
Prerequisites

- You completed the Plantweb Optics Data Lake installation using the Windows installer.
- You have system owner (so) rights or equivalent administrator permissions.
- You viewed the DataStudio Docs > Infrastructure Hands On > I/O Model Hands On > How to add a Connector topic in the *Plantweb Optics Data Lake Help*.
- The initial System object is part of the I/O Model.

Procedure

1. Click the DataStudio **System** → **Connect** to call the login dialogue that connects you to the Plantweb Optics Data Lake Core service.
2. Right-click the **Core** object and select the **Admin** → **New** → **Services** → **Connector** command.
3. Enter a name and a description (optional) in the **Object Name** and **Object Description** fields in the **Common** properties area.

Figure 2-3: Create Connector object under the Core service



4. Select **Communication** area to configure the Connector properties.
5. Set **Host Name** to `localhost`. **Caution:** You can create only one **local** connector on the same host as the Core. Adding multiple local connectors causes disconnection from the Core and displays an error message.
6. Select **Passive** for the **Connection Mode**.
7. Select **TLS-SRP** (Transport Layer Security Secure Remote Password) for the **Security Mode**.
8. Click **Create**.
The Connector object displays as a child object of the Core in the I/O Model.

Postrequisites

Add a data source.

Related information

[Configure OPC UA components](#)
[Install Plantweb Optics Data Lake](#)

2.3 Add a data source

Note

If you created a Connector object, added the data source, and configured the Server service, you can proceed with configuring the data source. See Related information for details.

Prerequisites

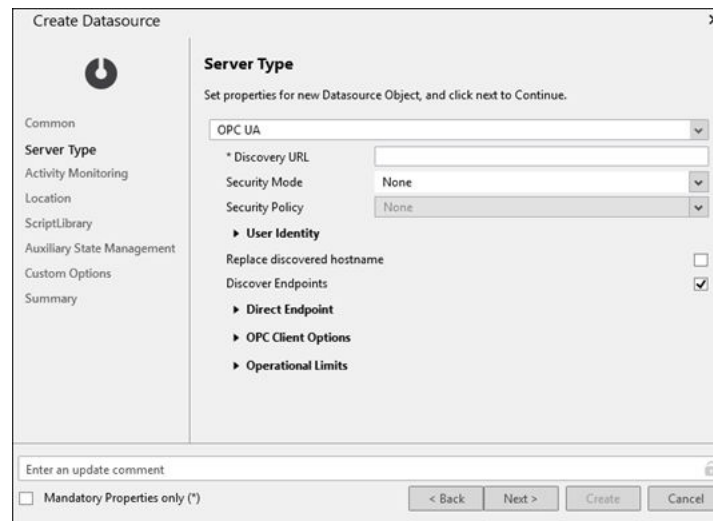
- You completed the Plantweb Optics Data Lake installation using the Windows installer.
- You have system owner (**so**) rights or equivalent administrator permissions.

- You created a Connector object. See Related information for details.
- You viewed the DataStudio Docs > Infrastructure Hands On > I/O Model Hands On > How to connect to an OPC UA Datasource topic in the *Plantweb Optics Data Lake Help*.

Procedure

1. Use Optics Data Lake DataStudio to add the Datasource object under the Connector object.
2. Right-click the Connector object and select the **Admin** → **New** → **External Interfaces** → **Datasource** command.
3. Enter a name and a description (optional) in the **Object Name** and **Object Description** fields in the **Common** properties area.

Figure 2-4: Create the Datasource object for the OPC UA server under the Connector object



4. Select the **Server Type** area to configure the Datasource Object properties.
5. Use the selection list to choose the OPC UA server type.
6. Optional: Enter the **Discovery URL**.
For OPC UA servers that are not automatically discovered, the endpoint URL must be entered. The usual form is `opc.tcp:<hostmachine name>:<port number>`
7. Select **None** for the **Security Mode**.
8. Click **Create**.
The Datasource object displays in the I/O Model.

Postrequisites

Proceed to install the Server service.

Related information

[Install Plantweb Optics Data Lake](#)
[Create a Connector object](#)

Configure OPC UA components

3 Configure OPC UA components

To configure the OPC UA components (see Related information for details), you need to:

1. Enable OPC UA Host server and Add OPC UA TCP server.
2. Create an OPC UA TCP server endpoint.
3. Define the server endpoint security requirements. Use the Emerson recommend security settings for the Web App.
4. Place an OPC UA Client certificate in the Plantweb Optics Data Lake certificates folder.

Related information

[Create the OPC UA TCP server](#)

[Create OPC UA TCP server endpoint](#)

[Configure TCP server endpoint security settings](#)

[Security settings for Movicon.NEXt Web App](#)

[Certificate management](#)

[Plantweb Optics Data Lake help](#)

3.1 Create the OPC UA TCP server

Use this task to set up a specific security and user token policy for the OPC UA TCP Server.

Prerequisites

- You installed the Plantweb Optics Data Lake core components.
- You accessed the OPC UA Server configuration instructions using the Guardian link: [System Docs](#).
- You navigated the *Plantweb Optics Data Lake Help* topic tree: System Docs > System Services > The Server Service > OPC UA Server.

Procedure

1. Follow the instructions in System Docs topic path—System Docs > System Services > The Server Service > OPC UA Server.
2. Go Server Model tab and enable the default server. Right-click and select **Admin** → **Enable** → **Object**.
3. Create an OPC UA TCP Server. Select the enabled Host Machine in the Server Model.
4. Right-click and select **Admin** → **New** → **OPC UA TCP Server** to open the Create Object wizard.
5. Enter the name for the OPC UA Server in Object Name. Click **Next**.
6. On the **Communication** page, enter another default **Listener Port** when you cannot use the 4840 default.
7. Click **Create** to finish the OPC UA TCP Server object in the Server Model.

Postrequisites

1. Create the OPC UA TCP Server endpoint.
2. Configure OPC UA TCP Server Endpoint certificate Trust mode, message security mode, and user token policies. See Related information for details.
3. Manage the certificates for the OPC UA Server and the UA Client (Movicon.NExT). See Related information for details.

Related information

[Create OPC UA TCP server endpoint](#)
[Certificate management](#)

3.2 Create OPC UA TCP server endpoint

Create the OPC UA TCP Server endpoint to define the security policies and modes for transferring data to the UA client (Movicon.NExT).

Prerequisites

- You installed the Plantweb Optics Data Lake core components.
- You created an OPC UA TCP Server and configured the server.
- You accessed the OPC UA TCP server endpoint creation instructions using the Guardian link: [DataStudio Docs](#).
- You navigated the *Plantweb Optics Data Lake Help* topic tree: DataStudio Docs > Infrastructure Hands On > Server Model Hands On > Connecting to the system's OPC UA Server > Creating an Endpoint.
- Follow your company conventions for naming the OPC UA TCP Server and its endpoint.

Procedure

1. Select the OPC UA TCP Server object in the Server Model.
2. Right-click and select **Admin** → **New** → **OPC UA TCP Server Endpoint** to start the Create Object wizard.
3. Enter the name for the Endpoint object. Click **Next**.
4. Provide the following information:
 - a) **Endpoint Path**–Optional to define. When you select an endpoint name, that name becomes part of the endpoint URL.
For example, the endpoint `myendpoint`, would result in the UA client (Movicon.NExT) using the endpoint URL-`opc.tcp://hostmachine:4840/myendpoint`.
 - b) **User Token Policies**–Start with an **Anonymous Policy** first that uses the system owner credentials. Later you will switch to a User Name Policy for appropriate security.

Figure 3-1: UA TCP Server endpoint security policies

The screenshot shows a configuration window for UA TCP Server endpoint security policies. The fields are as follows:

Endpoint Path	opc.tcp://TEVW01JT2-DL01:4840
Security Policy	None
Security Mode	None
Security Level	1
▼ User Token Policies	
▼ Anonymous Policy	
Enable	<input type="checkbox"/>
Profile	
Password	<input type="password"/>
▼ User Name Policy	
Enable	<input type="checkbox"/>
Security Policy	None

5. Click **Create** to add the OPC UA TCP Server Endpoint object in the Server Model.

Related information

[Configure TCP server endpoint security settings](#)
[Certificate management](#)

3.3 Configure TCP server endpoint security settings

Endpoints are created below OPC UA server instances and specify the security policy, message security mode, and the supported set of user token policies for connection to the UA server.

Important

When you disable the **Anonymous Policy** (User Token), the Web app does not work.

Prerequisites

- You installed the Plantweb Optics Data Lake core components.
- You placed an OPC UA Datasource under the Server object.
- You have chosen to use the Web App and the WPF/HTML5 web client.
- You created an OPC UA TCP server endpoint for this server. See Related information for details.

Procedure

1. Select the OPC UA TCP Server and set the **Trust Mode** in the Certificate Management to **Trust**.
2. Select the OPC TCP UA Server Endpoint. See Related information for details.
3. For the Web app, use the [Security settings for Movicon.NEXt Web App](#).

Related information

[Create OPC UA TCP server endpoint](#)

3.3.1 Security settings for Movicon.NEXt Web App

Use these Plantweb Optics Data Lake security settings to configure the TCP Server endpoint to work with the Movicon.NEXt Web App. This web client portion works using multiple desktop and mobile device browsers with a Movicon.NEXt project published with Microsoft Internet Information Server (IIS).

Table 3-1: Security settings for Movicon.NEXt Web App

Security Policies	Web App
<p>▼ Communication</p> <p>Endpoint Path <input type="text"/></p> <p>Security Policy Basic256Sha256 ▼</p> <p>Security Mode Sign And Encrypt ▼</p> <p>Security Level <input type="text" value="1"/></p>	Works independent of Security Policy or Security Mode setting.
<p>▼ User Token Policies</p> <p>▼ Anonymous Policy</p> <p>Enable <input checked="" type="checkbox"/></p> <p>Profile <input type="text" value="so"/></p> <p>Password <input type="password" value="•••••"/></p>	<i>Must enable Anonymous Policy to work.</i>
<p>▼ User Name Policy</p> <p>Enable <input checked="" type="checkbox"/></p> <p>Security Policy Basic256Sha256 ▼</p>	Works independent of Security Policy setting.

3.4 Certificate management

For details about Plantweb Optics Data Lake certificate management:

1. Access the certificate management instructions using the Guardian link: [DataStudio Docs](#).
2. Navigate the *Plantweb Optics Data Lake Help* topic tree: DataStudio Docs > Infrastructure Hands On > Server Model Hands On > Connecting to the system's OPC UA Server > Security Policies and Modes, and Certificate Management.

For a successful secure client connection, the UA client certificate needs to be manually copied into the following folder: C:\Emerson\Plantweb Optics Data Lake\inmation.root\certificates\certs

For the Movicon.NEXt client, the OPC UA Client certificate:

- Security certificate file–Platform.NEXt.v2 MoviconNEXt[*your GUID*].der
- Movicon.NEXt platform folder name–C:\ProgramData\OPC Foundation\CertificateStores\MachineDefault\certs

You may need to manually install the UA server certificate in the client's public key infrastructure. The UA server certificate is located at: C:\Emerson\Plantweb Optics Data Lake\inmation.root\certificates\public

Related information

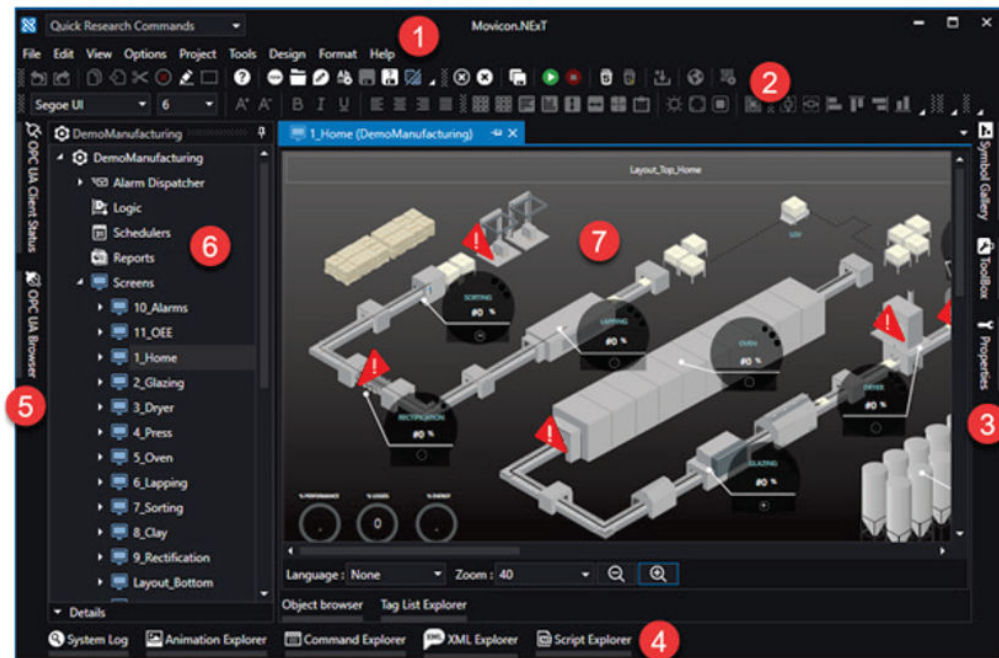
[Add Movicon.NEXt UA client certificate](#)

4 Install Movicon.NExT

To install Movicon.NExT you need to:

1. Obtain the Installation file using the instructions sent with your license email.
2. Run the Movicon.NExT installer and follow the screen instructions.
3. Add a UA client certificate in the Plantweb Optics Data Lake certificates folder.

Figure 4-1: Example Movicon.NExT project interface



Related information

- [Obtain Movicon.NExT license and installation file](#)
- [Install and configure Movicon.NExT software](#)
- [Add Movicon.NExT UA client certificate](#)
- [Movicon.NExT documentation](#)

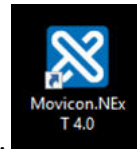
4.1 Obtain Movicon.NExT license and installation file

The procedure describes receiving your Movicon.NExT license email. It contains:

- Movicon.NExT License Type and its KeyCode you provide the **License Manager** in the Movicon.NExT program.
- Link to the site where you can download the Movicon.NExT installation file.

Procedure

1. Display the email from Emerson that was sent to you after you made your Movicon.NExT license purchase.
2. Click the link where you can download the Movicon.NExT (v4.0.1 or later) installation file, *MoviconNextSetup.exe*, from your Emerson license email.
3. Check the installation requirements by referring to the *Movicon.NExT - Quick Start Guide*. See Related information for details.
4. Run the installation file and set up the program. See the details in the following task.



5. Start the Movicon.NExT software.
6. On the Movicon.NExT menu, select **Options** → **License** → **License Manager**.
7. When the **KeyCode** window displays, enter the KeyCode from your Emerson license email.

Related information

[Movicon.NExT documentation](#)

4.2 Install and configure Movicon.NExT software

This procedure runs the Movicon.NExT installation software to create the Client Runtime server and the WebClients to display projects.

Prerequisites

- You have obtained the Movicon.NExT (v4.0.1 or later) installation file (*MoviconNextSetup.exe*) and the license key from your Emerson email.

Note

Minimum testing of Movicon.NExT software version 4.0 was done for this integration with Plantweb Optics Data Lake.

- You have administrative rights to this server.
- Server meets hardware and software requirements defined in *Movicon.NExT QuickStart* > Server Requirements.
- WebHMI meets hardware and software requirements defined in *Movicon.NExT QuickStart* > WebHMI Runtime Requisites
- Web Client meets hardware and software requirements defined in *Movicon.NExT QuickStart* > Web Client Requisites (WPF/HTML5)

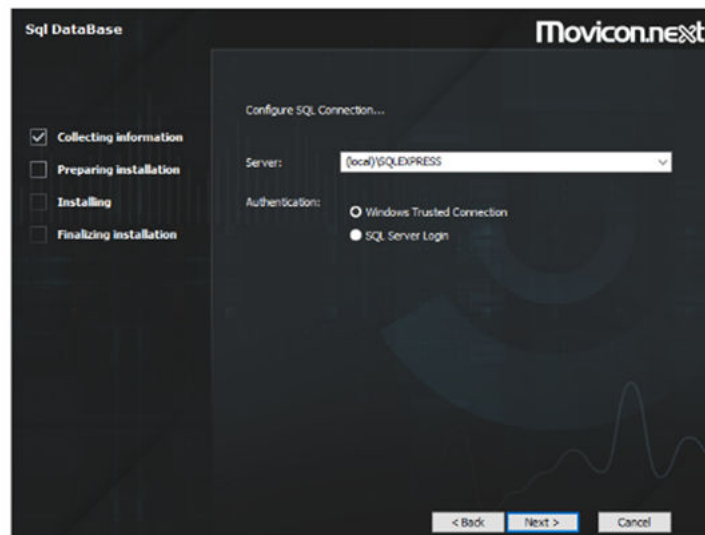
Note

Unless otherwise instructed, after making selections in each window of the Movicon.NExT installation setup, click the **Next** button.

Procedure

1. Select `MoviconNextSetup.exe` file. Right-click and select the **Run as administrator** command.
2. For the interface language, select EN.
3. Select Movicon.NEXT (version) Setup.
4. Run the Prerequisite Wizard.
Displays the missing prerequisite software.
5. Click **Next** to install any missing .NET software
6. Accept the **Microsoft.NET Framework** license. Click **Install**.
The Microsoft.NET Framework installs.
7. Click **Finish**.
8. Click **Restart Now**.
Movicon.NEXT continues Installation with SQL Server Express (x64).
9. Select SQL Express for the **Server** and **Windows Trusted Connection** for **Authentication** policy.

Figure 4-2: SQL Express select and authentication



10. Accept Movicon.NEXT End-User Agreement. Choose **Accept**.
11. For **Additional Languages**, clear German and Italian resources, unless needed.
12. SQL Database Set Server and Authentication use the Default: **Windows Trusted Connection**.
13. Choose the **Typical Setup Type**.
14. For the Help Setup, install Help locally.
15. Ready to Install. Click **Install**.
16. Click **Finish**.
17. For the Help Set Up Set language, leave the default.

18. For the Select Help language, clear Italian and German, unless needed.
19. For Help set up, click **Finish**.

Postrequisites

Install the Movicon.NExT UA client security certificate on the Optics Data Lake OPC UA Server.

Related information

[Movicon.NExT documentation](#)

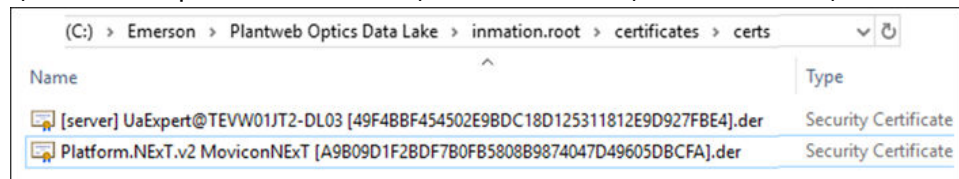
4.3 Add Movicon.NExT UA client certificate

For a successful secure client connection, the Movicon.NExT UA client certificate needs to be manually copied to the Plantweb Optics Data Lake Server certificates folder.

A self-signed certificate can be created using the OPC Foundation Configure OPC UA tool. Once a certificate is created, you can manually download the certificate to your local ProgramData files. For details about self-signed certificates, see [Manually creating OPC UA self-signed certificates](#).

Procedure

1. Copy the Movicon.NExT client certificate from the platform folder–C:\ProgramData\OPC Foundation\CertificateStores\MachineDefault\certs.
2. Paste the OPC UA client certificate into the Data Lake server folder–C:\Emerson\Plantweb Optics Data Lake\inmation.root\certificates\certs.



Related information

[Plantweb Optics Data Lake help](#)
[Certificate management](#)

5 Validate Plantweb Optics Data Lake and Movicon.NExT integration

To test that a Movicon.NExT project can access asset tags from the Plantweb Optics Data Lake involves:

1. Creating a minimal Movicon.NExT project.
2. Defining a client-side connection to associate Movicon.NExT graphic elements with the Optics Data Lake items. The WebClient (WPF/HTML5) App uses the OPC UA Browser. This method associates the project graphic elements directly with the items of the OPC UA Server.
3. Determining that you meet the run-time requirements and have performed one-time steps to deploy the Movicon.NExT project.
4. Deploying both the Movicon.NExT project client (WPF/HTML5) and app (the service) components.

Related information

[Create Movicon.NExT project](#)

[Use OPC UA Browser to connect data items to project](#)

[Movicon.NExT project deployment requirements and one-time actions](#)

[Deploy Movicon.NExT Web App](#)

[Movicon.NExT documentation](#)

5.1 Create Movicon.NExT project

While creating and designing Movicon.NExT projects is outside the scope of this document, creating a simple project validates the integration of your Plantweb Optics Data Lake and Movicon.NExT installations.

Prerequisites

To put together a validation Movicon.NExT project, you want to refer to the Related information for detailed procedures found in the Movicon.NExT documentation.

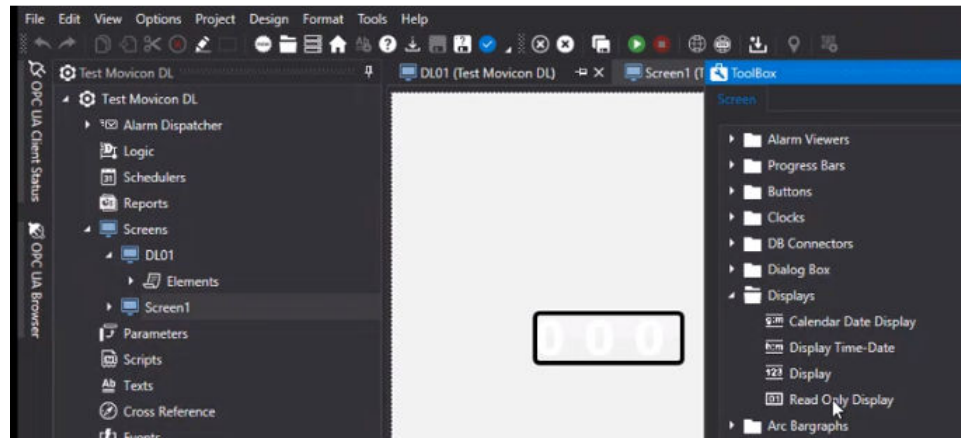
- *Movicon.NExT - Help*
- *Getting Started with Movicon.NExT* web page: <http://www.movicon.info/TutorialNExT/en-US/#t=Introduction%2FIntroduction.htm>

A high-level outline for creating a Movicon.NExT project would include:

Procedure

1. Create a Movicon.NExT project using the **Empty Object Wizard**.
2. Select **Local Project** and follow the wizard instructions. Click **Finish**.
3. Add New Screens.
4. Add Objects using **Symbol Gallery** → **Add items from Toolbox**.

Figure 5-1: Adding objects to Movicon.NExT project



5. Arrange the objects and configure each object's properties.
6. Save the Movicon.NExT project.

Related information

[Movicon.NExT documentation](#)

5.2 Use OPC UA Browser to connect data items to project

You associate Movicon.NExT project elements with Plantweb Optics Data Lake data items using the OPC UA Browser software. This associates the project graphic elements directly with OPC UA server data items.

Prerequisites

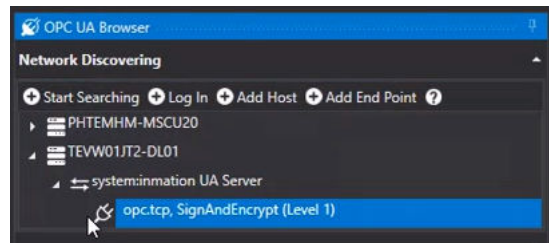
- You have created a Movicon.NExT project with graphical elements (values or animations).
- You have existing data items on the OPC UA Server (Plantweb Optics Data Lake).

Do the first six steps for each Movicon.NExT project object you need to connect to a data source.

Procedure

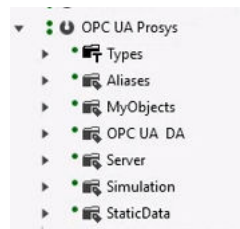
1. On the Movicon.NExT project screen, select a project Object.
2. Right-click and select **Tag**.
3. Select the **OPC UA Browser** → **Network Discovering** → **Add Host**.
4. Double click the Plantweb Optics Data Lake **Endpoint**.

Figure 5-2: Selecting the OPC UA server endpoint



5. Expand the tree Hierarchy.

Figure 5-3: Expand the OPC UA server endpoint



6. Select the Optics Data Lake item and click **OK**.
7. **Save** the Movicon.NExT project.
8. Start the Movicon.NExT Client Runtime.

Postrequisites

Deploy your project as a web client app.

Related information

[Movicon.NExT documentation](#)

5.3 Movicon.NExT project deployment requirements and one-time actions

Project deployment requirements

- You have created a Movicon.NExT project. See Related information for details.
- You associated project graphical elements with data items from the OPC UA Server (Optics Data Lake) using the OPC UA Browser. See Related information for details.
- You saved the Movicon.NExT project and started the Movicon.NExT Client Runtime.
- The computer used to download the web client app is running Windows 10 version or later OS

Project deployment one-time actions

1. The Windows Internet Information Services (IIS) are installed. Start the IIS services.

2. Enable the TCP port 8089 to pass data through your firewall or anti-virus software.
3. Download the Movicon.NExT WebClient app from this Internet site: <https://www.microsoft.com/en-us/p/webclient-next/9nblggh4rz75?activetab=pivot:overviewtab>.

Related information

[Create Movicon.NExT project](#)

[Use OPC UA Browser to connect data items to project](#)

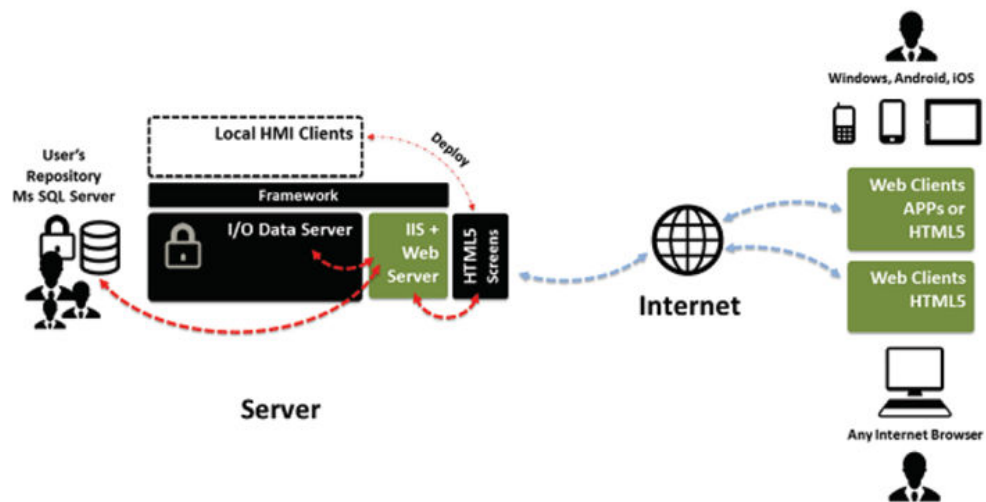
[Deploy Movicon.NExT Web App](#)

5.4 Deploy Movicon.NExT project Web Client and Web App

In these next tasks, you deploy the client and service components of the web client:

- WebClient (WPF/HTML5) that is published to an IIS server.
- Web App that acts as a service and provides OPC UA data to the Movicon.NExT screen elements.

Figure 5-4: Movicon.NExT project deployment architecture



Related information

[Movicon.NExT documentation](#)

[Deploy Movicon.NExT Web Client \(WPF/HTML5\)](#)

[Deploy Movicon.NExT Web App](#)

5.4.1 Deploy Movicon.NExT Web Client (WPF/HTML5)

Deploy the client portion of the Movicon.NExT project to the IIS server.

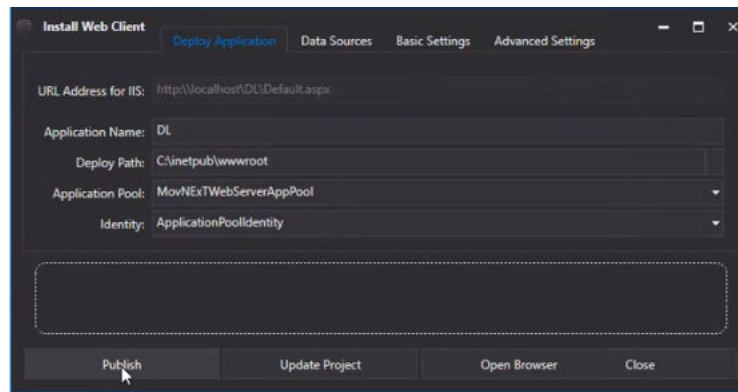
Prerequisites

You have met the requirements and one-time actions for deploying your project. See Related information for details.

Procedure

1. Select the **Options** → **Create WebClient (WPF/HTML5)** to create the web browser. The **Install Web Client** dialog displays.

Figure 5-5: Publish web client and start browser



2. Click **Publish** to install the web client and deploy to the IIS server.
3. Click **Open Browser** on the **Install Web Client** dialog. The Browser starts on the localhost and displays the Movicon.NExT project screens.

Test Movicon DL



Related information

[Deploy Movicon.NExT Web App](#)
[Movicon.NExT documentation](#)

5.4.2 Deploy Movicon.NExT Web App

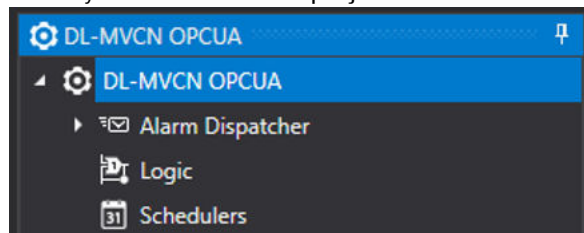
Follow these steps to install and start the Web App from the **Services Control Panel**.

Prerequisites

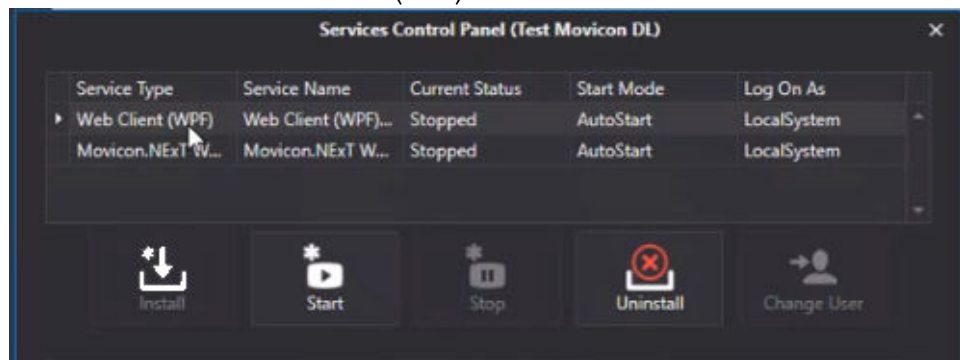
You have met the requirements and one-time actions for deploying your project. See Related information for details.

Procedure

1. Select your Movicon.NExT project.



2. Select the **Options** → **Services Control Panel**. The **Services Control Panel** displays to install and start the Web Client (WPF) service.



3. Optional: Click **Install** if the WebClient service is not installed.
4. Click **Start** to start the Web Client service.
Now our WebClient can display the project.
5. On the computer where the WebClient is installed, start the application by clicking the Movicon.NExT icon.
When the WebClient displays the first time, it contains only a **Demo** profile.
6. Click the plus sign in the top right corner of the **Movicon.NExT WebClient** screen to add a new project profile.



7. Fill in the required profile settings needed:
 - a) Required: Enter a **Profile Name**.
 - b) Required: Provide the IP address of the Movicon.NExT server in the **Server Address**.
 - c) Required: Enter 8089 as the **Server Port** number.
 - d) Optional: Provide a **Main Page** name for your project.
 - e) Enter **Timeout** as 10000 ms.
 - f) Save the profile.

- new profile -

profile settings

basic

Profile Name:*

Server Address:*

Server Port:*

Main Page:

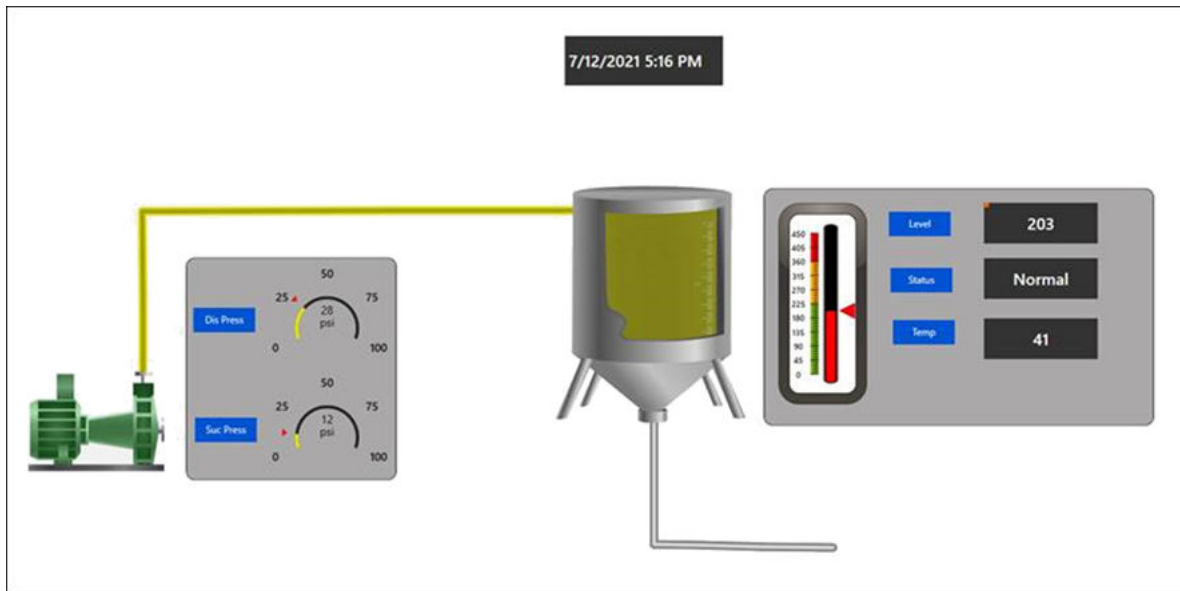
User Name:

Password:

Timeout (ms):

8. Double-click the new profile name in the **Movicon.NExT WebClient** screen and display the Movicon.NExT project.

Figure 5-6: Movicon.NExT Project displays simulated OPC UA data



Related information

[Deploy Movicon.NExT Web Client \(WPF/HTML5\)](#)

[Movicon.NExT documentation](#)

A Security Recommendations

A.1 OPC UA server security

Recommendations for OPC UA server security include:

- Proper certificate management
- Security modes, security policies, and authentication settings

Related information

[Certificate management](#)

[Security summary](#)

A.2 Movicon.NExT security

Movicon.NExT Project Files

Important

Emerson strongly recommends that you protect project files from unauthorized access by providing a project password. By encrypting the project files and resources, you remove a potential point of access.

Movicon.NExT Runtime Client Server

For a successful secure client connection, the Movicon.NExT UA client certificate needs to be manually or automatically copied into the Optics Data Lake certificates folder.

Folder-C:\Emerson\Plantweb Optics Data Lake\inmation.root
\certificates\certs.

Related information

[Certificate management](#)

[Security summary](#)

B Documentation resources

B.1 Plantweb Optics Data Lake help

Several areas of the *Plantweb Optics Data Lake Help* can assist you with the integration of Optics Data Lake and Movicon.NExT:

- DataStudio - [DataStudio Docs](#)
- System Docs > Installation Guide - [Installation steps](#)
- JumpStarts > Using Lua Scripting - [Scripting to simulate data](#)
- System Docs > Object Types > I/O Model Object Types - [Objects for data simulation](#)
- System Docs > OPC Connectivity > OPC Unified Architecture - [OPC UA Server for Movicon.NExT client](#)

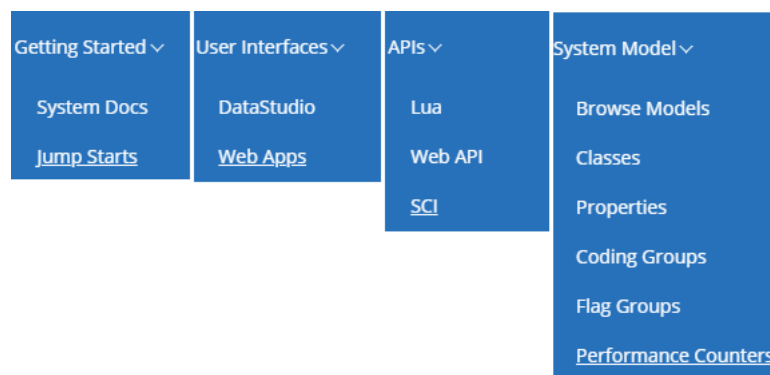
Using Guardian to reach the Plantweb Optics Data Lake documentation.

1. Login to the Guardian site using <https://guardian.emerson.com/>. Sign in with your **Email Address** and **Password**. Select preferred **Language**. Click **SIGN IN**.
2. Click **Support** (telephone icon).
3. Click **Resources** (last on the **Support** menu).
4. Under PLANTWEB OPTICS, click *Plantweb Optics Data Lake Help* to access the System Docs section of the help.

Tip

To quickly access other key sections of the Plantweb Optics Data Lake Help, use the selection menus on the top, right side of the help browser page.

Figure B-1: Plantweb Optics Data Lake Help - quick links



Related information

[Emerson documentation](#)

B.2 Movicon.NExT documentation

Using Internet to access Movicon.NExT documentation.

1. Using a browser, click the following URL to display the **Movicon.NExT Manuals** page: <https://www.progea.com/manuals/?lang=en>
2. Click the left-side downward arrow by *Movicon.NExT - Quick Start Guide*.
3. Click the **Download** arrow to download the latest file version to your local PC.
4. Click the left-side downward arrow by *Movicon.NExT - Help*.
5. Click the **Download** arrow to download a compressed file containing the help to your local PC.
6. Using a browser, click the following URL to display the *Getting Started with Movicon.NExT* web page: <http://www.movicon.info/TutorialNExT/en-US/#t=Introduction%2FIntroduction.htm>

Related information

[Emerson documentation](#)

Glossary

Access Model

A group of classes that defines security permissions for other Optics Data Lake models and classes. It supplies the features which are required to create and maintain a secure infrastructure.

asset

Any physical component (such as a device or machine) being monitored by Plantweb Optics Data Lake, or the logical representation of a physical asset. Examples include a motor, a pump, a fan, or a turbine.

client application

A Plantweb Optics or third-party client that accesses the data repository. DataStudio is a client application that is included with Plantweb Optics Data Lake. Custom client applications (Movicon.NEXT) can access data from the repository (JSON) or from the Plantweb Optics Server (OPC).

Connector

Another term for a Connector service. It retrieves data from one or multiple data sources. It integrates data from Emerson data collectors, OPC UA servers, or other sources and passes it to the Core, where it is stored in the repository. Permits the connection of multiple real-time data sources using secure, compressed single-port TCP communication with the Relay or the Core.

Core

Another term for the Core service. The central component of Plantweb Optics Data Lake. The Core retrieves data from any number of Connectors, in the same network or located at remote locations. The Core processes the data, storing all information in the repository (MongoDB). The Core also can process WebAPI and OPC requests from client applications, such as, Plantweb Optics Portal, DataStudio, and Movicon.NEXT. It exposes the data to the web clients using open formats, such as, OPC UA, JSON, ODBC, CSV (spreadsheet), and so forth.

Data Access (DA)

The OPC Unified Architecture data access specification used to communicate between Plantweb Optics Data Lake OPC UA server and the Movicon.NEXT client project.

data source

Data sources are also referred to as endpoints. A data source exposes information, which was retrieved using Plantweb Optics Data Lake. For example, an OPC UA server, an Emerson data collector (such as AMS Machinery Manager), or a cloud service (Azure or Amazon Web Services). A data source is connected to the Plantweb Optics Data Lake Core through a Connector.

DataStudio

One of many client applications used with Plantweb Optics Data Lake. It is designed to be a secure and singular interface to access a data source network. DataStudio provides access to your real-time and historized data. It supports an interface and customizable tools set

to provide users, power users, and administrators, the features to configure and control their workspace.

I/O Model

Previously known as the *Network Hierarchy*. This model displays the asset's static physical devices and device parameters. The I/O Model contains such objects as Scheduler Items and Action Items. The I/O system tree comprises all classes required for managing external data sources and persistent data storage, including Time Series plus the Alarms and Events Historization. See *ISA-95 Model* for details about the asset logical view and making changes to an asset.

Interface Servers

A service that exposes data stored in the Plantweb Optics Data Lake according to the latest OPC or web API specifications.

ISA-95 Model

Previously referred to as the *Logical Hierarchy*. The model helps you to create a logically compliant hierarchical asset model for all sites, units, and modules within a plant. Use this model to make changes to the asset, while keeping the assets physical devices and measurements (parameters) static. This is the logical model you use to set specific asset properties, either manually or using the bulk edit feature (MassConfig) in Optics Data Lake. See *I/O Model* for details about the asset physical devices.

Movicon.NExT™

A software architecture designed for building automation systems. Movicon.NExT is an open and scalable platform based on .NET technology. This platform uses technology based on .NET, C#, WPF/XAML, OPC UA, SQL Server and HTML5. It uses a human machine interface (HMI) based on WPF and has XAML graphics quality.

repository

A central storehouse that stockpiles acquired data using standard formats. MongoDB is the repository; an open-source NoSQL database that can scale to work with increasing amounts of real-time data.

Server

Also referred to as the Server service. A Server that exposes data using OPC specifications. The Plantweb Optics OPC server allows any third-party client (such as, Movicon.NExT) to connect to Plantweb Optics Data Lake and access the data source network. This server is installed with the Plantweb Optics Setup installation, as part of the Plantweb Optics core components.

Server Model

A Core service that helps you manage external Server interfaces of Plantweb Optics Data Lake and the assignment of other models to the particular Servers.

tag (*noun*)

Basic elements of dynamic information that connect to programmable logic controllers (PLC) or field devices by using communication drivers to connect to the supervision project's objects and functions. It is also possible to select the "OPC UA Browser" tab from the Tag Browser window, through which you can access the list of available OPC UA

Servers. An asset identification number is used by OPC UA Browser to identify data elements to integrate into a Movicon.NExT project.

Unified Architecture (UA)

A machine-to-machine communication protocol for industrial automation developed by the OPC Foundation.

WebClient (WPF/HTML5)

A Movicon.NExT client that uses the Microsoft Internet Information Services (IIS) and displays graphics using the Windows Presentation Format (WPF). The Movicon.NExT client technology is based on the HTML5 standard and supported by any HTML5 compatible browser using any of the following operating systems:

- Desktop—Microsoft® Windows, Apple iOS, Linux, etc.
- Mobile—Windows Phone, Apple iOS, Android, etc.

Index

C

- cautions, installing Plantweb Optics Data Lake 13
- certificates
 - paste Movicon.NExT UA client 28
 - Plantweb Optics Data Lake 22
- communication security
 - OPC UA Server 9
- connect project objects
 - client-side browser 30
- Connector object
 - create 15

D

- data source
 - create 16
- deploy
 - client and app components 32
 - Web App 34
- discovery URL
 - required for undiscovered endpoints 16
- documentation
 - Movicon.NExT 40
 - other products 6

E

- email address, Product Support 6

F

- firewall
 - open port 8089 31

G

- guide, high-level steps 5

H

- help, Product Support 6

I

- IIS Server
 - start services 31
- installation file, obtain the Movicon.NExT 25
- Internet, Product Support 6

L

- links, detailed implementation steps 5
- local connector
 - restricted to one 15

M

- Movicon.NExT
 - creating a project 29
 - deployment with Plantweb Optics Data Lake 11
 - installation file 26
 - installation file, obtaining 25
 - installation steps 25
 - security for Client Runtime 37
 - security recommendations 37
 - server authentication 26
 - system requirements 8
 - UA client certificate 22
 - user documentation 7, 40
 - validate project with Optics Data Lake 5
- Movicon.NExT project
 - deploy as Web App 29, 34

O

- OPC UA Browser
 - associate project elements 29
 - select data items 30
- OPC UA Datasource, create and configure 11
- OPC UA Server
 - configuring 19
 - create 19
 - security recommendations 37
- OPC UA TCP server endpoint, create 20
- outline
 - Movicon.NExT project creation 29

P

- passwords, Movicon.NExT project 37
- Plantweb Optics Data Lake
 - certificates folder 22
 - installation overview 5
 - installation requirements 8
 - installing core components 11
 - OPC UA client certificate 28
 - system requirements 8
 - user documentation 7, 39
 - Windows installer 13
- Product Support
 - email address 6

Product Support (*continued*)
 Internet 6
 telephone numbers 6
project
 creating minimal Movicon.NEXT 29
 validate Movicon.NEXT with Optics Data Lake 5

R

restrictions
 Movicon.NEXT licensing 9

S

security recommendations
 Movicon.NEXT Client Runtime server 37
 OPC UA server 37
 summary 9
security settings
 OPC UA server endpoint 21
 Web App 19, 22
SQL Express 26
System Requirements
 Plantweb Optics Data Lake 8

T

TCP Server Endpoint, configuring 19
telephone
 contact numbers 6
 toll-free numbers 6
top-level help sections, Plantweb Optics Data Lake 39

W

Web App
 avoid security setting 21
 OPC server security settings 22
 start service 34
WebClient (WPF/HTML5)
 deployment steps 32
 download 31

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