

Industrial Edge Management - Getting Started 08/22

Getting Started

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Warning notice system

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

| |
|--|
|  DANGER |
| indicates that death or severe personal injury will result if proper precautions are not taken. |

| |
|---|
|  WARNING |
| indicates that death or severe personal injury may result if proper precautions are not taken. |

| |
|--|
|  CAUTION |
| indicates that minor personal injury can result if proper precautions are not taken. |

| |
|--|
| NOTICE |
| indicates that property damage can result if proper precautions are not taken. |

If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

Qualified Personnel

The product/system described in this documentation may be operated only by **personnel qualified** for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

Proper use of Siemens products

Note the following:

| |
|--|
|  WARNING |
| Siemens products may only be used for the applications described in the catalog and in the relevant technical documentation. If products and components from other manufacturers are used, these must be recommended or approved by Siemens. Proper transport, storage, installation, assembly, commissioning, operation and maintenance are required to ensure that the products operate safely and without any problems. The permissible ambient conditions must be complied with. The information in the relevant documentation must be observed. |

Trademarks

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Disclaimer of Liability

We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

Preface

This documentation contains all the information you need to get started with Industrial Edge (IE) and is intended for operators who commission the Industrial Edge Management (IEM).

The complete operating manual for operators who, for example, commission and operate Edge Devices, as well as service and maintenance technicians who perform error analysis, is included in the "Industrial Edge Management - Operation (<https://support.industry.siemens.com/cs/us/en/view/109780393>)" manual.

The documentation for programmers who develop respectively package their own Edge Apps and load these Edge Apps to the IEM through the Industrial Edge App Publisher is included in the "Industrial Edge App Publisher - Operation (<https://support.industry.siemens.com/cs/us/en/view/109780392>)" manual.

New features, known issues and notes on use regarding new published versions of the Industrial Edge Management are included in the "Industrial Edge - Release Notes (<https://support.industry.siemens.com/cs/us/en/view/109780394>)" manual.

An overview with regard to security for Industrial Edge and its components are included in the "Industrial Edge - Security overview (<https://support.industry.siemens.com/cs/us/en/view/109781002>)" manual.

Information regarding Edge Devices and their operations are included in the "Industrial Edge Device - Operation (<https://support.industry.siemens.com/cs/us/en/view/109783785>)" manual.

Instructions and sequences to update Industrial Edge and its components are included in the "Industrial Edge - Update Procedures (<https://support.industry.siemens.com/cs/us/en/view/109795343>)" manual.

Requirements and procedures on publishing apps to the IE Hub are included in the "Industrial Edge - Publishing Apps to the IE Hub (<https://support.industry.siemens.com/cs/us/en/view/109803581>)" manual.

Purpose of this document

The objectives of this documentation include the following:

- You are provided with a functional overview of Industrial Edge.
- You find all the information on how to set up the Industrial Edge Management (IEM) On-Premises.
- You learn how to connect an Edge Device to your IEM and install Edge Apps onto Edge Devices.

Basic knowledge required

- Solid knowledge of personal computers is required.
- Solid knowledge of Linux-based operating systems is required.
- Solid knowledge of Linux-based command lines is required.

- Solid knowledge of IP-based networks is required.
- Solid knowledge of Docker is required.
- General knowledge in the field of IT is required.
- General knowledge in the field of automation technology is recommended.

Scope of this document

This Getting Started is valid for Industrial Edge.

Convention

The term "Edge Device" is used in this documentation to designate hardware with a configured Industrial Edge Device OS.

Instead of the product designation "Industrial Edge Apps", the short forms "Edge Apps" and "Apps" are also used.

Instead of the product designation "Industrial Edge System Apps", the short form "System Apps" is also used.

Instead of the product designation "Industrial Edge Device", the short form "Edge Device" is also used.

Instead of the product designations "Industrial Edge Databus" and "Industrial Edge Databus Configurator", the short forms "Databus" and "Databus Configurator" are also used respectively.

Instead of the product designations "Industrial Edge Cloud Connector" and "Industrial Edge Cloud Connector Configurator", the short forms "Cloud Connector" and "Cloud Connector Configurator" are also used respectively.

Figures

Picture components are marked with black position numbers on a white background: ①, ②, ③, etc.

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Industrial security

Siemens provides products and solutions with industrial security functions that support the secure operation of plants, systems, machines and networks.

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens' products and solutions constitute one element of such a concept.

Customers are responsible for preventing unauthorized access to their plants, systems, machines and networks. Such systems, machines and components should only be connected to an enterprise network or the internet if and to the extent such a connection is necessary and only when appropriate security measures (e.g. firewalls and/or network segmentation) are in place.

For additional information on industrial security measures that may be implemented, please visit (<http://www.siemens.com/industrialsecurity>).

Siemens' products and solutions undergo continuous development to make them more secure. Siemens strongly recommends that product updates are applied as soon as they are available and that the latest product versions are used. Use of product versions that are no longer supported, and failure to apply the latest updates may increase customer's exposure to cyber threats.

To stay informed about product updates, subscribe to the Siemens Industrial Security RSS Feed at (<https://support.industry.siemens.com/cs/start?>).

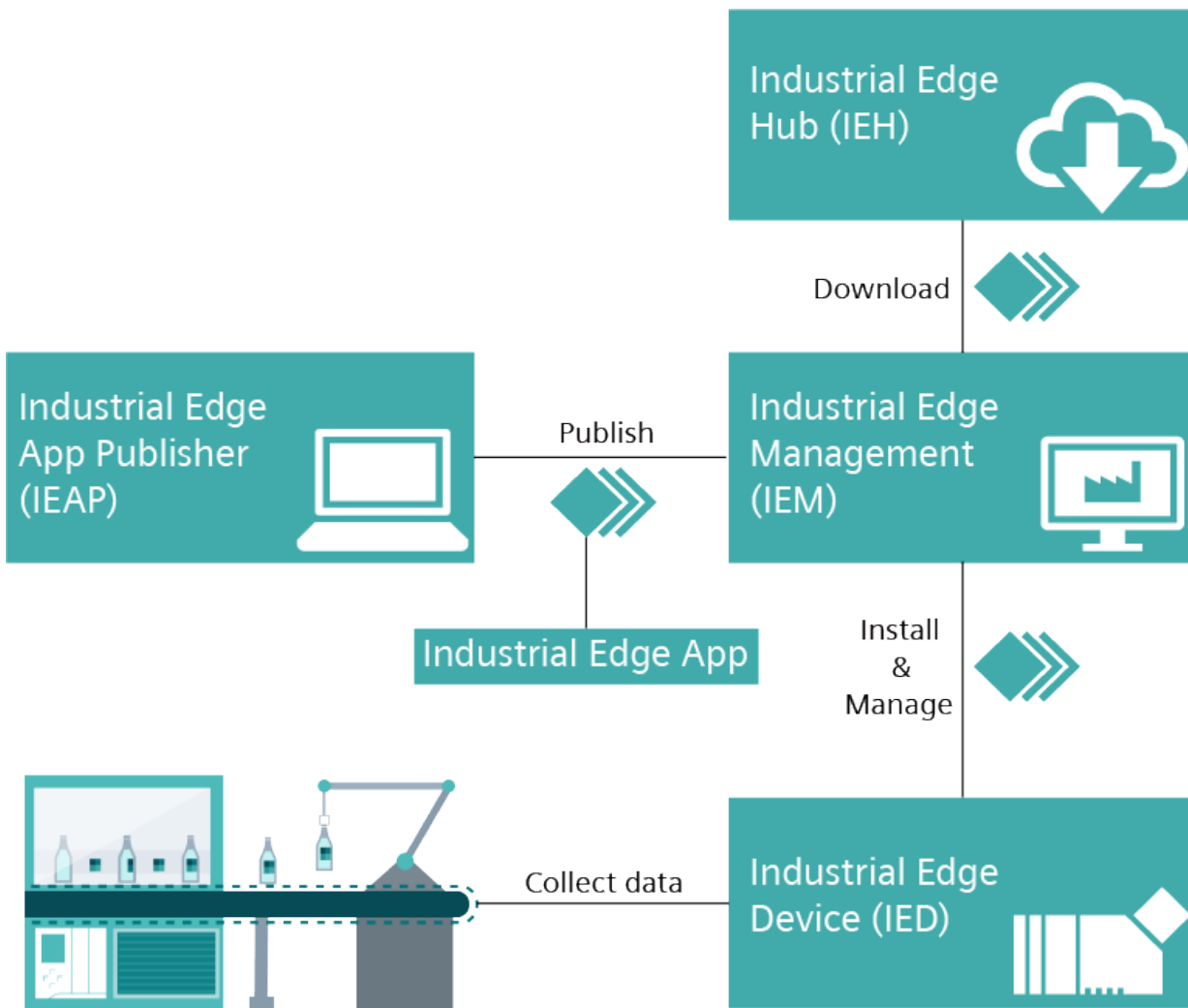
Follow the recommendations stated in this document. In addition, observe and follow the security statements, which are valid for this documentation, from the "Industrial Edge - Security Overview (<https://support.industry.siemens.com/cs/us/en/view/109781002>)" manual. Following these recommendations and security statements ensures that Siemens will provide correct response in case some vulnerabilities are found in the system.

Overview of Industrial Edge

Industrial Edge combines local engineering with Cloud engineering.

Industrial Edge provides you with the following options:

- Install and use apps as required
- Distribution of apps to individual or grouped Edge Devices
- Availability of local data and, if desired, global data
- Regular software update cycles for Edge Devices and Edge Apps
- Pre-processing of data with low latency times
- Regular maintenance and updates of your system
- Management of associated Edge Devices and Edge Apps
- Development of custom Edge Apps
- Connectivity to your IT system and to automation
- Transfer of data with IT and cloud systems



Industrial Edge consists of the following main components:

- **Industrial Edge Hub (IEH):**
The Industrial Edge Hub (IEH) is placed in the cloud level and is the central starting point of Industrial Edge. From the IEH, you download the Industrial Edge Management OS to enable the IEM on-premises and all necessary software for running the IEM. Furthermore, the IEH provides an app catalog where you purchase available Edge Apps. All necessary documentation and information about Industrial Edge is also available in the IEH.
- **Industrial Edge Management (IEM):**
The Industrial Edge Management is placed in the factory level and is the central infrastructure of Industrial Edge. The Industrial Edge Management is available as local IEM On-Premises. The Industrial Edge Management allows you to manage both connected Edge Devices and Edge Apps that you install individually on each Edge Device. The Industrial Edge Management also provide tools for managing Edge Devices and tracking analytics. Developers also have the possibility to create new projects using collaboration features and role-based access for co-developers.

- **Industrial Edge Devices:**
Industrial Edge Devices (IEDs) are placed in the field level where the data generation and acquisition from automation systems take place. Edge Devices can store automation data locally and retrieve it as needed. In addition, Edge Devices can load this data to the cloud infrastructure (e.g. MindSphere) and retrieve it at any time. Once provisioned and connected, the IEM activates the Edge Device through an Edge Device configuration file.
- **Industrial Edge Apps:**
Industrial Edge Apps are used for intelligent processing of automation data. Edge Apps are available from Siemens, business partners (App Partners), third-party vendors or from your own development. You use the IEM to configure, install and maintain these Docker containerized Edge Apps to targeted Edge Devices.
- **Industrial Edge App Publisher (IEAP):**
The Industrial Edge App Publisher is a software application to package Docker images to Industrial Edge Apps and to publish these Industrial Edge Apps to your IEM. The Industrial Edge Apps can then be installed on Industrial Edge Devices. The IEAP is available for Windows and Linux operating systems.

Industrial Edge Hub

3.1 Sign up

Requirement

- You have purchased access to the Industrial Edge Hub.
-

Note

Purchasing access to the Industrial Edge Hub

You purchase access to the Industrial Edge Hub in the Siemens Industry Mall or in the IE Marketplace. The purchasing process requires an email address and the allocated location.

- You have received a welcome email containing the URL of the Industrial Edge Hub.
-

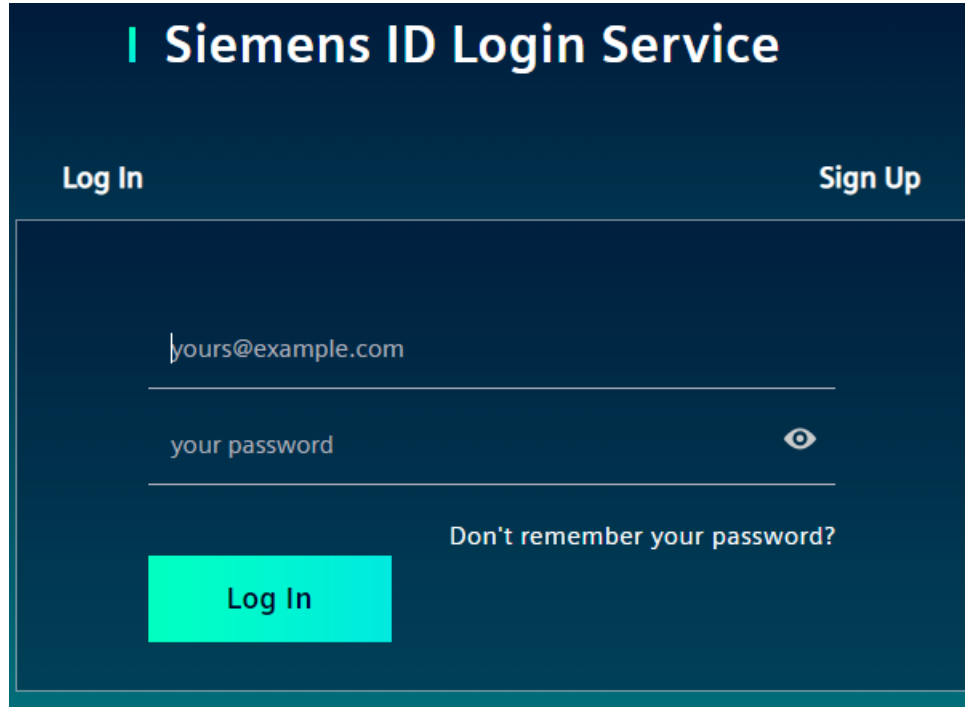
Note

Receiving the welcome email

You receive the welcome email after you have purchased access to the Industrial Edge Hub. It takes some time between the purchase process and the receipt of the welcome email.

Procedure

1. After you have received the welcome email containing the URL of the Industrial Edge Hub, open the Industrial Edge Hub by clicking the link in the welcome email. The login screen for Industrial Edge Hub is displayed.



2. Click the "Sign up" tab.
3. Enter the following parameters in the according input fields:
 - Email address: Email address that has been specified for the Industrial Edge Hub access
 - Password: Password to log in to the Industrial Edge Hub

Note

Password requirements

The password must meet at least 8 characters, 1 upper-case letter, 1 special character and 1 number.

- First name: First name of the email user
- Last name: Last name of the email user

All input fields are mandatory.

4. Read and accept the terms of use.

- Click "Sign Up".
The "Welcome" screen is displayed.

Welcome

Welcome to Industrial Edge Hub. Please check the information below and click continue to complete your account activation.

Name:

Email:

Country:

If your user information is incorrect, please contact with [Siemens Support](#)

- Check your data.
- If everything is correct, click "Continue".

Note

Incorrect data

If the data is incorrect, click the link to contact the Siemens support.

The "Confirmation of delivery address and Export Control Clause" screen is displayed.

Confirmation of delivery address and Export Control Clause

Delivery Address

Email:

Country Code:

The user confirms that the download is executed on the displayed country.

Export regulations for DE

[export regulations \(en\)](#)

[export regulations \(de\)](#)

The export control clause for distribution contracts is accepted.

The displayed export regulations in the screen depend on your location, here for example Germany.

8. Before entering the Industrial Edge Hub, read the export regulations.
9. Accept the export regulations by selecting the 2 check boxes.
The acceptance will be logged in the Industrial Edge Hub database along with the date of acceptance.
10. When both check boxes are selected, click "Continue".
The home page of the Industrial Edge Hub is displayed.

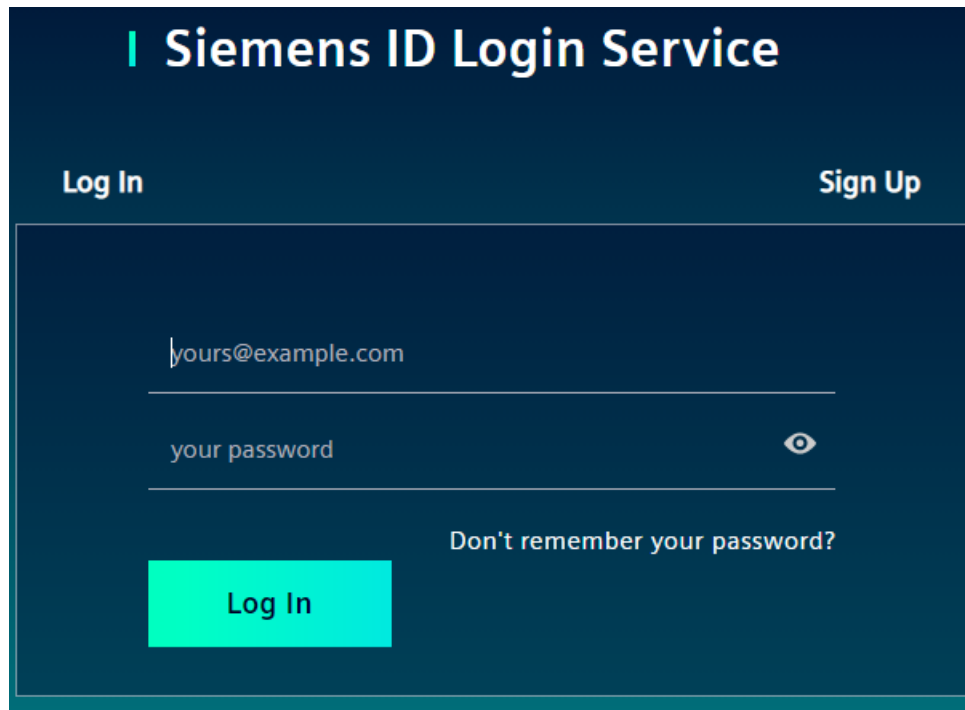
3.2 Log in and sign out

Requirement

- You have purchased the Industrial Edge Hub access.
- You have successfully signed up to the Industrial Edge Hub.

Log in

1. Open the IE Hub by entering the URL into an Internet browser.
The login screen is displayed.



2. In the "Login" screen, enter your email address and your password in the according input fields.

3. Click "Log in".
The "Organization Selection" screen is displayed.

Organization Selection

You have access to following organizations

| | Organization | |
|--------------------------|---------------------------|---------------------------|
| <input type="checkbox"/> | MyDisplayName papopeko | Create Date: Feb 15, 2021 |
| <input type="checkbox"/> | Core core | Create Date: Feb 25, 2021 |

[Continue](#) [Logout](#)

You have the possibility, to be registered in several IE Hub organizations. If you are registered in several IE Hub organizations, these IE Hub organizations are displayed in this screen. All resources, registered users, available licenses and assigned apps are only valid in the specific IE Hub organization you log into. The IE Hub organization name is generated automatically by the system without any meaning or semantics and cannot be changed. The display name can be renamed under "Organization Settings" once you are logged into the IE Hub. If you are registered in just 1 IE Hub organization, the IE Hub organization will open directly without the selection of an IE Hub organization.

4. Select the check box of the IE Hub organization you want to log into.

- 5. Click "Continue".
The "Confirmation of delivery address and Export Control Clause" screen is displayed.

Confirmation of delivery address and Export Control Clause

Delivery Address

Email:

Country Code:

The user confirms that the download is executed on the displayed country.

Export regulations for DE

[export regulations \(en\)](#)

[export regulations \(de\)](#)

The export control clause for distribution contracts is accepted.

Continue Cancel

The available export regulations in the screen depend on your location, here for example Germany.

- 6. Before entering the IE Hub, you must read the export regulations.
- 7. Accept the export regulations by selecting the 2 check boxes.
The acceptance will be logged in the IE Hub database along with the date of acceptance.
- 8. When both check boxes are selected, click "Continue".
The home page of the IE Hub is displayed.

Note

IE Hub URL

The IE Hub URL adapts to the generated IE Hub organization name. For example, when the organization name is "core", the URL will be "https://core.iehub.eu1.edge.siemens.cloud". You can directly log into specific IE Hub organizations by using the respective URL.

No access to the Industrial Edge Hub

If you try to sign into the Industrial Edge Hub without having purchased access to the Industrial Edge Hub, the following screen is displayed:

Action Required

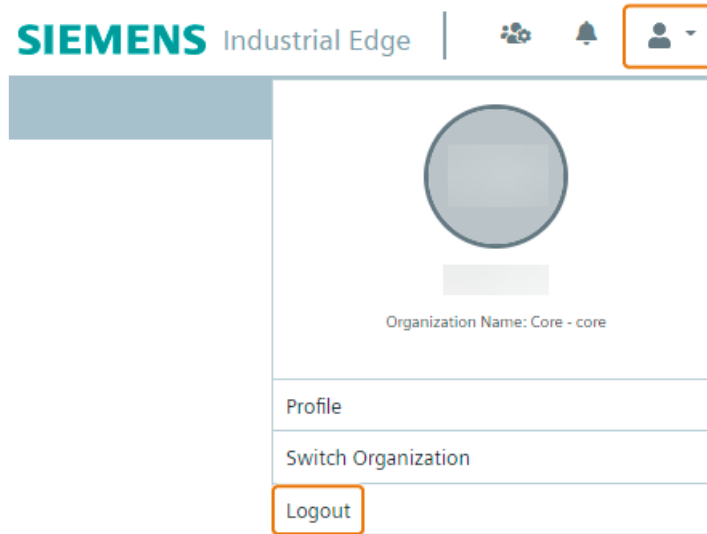
Industrial Edge Hub is not purchased for your e-mail address.

You can purchase access to Industrial Edge Hub from [Siemens Industry Mall](#).

Purchase access to the Industrial Edge Hub in the Siemens Industry Mall by clicking the link.

Sign out

1. Click the user icon in the top right corner.
2. Click "Logout".

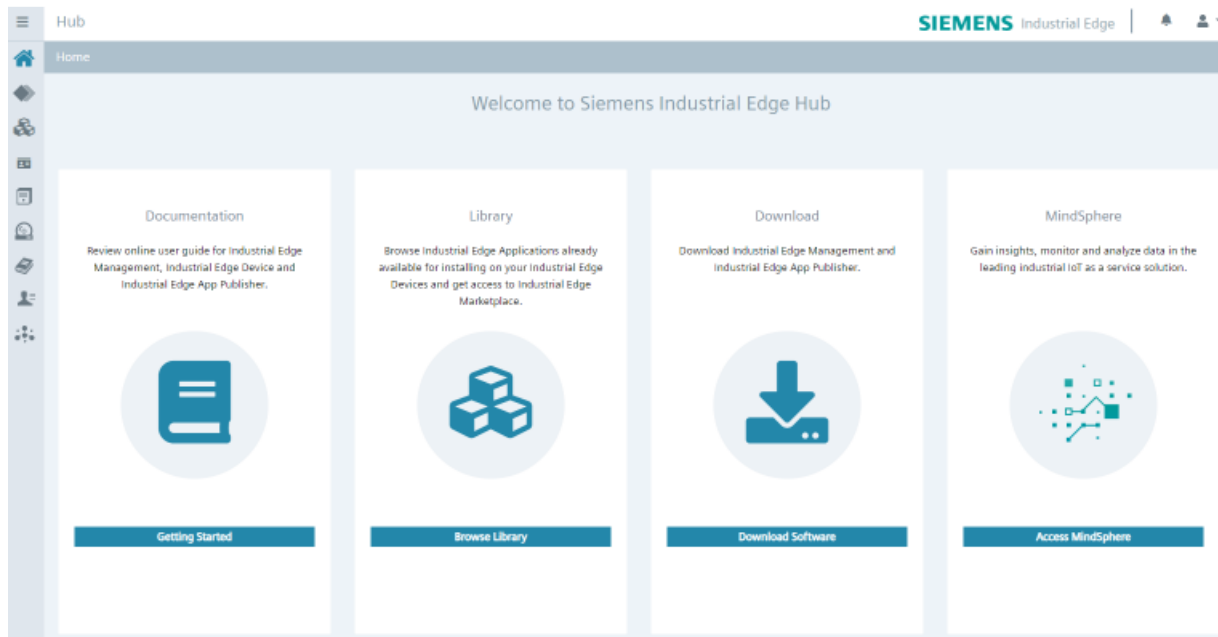


You are signed out from the IE Hub.

3.3 Home

After you log into the IE Hub, the "Home" screen of the IE Hub is displayed.

The following figure shows the IE Hub home page:




By clicking the button within the tiles, you navigate to the according menu item. By clicking "Access MindSphere", you will be redirected to MindSphere.

The IE Hub provides the following navigation menu:

- Home
- Application Management
- Library
- Licenses
- IEM Instances
- Download Software
- Documents
- User Management
- Organization Settings

Notifications

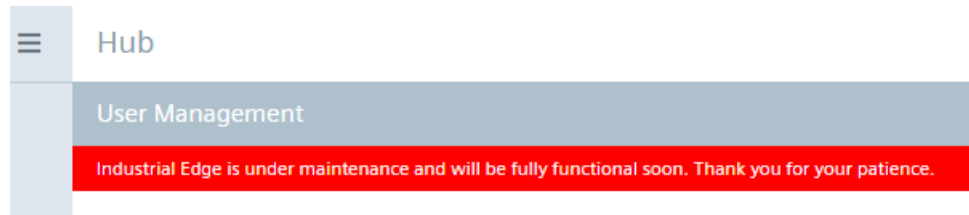
By clicking the  icon, the "Notifications" screen with all notifications referring to the IE Hub is displayed. For example, whenever 1 of the following events occur, the according notification is displayed in the "Notifications" screen:

- Purchased Edge Device licenses
- Purchased Edge App licenses
- Releases of new Industrial Edge Management OS
- Releases of new Industrial Edge Device OS

- Releases of new Edge App versions
- Updates of Edge Apps

IE Hub under maintenance

When the IE Hub is under maintenance or when new features and components are getting deployed, the following message will be displayed in the IE Hub.



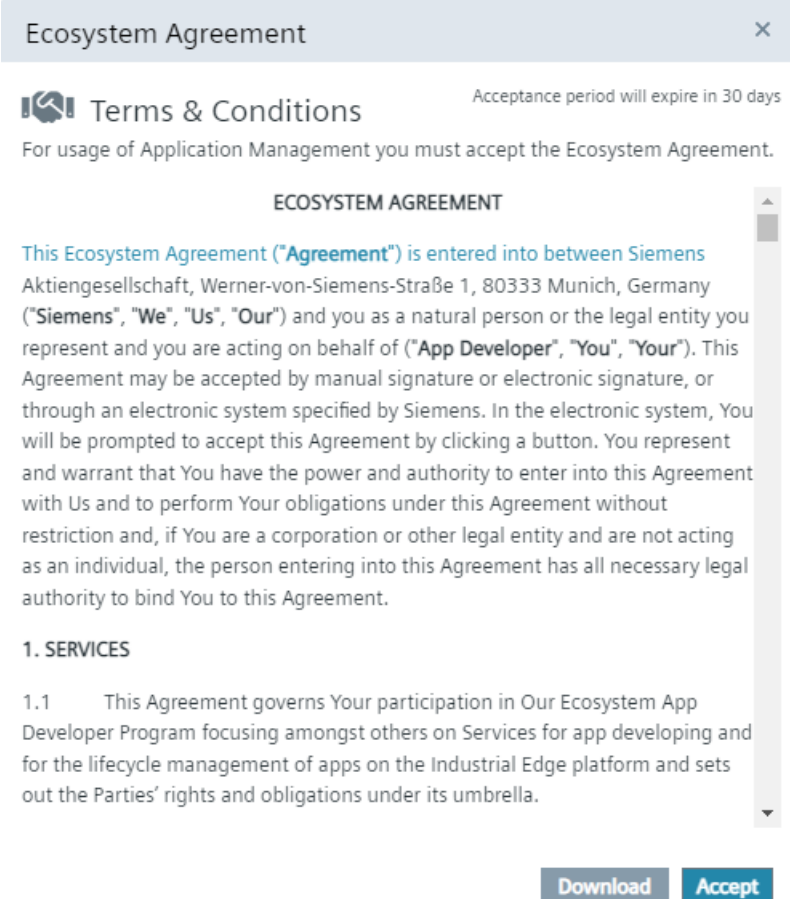
In this maintenance interval, you cannot use the IE Hub. After the required work is done, the message is removed from the IE Hub and you can use again the IE Hub.

3.4 Application Management

3.4.1 Overview

Publishing Apps to the IE Hub


In the "Application Management" screen, you have the possibility to publish apps to the IE Hub. To do so, you must accept the Ecosystem Agreement.



The screenshot shows a modal dialog box titled "Ecosystem Agreement" with a close button (X) in the top right corner. Below the title is a "Terms & Conditions" icon and the text "Acceptance period will expire in 30 days". The main content area contains the text: "For usage of Application Management you must accept the Ecosystem Agreement." followed by a scrollable section titled "ECOSYSTEM AGREEMENT". The agreement text states: "This Ecosystem Agreement ("Agreement") is entered into between Siemens Aktiengesellschaft, Werner-von-Siemens-Straße 1, 80333 Munich, Germany ("Siemens", "We", "Us", "Our") and you as a natural person or the legal entity you represent and you are acting on behalf of ("App Developer", "You", "Your"). This Agreement may be accepted by manual signature or electronic signature, or through an electronic system specified by Siemens. In the electronic system, You will be prompted to accept this Agreement by clicking a button. You represent and warrant that You have the power and authority to enter into this Agreement with Us and to perform Your obligations under this Agreement without restriction and, if You are a corporation or other legal entity and are not acting as an individual, the person entering into this Agreement has all necessary legal authority to bind You to this Agreement." Below this is a section titled "1. SERVICES" with a sub-section "1.1" stating: "This Agreement governs Your participation in Our Ecosystem App Developer Program focusing amongst others on Services for app developing and for the lifecycle management of apps on the Industrial Edge platform and sets out the Parties' rights and obligations under its umbrella." At the bottom of the dialog are two buttons: "Download" and "Accept".

You find more information on the Ecosystem Agreement and information on how to publish apps to the IE Hub in the "Industrial Edge - Publishing Apps to the IE Hub (<https://support.industry.siemens.com/cs/us/en/view/109803581>)" manual.

Granting access to Application Management APIs

After you have accepted the Ecosystem Agreement, the  icon is enabled in the top right corner in the header of the IE Hub. Through this icon, you can create maximum 3 accounts whom you can grant access to the Application Management APIs.

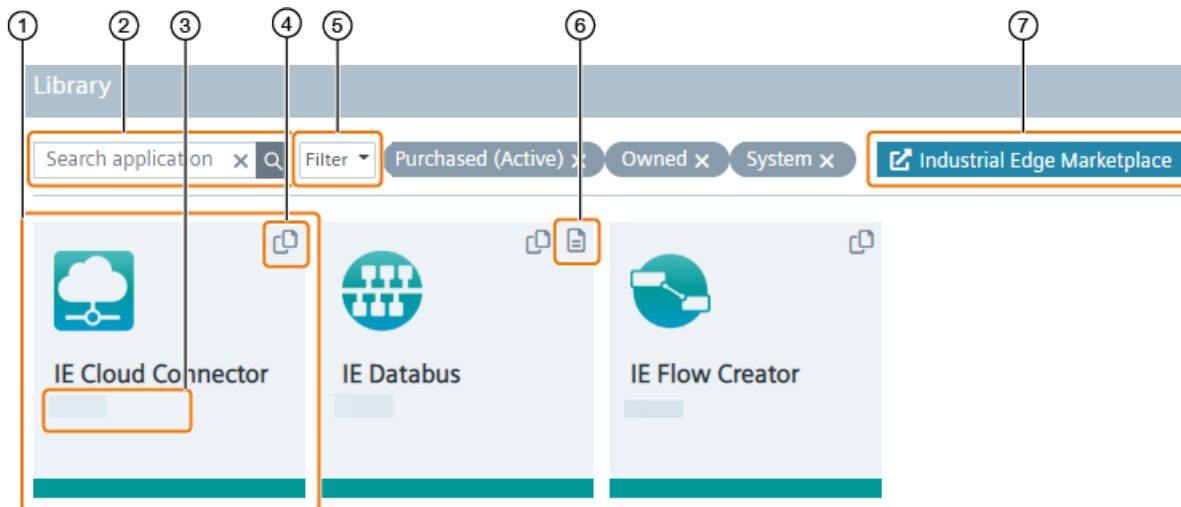
You find more information on how to grant access to Application Management APIs in the "Industrial Edge - Publishing Apps to the IE Hub (<https://support.industry.siemens.com/cs/us/en/view/109803581>)" manual.

3.5 Library

The "Library" screen lists all apps for which you purchased a license and which you can transfer to your IEM instances.

System Apps are included in the purchase of the Industrial Edge Management, so you do not have to purchase a license for System Apps. You can directly copy the System Apps to the catalog of an IEM instance.

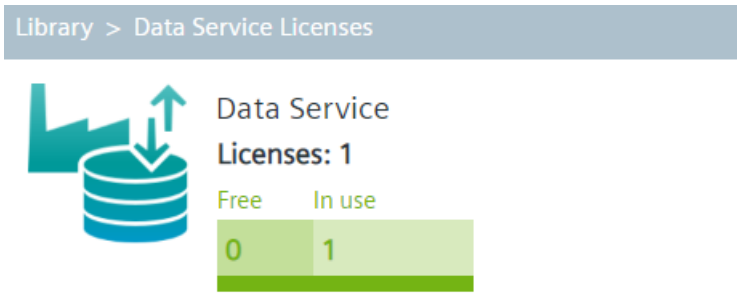
The following figure shows an example of the "Library" screen:



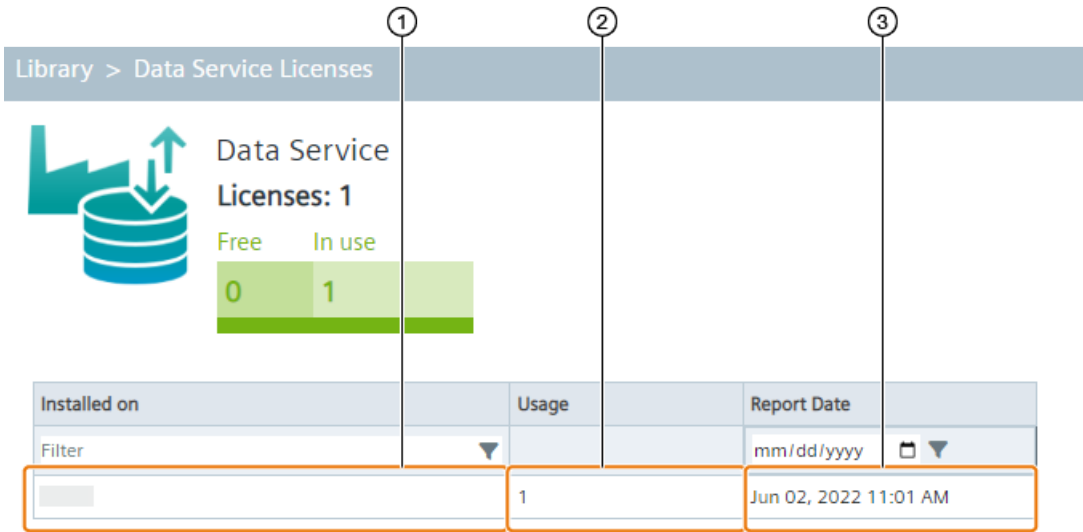
- ① Licensed app
- ② Search for an app
- ③ App version
- ④ Copy app to IEM instances
- ⑤ Filter apps
- ⑥ Open app documentation
- ⑦ Open Industrial Edge Marketplace

To purchase apps and app licenses, visit the Industrial Edge Marketplace.

By clicking an app tile, you can check the license details of the respective app, for example:



If a license report was sent from the IEM to the IE Hub, the report is displayed in this screen.



- ① IEM instance
- ② Number of used licenses on the corresponding IEM instance
- ③ Creation date of the report

You find more information on creating and sending a license report from the IEM to the IE Hub in the "Admin UI > Licenses" subsection in the "Industrial Edge Management - Operation" manual.

Note


If an IEM instance is deleted from the IE Hub, reports that belong to the deleted IEM instance will be deleted too.

3.5.1 Copying an app to IEM instances

Procedure

Copying an app to IEM instances requires a created IEM instance and an Internet connection. With this functionality, you send the app directly to the catalog of the Management UI of the IEM instances.

To copy an app to IEM instances, proceed as follows:

1. Click the  icon of the app you want to copy to IEM instances. The "Copy Application to IEM Catalog" screen is displayed.
2. Select all the IEM instances you want to send the app to.

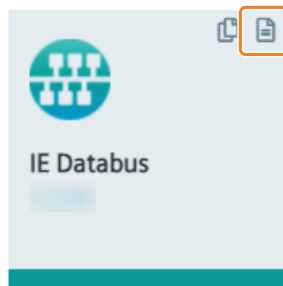
Note

You can also search for the name of an IEM instance.

3. Click "Copy".
An according job is created. You can check the job status in the job status screen in the Management UI of the respective IEM instances.

3.5.2 Opening app documentation

If the app provides a documentation, the app tile contains the documentation icon.



By clicking the icon, you will be redirected to the documentation page.

3.5.3 Purchasing an app

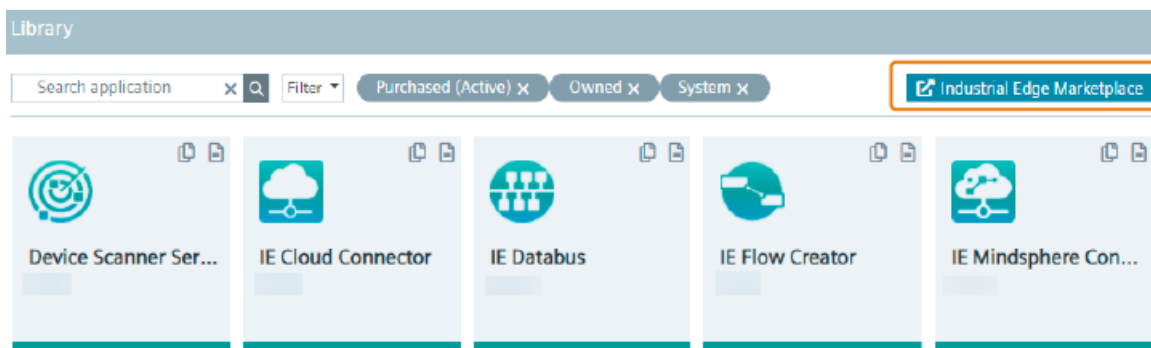
You purchase apps respectively app licenses in the IE Marketplace. To be able to purchase apps, you need an access code. To get this access code, contact the regional Siemens contact person.

Requirement

You have received the access code from the regional Siemens contact person.

Procedure


1. In the "Library" screen of the IE Hub, click "Industrial Edge Marketplace".



2. Click "Manufacturing & Process Industries".
The Industrial Edge Marketplace is opened.

- Click the tile of the app you want to purchase, in this example the "Energy Manager" app. The app description and app details are displayed.

Siemens PLM > Industrial Edge Marketplace > Manufacturing & Process Industries > Energy Manager



Prerequisites 3 REQUIRED

- ★ Industrial Edge Hub Access
- ★ Data Service

Additional Requirements

Hardware Demands
Industrial Edge Management License
Industrial Edge Devices in Industry Mall

Terms & Conditions

Universal Customer Agreement
Industrial Edge Supplemental Terms (alpha code 1E)

Energy Manager

Provided by **SIEMENS**

Increase energy efficiency and reduce energy costs using different analytics for consumption.

Energy Manager provides visibility across distributed energy consumers including machines, lines or whole sites. Everything can be connected to your Edge device and accessed to benchmark energy consumers and to visualize optimization potential.

Data is transformed using KPIs and displayed in easily configured dashboards according to the needs of different users. Energy efficiency measures can be derived based on increased transparency.

- Energy transparency supporting ISO 50001
- Flexible KPI definition and user specific dashboards providing a holistic view of energy consumption to derive energy efficiency measures
- Transparency of energy costs and consumption from the machine level to plant level


Subscription per installed app instance including three (3) assets.

Quantity

Minimum: 1

On the left, you find all prerequisites and requirements needed to run this app in the IEM.

Siemens PLM > Industrial Edge Marketplace > Manufacturing & Process Industries > Energy Manager



Prerequisites 3 REQUIRED

- ★ Industrial Edge Hub Access
- ★ Data Service

Additional Requirements

Hardware Demands
Industrial Edge Management License
Industrial Edge Devices in Industry Mall

Terms & Conditions

Universal Customer Agreement
Industrial Edge Supplemental Terms (alpha code 1E)

Energy Manager

Provided by **SIEMENS**

Increase energy efficiency and reduce energy costs using different analytics for consumption.

Energy Manager provides visibility across distributed energy consumers including machines, lines or whole sites. Everything can be connected to your Edge device and accessed to benchmark energy consumers and to visualize optimization potential.

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- Energy transparency supporting ISO 50001
- Flexible KPI definition and user specific dashboards providing a holistic view of energy consumption to derive energy efficiency measures
- Transparency of energy costs and consumption from the machine level to plant level

Subscription per installed app instance including three (3) assets.

Quantity

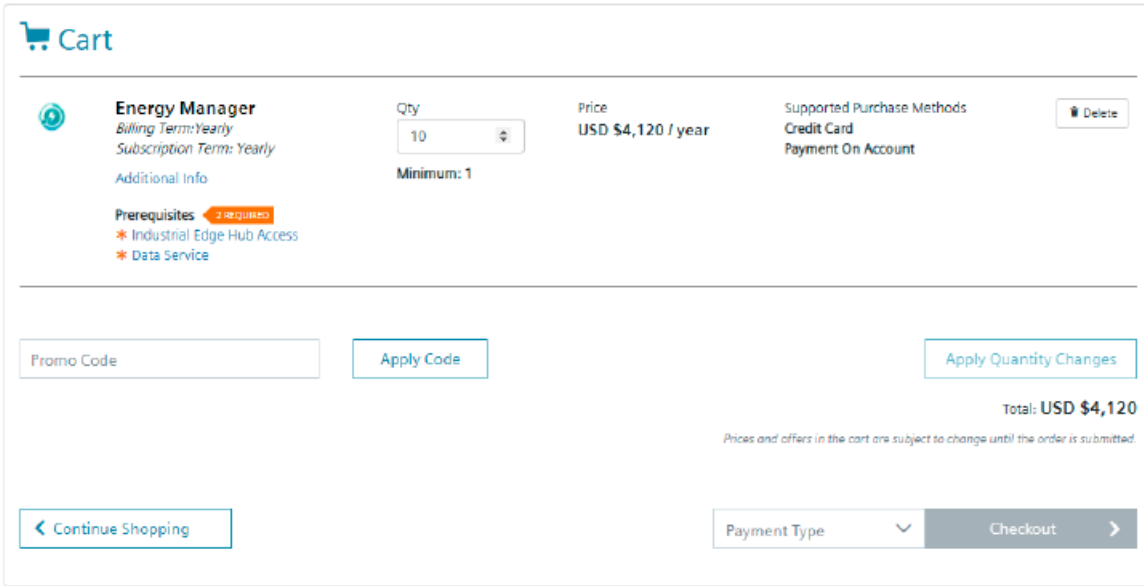
Minimum: 1

You can purchase all these required products in 1 transaction.

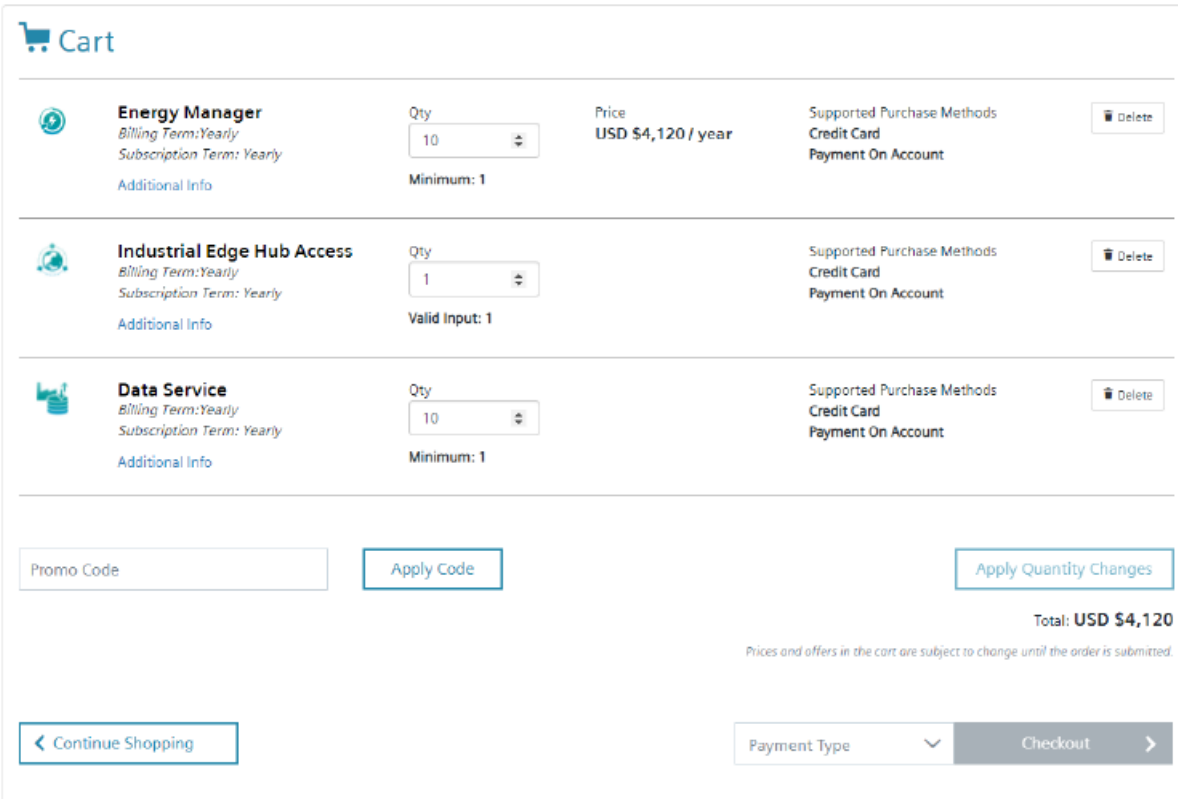
- Enter the amount of required licenses in the "Quantity" input field.
- In the "Access Code" input field, enter the received access code.

3.5 Library

- 6. Click "Add to Cart".
The cart is displayed.



- 7. If not yet purchased, add all required products to the cart.
For that, you can click the respective links under "Prerequisites" and add all needed products to the cart in the same manner.



8. From the "Payment Type" drop-down list, select your favored payment type. For 3rd party apps, only the "Credit Card" payment type is available.
9. Check again your provided information.

Note

You can edit again the amount of licenses and apply the changes by clicking "Apply Quantity Changes".

10. Click "Checkout" and follow the instructions on the screen.

Cart

| | | | | | |
|--|---|--------------------------|---------------------------|--|------------------------|
| | Energy Manager Billing Term: Yearly Subscription Term: Yearly Additional Info | Qty: 10 Minimum: 1 | Price: USD \$4,120 / year | Supported Purchase Methods: Credit Card Payment On Account | Delete |
| | Industrial Edge Hub Access Billing Term: Yearly Subscription Term: Yearly Additional Info | Qty: 1 Valid Input: 1 | | Supported Purchase Methods: Credit Card Payment On Account | Delete |
| | Data Service Billing Term: Yearly Subscription Term: Yearly Additional Info | Qty: 10 Minimum: 1 | | Supported Purchase Methods: Credit Card Payment On Account | Delete |

Promo Code [Apply Code](#) [Apply Quantity Changes](#)

Total: USD \$4,120
Prices and offers in the cart are subject to change until the order is submitted.

[Continue Shopping](#) Payment Type: Payment On Account [Checkout](#)

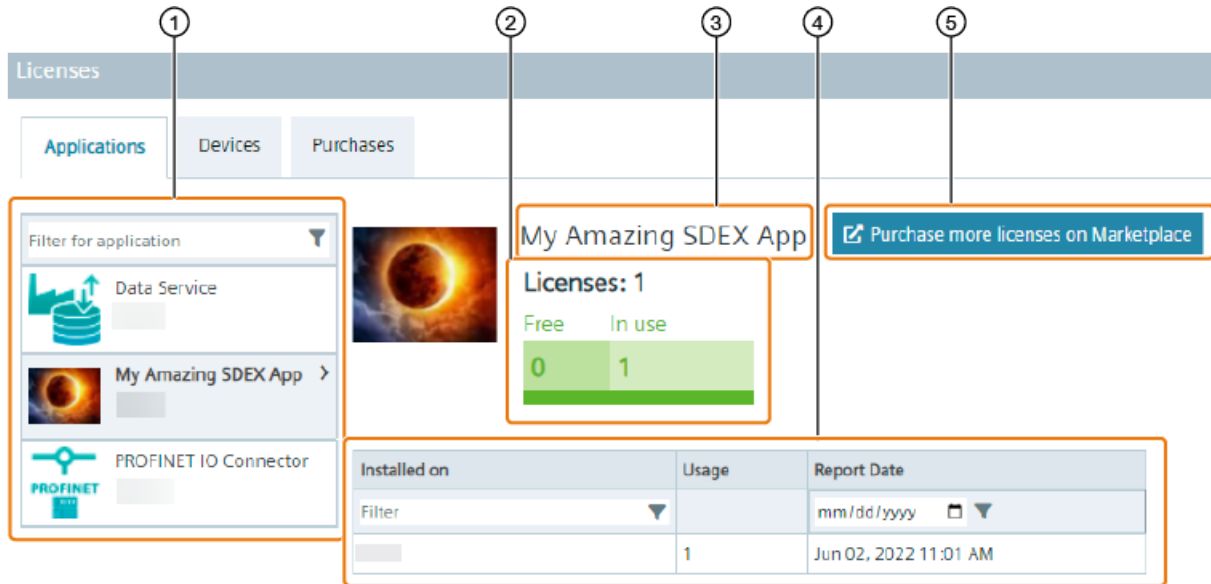
After you have purchased the app, the app is displayed in the IE Hub under "Library". From there, you can copy the app to your IEM instances. The amount of licenses, the license itself and further information are displayed under "Licenses". If needed, you can purchase more licenses of the respective app from there.

3.6 Licenses

The "Licenses" menu item lists all licenses and subscriptions that you ordered.

3.6.1 Purchased app licenses

The "Applications" tab lists all app licenses that you have purchased. The following figure shows the "Applications" tab as an example:

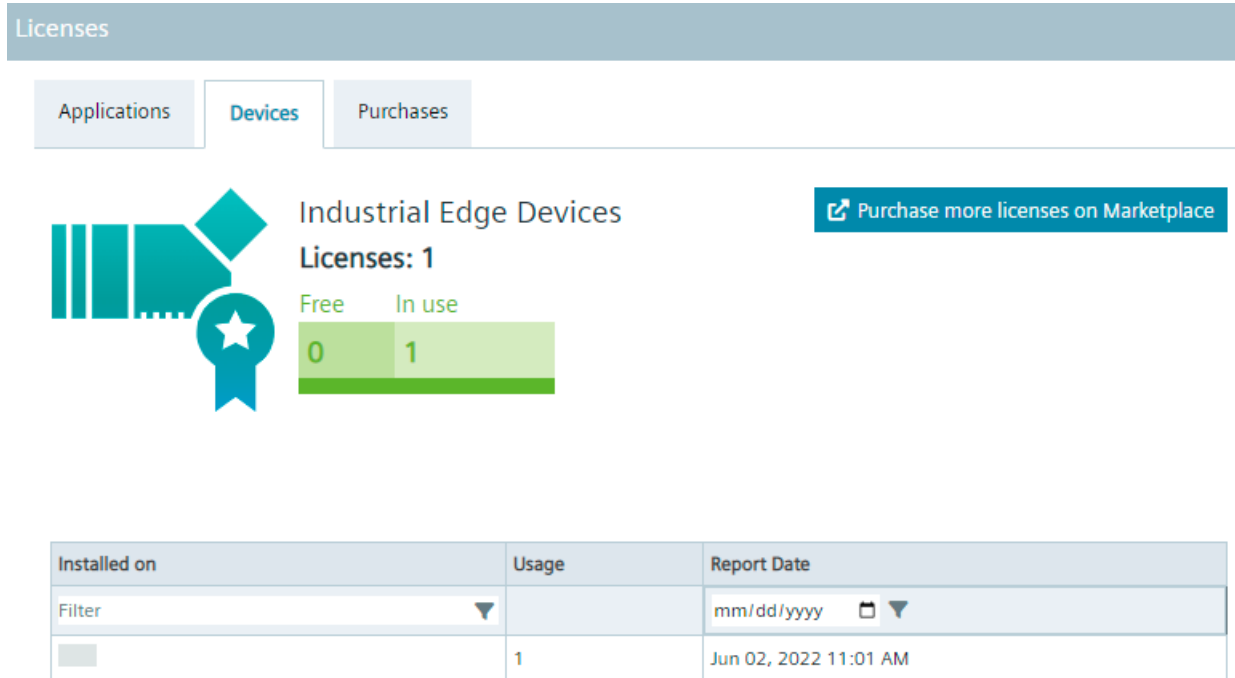


- ① Purchased apps
- ②
 - Number of valid licenses in total of the selected app
 - Free licenses that can be used
 - Number of used licenses
- ③ App name
- ④ License report table including:
 - IEM instance
 - Number of used licenses on the corresponding IEM instance
 - Creation date of the report
- ⑤ Link to the respective app in the IE Marketplace to purchase more licenses

System Apps and your own apps are not listed in this screen.

3.6.2 Purchased Edge Device licenses

The "Devices" tab displays the amount of Industrial Edge Device licenses that you have purchased from the IE Marketplace. The following figure shows the "Devices" tab as an example:



1 license enables the connection and management of 1 Industrial Edge Device. By default, 1 license is included at no charge with each Industrial Edge Management system. To purchase more Edge Device licenses, click "Purchase more licenses on Marketplace". In the IE Marketplace, purchase the amount of licenses you require to permanently onboard and manage your Industrial Edge Devices within your Industrial Edge Management system.

If a license report was sent from the IEM to the IE Hub, the report is displayed in this screen. Similar to purchased app licenses, the table shows:

- IEM instance
- Number of used licenses on the corresponding IEM instance
- Creation date of the report

You find more information on creating and sending a license report from the IEM to the IE Hub in the "Admin UI > Licenses" subsection in the "Industrial Edge Management - Operation" manual.

3.6.3 Purchased licenses

The "Purchases" tab lists all licenses and subscriptions of your purchased products. The tab is divided into the "Industry Mall" and the "Industrial Edge Marketplace" section.

3.6 Licenses

The "Industry Mall" section lists all purchased licenses. The following figure shows the "Industry Mall" section as an example:

| Product | Licensed By | Licensed to | Order Date | License Files |
|---|-------------|-------------|-----------------------|-------------------------|
| IE Databus App License Order No. [blurred] | [blurred] | [blurred] | Nov 12, 2020 15:20 PM | Licence |
| IE Cloud Connector App License Order No. [blurred] | [blurred] | [blurred] | Nov 12, 2020 15:20 PM | Licence |

< 1 >

- ① Product name and order number (MLFB)
- ② Purchaser email address
- ③ Customer email address
- ④ Date of order
- ⑤ Download license file



The "Industrial Edge Marketplace" section lists all subscriptions that you ordered from the IE Marketplace. The following figure shows the "Industrial Edge Marketplace" section as an example:

The screenshot shows a web interface for 'Industrial Edge Marketplaces'. At the top, there are tabs for 'Applications', 'Devices', and 'Purchases'. Below these is a header for 'Industry Mall' and 'Industrial Edge Marketplaces'. The main content is a table with columns: Subscription ID, Product, Purchaser, Contract Start Date, Contract End Date, and Quantity. The table has a filter row and several data rows. One row is highlighted with an orange border. Below the table is a pagination control with a blue arrow pointing right.

| Subscription ID | Product | Purchaser | Contract Start Date | Contract End Date | Quantity |
|-----------------|---------------------|--------------|---------------------|-------------------|----------|
| Filter | Filter | Filter | mm/dd/yyyy | mm/dd/yyyy | |
| | Data Service | @siemens.com | Jun 29, 2022 | Jun 29, 2023 | 10 |
| | My Amazing SDEX App | @siemens.com | Jul 28, 2022 | Jul 26, 2023 | 8 |
| | Data Service | @siemens.com | Sep 20, 2021 | Sep 20, 2022 | 1 |
| | My Amazing SDEX App | @siemens.com | Aug 11, 2020 | Aug 11, 2021 | 3 |
| | My Amazing SDEX App | @siemens.com | Aug 11, 2020 | Aug 7, 2022 | 3 |

- ① Subscription ID
- ② Product name
- ③ Email address of the purchaser
- ④ Subscription start
- ⑤ Subscription end
- ⑥ Auto-renewal status
- ⑦ Number of subscriptions

The auto-renewal status indicates whether the product license that is about to expire will be automatically renewed or not when the subscription end is reached.

Product licenses that are marked with the  icon will not be automatically renewed when the subscription end is reached and will not be available anymore after subscription end. Product licenses that are marked with the  icon will be automatically renewed when the subscription end is reached. In both cases, if you want to change the auto-renewal status, contact the product purchaser.

3.7 IEM Instances

The "IEM Instances" screen lists all existing IEM instances and provides the following functions:

- Creation of new IEM instances
- Management of IEM instances

When you create a new IEM instance, the IEM instance is added to the table and a configuration file is created. This configuration file contains the configuration for the IEM that you need to set up the IEM instance.

The following figure shows the "IEM Instances" screen as an example:

3.7 IEM Instances

| Name | Description | Creator | Configuration Date | Status | Actions |
|------------|--------------------|---------|-----------------------|---------|---------|
| iemhamburg | Factory in Hamburg | | May 11, 2022 10:46 AM | Online | |
| iemmunich | Factory in Munich | | May 11, 2022 10:45 AM | Online | |
| iemberlin | | | Mar 31, 2022 09:51 AM | Offline | |

① Create New IEM Instance

② IEM instances table

Listed IEM instances inclusive following information:

- Name: Name of the instance
- Description: Description of the respective instance
- Creator: E-mail address of the instance's creator
- Configuration Date: Creation date of the instance
- Status: Status of the instance
 - Online: IEM instance is running
 - Offline: IEM instance is offline since minimum 15 minutes
- Actions: Manage instance
 - Edit instance description
 - Download configuration file
 - Delete instance

Note

Description and creator of IEM instances


With IE release 06/22, the description and the creator of an IEM instance is also displayed in the table. For IEM instances, that have been created with earlier IE versions, the respective columns are empty. For these IEM instances, you can add a description afterwards.

3.7.1 Managing IEM instances


Creating an IEM instance

When you click "Create New IEM Instance", you create an IEM instance and the according configuration file which you need for setting up your IEM instance. You find the detailed procedure to create an IEM instance in the "Creating IEM instance and downloading the configuration file (Page 55)" subsection.


Editing IEM instance description

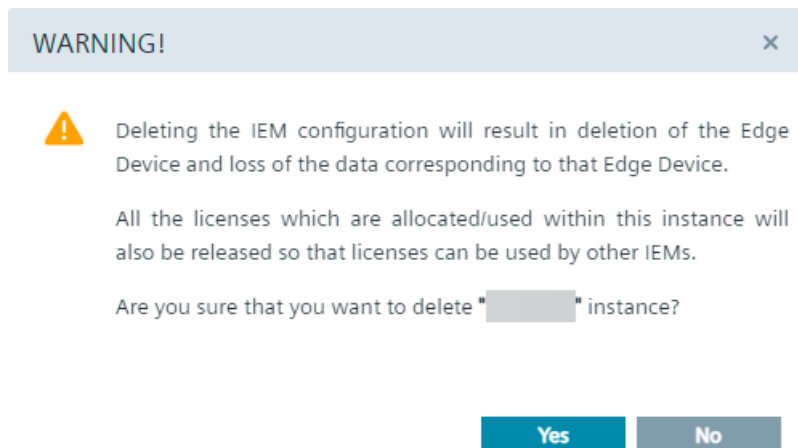
To edit (or to add) an IEM instance description, click the  icon of the respective instance. Enter the description and save the changes by clicking "Save".

Downloading an IEM configuration file

To download an IEM configuration file, click the  icon of the respective instance. The configuration file is downloaded to the standard download folder of your Internet browser.

Deleting an IEM instance

1. Click the  icon of the respective instance. A warning is displayed.



If you delete the IEM instance, all data corresponding to this IEM instance will be deleted irrecoverable.

2. To confirm the deletion, click "Yes". The IEM configuration is deleted from the IEH.

3.8 Download Software

In the "Download Software" screen you download all necessary software for running the IEM.

3.10 User Management

In the "Initial Setup Tools" tab, you download the Industrial Edge Management OS which runs on a VM. From the "Update Packages" tab, you download the software update package to update the Industrial Edge Management. From the "Developer Tools" tab, you download the Windows respectively Linux version of either the UI based software or the CLI (command line interface) of the Industrial Edge App Publisher. In addition, you can download the Industrial Edge Control (IE CTL), the Command Line Interface to interact with Industrial Edge and its components.

By clicking the "Download" button of the corresponding software, the software is downloaded to the standard download folder of your Internet browser.

The respective software also includes links for its open source software (OSS) sources and for the OSS readme. By clicking 1 of the links, the respective file is being downloaded.

3.9 Documents

In the "Documents" screen, you get the necessary documentation and additional information regarding Industrial Edge.

You can open all documents either as PDF or HTML file.

3.10 User Management

3.10.1 Overview

It is possible to be registered in several IE Hub organizations. In the "User Management" section, you get an overview of all registered users in the logged IE Hub organization and also a list of invited users who have not yet accepted the invitation to access this IE Hub organization. You can invite new users to this IE Hub organization, delete users from the organization and manage roles assigned to the users.

The "User Management" screen is displayed as follows for example:

The screenshot displays the 'User Management' interface. At the top, there is a '+ Invite User' button (1). Below it, the 'Active Users' section contains a table with columns: Email (2), Name (3), Surname (3), Roles (4), and Actions (5). The table lists four users with their respective roles and action icons (edit and delete). Below the table is a pagination control showing page 1 of 2. The 'Pending Invitations' section contains a table with columns: Email (2), Roles (4), Invitation Date, and Actions (6). It lists four pending invitations with their roles and dates. Below this table is a pagination control showing page 1.

- ① Invite new users to your IE Hub organization
- ② Registered users
- ③ Filter respective column
- ④ Manage user roles
- ⑤ Delete user
- ⑥ Pending users

Note

Filtering can also be combined with several columns.

Inviting new users, deleting users and managing user roles is only available for users with the "ORGANIZATION_ADMIN" role.

3.10.2 Inviting a new user

Requirement

The "ORGANIZATION_ADMIN" role is assigned to you.

Procedure

1. Click "Invite User".
The "Invite User" screen is displayed.

Invite User

Email*

Location

| <input type="checkbox"/> Available Roles | | <input type="checkbox"/> Current Roles |
|---|----|--|
| <input type="checkbox"/> ORGANIZATION_ADMIN > | >> | <input type="checkbox"/> USER > |
| <input type="checkbox"/> IEM_MANAGER > | << | |
| <input type="checkbox"/> APP_SELLER > | | |
| <input type="checkbox"/> DEVICE_BUILDER > | | |

2. In the "Email" input field, enter the email address of the user you want to invite to the IE Hub organization.
3. In the "Location" drop-down list, select the location of the respective user.

4. Select the roles you want to assign to the user.

Invite User

william.smith@siemens.com

United States

| <input type="checkbox"/> | Available Roles |
|-------------------------------------|----------------------|
| <input checked="" type="checkbox"/> | ORGANIZATION_ADMIN > |
| <input checked="" type="checkbox"/> | IEM_MANAGER > |
| <input checked="" type="checkbox"/> | APP_SELLER > |
| <input checked="" type="checkbox"/> | DEVICE_BUILDER > |

| <input type="checkbox"/> | Current Roles |
|--------------------------|---------------|
| <input type="checkbox"/> | USER > |

>>


<<

Save Cancel

Note


By clicking the > icon next to a role, all permissions assigned to the role are displayed.

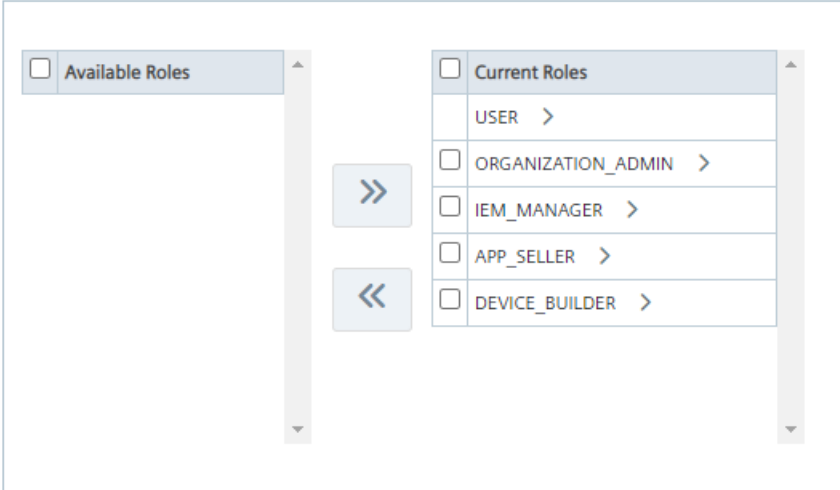
The "USER" role is assigned by default to the invited user. The "ORGANIZATION_ADMIN" role will be automatically assigned to the first registered user of the IE Hub organization. In addition to these roles, some other roles with specific features and content, for example the "DEVICE_BUILDER" or "APP_SELLER" role, do also exist. To enable these roles in your IE Hub Organization, contact the IE Ecosystem.

5. Add the selected roles to the user by clicking the  icon.

Invite User

william.smith@siemens.com

United States 



| Available Roles | Current Roles |
|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> USER > |
| | <input type="checkbox"/> ORGANIZATION_ADMIN > |
| | <input type="checkbox"/> IEM_MANAGER > |
| | <input type="checkbox"/> APP_SELLER > |
| | <input type="checkbox"/> DEVICE_BUILDER > |

Save

Cancel



6. Click "Save".
A warning is displayed related to access of resources.
7. Click again "Save".
The invitee will be added to the "Pending Invitations" list and an email will be sent to the invitee. The invitee then must activate his account by signing up to the IE Hub (Page 15). After the invitee has activated his account, the invitee will move to the "Active Users" list and is able to access the IE Hub with the roles that are assigned to the user.


3.10.3 Managing user roles

Requirement

The "ORGANIZATION_ADMIN" role is assigned to you.

Procedure

1. Click the  icon of the user whose roles you want to manage.
The "Edit Roles" screen is displayed.
2. Add new roles to the user by selecting the respective roles from the "Available Roles" list and by clicking the  icon.

3. Remove assigned roles from the user by selecting the respective roles from the "Current Roles" list and by clicking the  icon.
4. To save your changes, click "Save".

3.10.4 User roles

The following user roles are available.

User

Basic role for using the IE Hub. Includes read-only access to IE Hub resources.

Device Builder

Role for Device Builders which enables access to specific content on the IE Hub for Device Builders.

Organization Admin

Administrative role of the IE Hub organization. This role enables creation, modification and deletion of users, IEM instances and organizational resources.

App Seller

Role for app sellers. This role enables publishing apps to the IE Marketplace and deleting apps from there.

IEM Manager

Required role to manage IEM instances on the IE Hub and to download the IEM configuration file.

Unsubscribed User

Role for users who belong to a canceled IE Hub subscription. The role has limited scope to access certain IE Hub resources.

Permissions

| User role | Permissions |
|--------------------|---|
| User | <ul style="list-style-type: none"> • Read firmware release resources • Read firmware artifact resources • Read firmware resources • View licenses • View notifications • View subscriptions • View IEHub artifacts • Accept ECC document • View IEM instance configuration • View IEM instances • View users • View user roles • View apps • Transfer apps to IEM instances • View app versions • Create and manage app versions • Delete app versions • View access rights for an app • Accept or reject access rights for an app • View Device Types • View application agreement • Manage app • Delete app • View marketplaces for an app • View system settings • View API user |
| Device Builder | <ul style="list-style-type: none"> • Download Device Builder specific artifacts • Create IEM instances with Device Builder features |
| Organization Admin | <ul style="list-style-type: none"> • Accept application agreement • Create API user • Delete API user • Create and manage IEM instances • Invite users • Manage users • Manage IE organization • Configure user roles |
| App Seller | <ul style="list-style-type: none"> • Release approval of an app • Manage marketplace for an app • Delete app from marketplace |

| User role | Permissions |
|-------------------|---|
| IEM Manager | <ul style="list-style-type: none">• Create IEM instances• Edit IEM instances• Download IEM configuration file• Delete IEM instances |
| Unsubscribed User | <ul style="list-style-type: none">• View licenses• View subscriptions• View application agreement• View access rights for an app• View marketplaces for an app• View apps• View IEM instances• Accept ECC document• View users• Invite users• Manage users• View app versions• View system settings |

3.11 Organization Settings

3.11.1 Overview

In the "Organization Settings" screen, you can check the IE Hub organization name and creation date, as well as renaming the IE Hub organization display name.

The following figure shows an example of the "Organization Settings" screen:

3.11 Organization Settings

Organization Settings

Display Name
Core

Organization
core

Create Date & Time
Feb-25-2021

Save

- ① IE Hub organization display name
- ② IE Hub organization name
- ③ Creation date

Organization name and display name are also displayed when you click the user icon:

SIEMENS Industrial Edge

Organization Name: Core - core

Profile

Switch Organization

Logout

3.11.2 Renaming IE Hub organization display name

The IE Hub organization name is generated automatically by the system without any meaning or semantics and cannot be changed. However, to clearly correlate IE Hub organizations and to distinguish between several IE Hub organizations, you can rename the IE Hub organization display name. Via this display name, you can recognize IE Hub organizations.

Note**IE Hub URL**

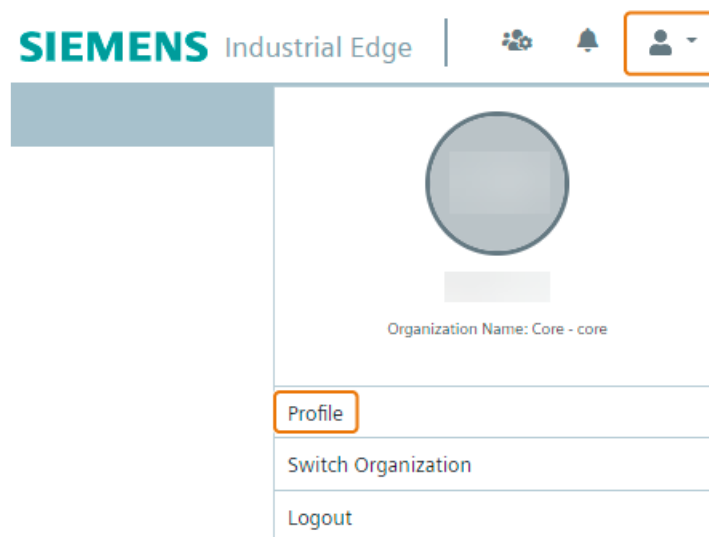
The IE Hub URL adapts to the generated IE Hub organization name. For example, when the organization name is "core", the URL will be "https://core.iehub.eu1.edge.siemens.cloud". You can directly log into specific IE Hub organizations by using the respective URL.

Procedure

1. In the "Display Name" input field, enter the IE Hub organization display name.
The name must not contain a blank and must contain just alphanumeric characters.
2. Click "Save".
The IE Hub organization display name is renamed.

3.12 Notification Settings

In the "Notification Settings", you can enable or disable e-mail notifications and IE Hub notifications displayed via the "Notifications" screen in the IE Hub. To open the "Notification Settings", click the user icon in the top-right corner and then "Profile".



The "Notification Settings" screen is displayed as follows for example.

3.12 Notification Settings

Home > Profile

Notification Settings

Decide on the kind of information that you want to receive for [redacted]. System-wide information will be switched on/off for all of the organizations of your user.

| Information | E-mails | Notifications |
|--|-------------------------------------|-------------------------------------|
| Industrial Edge New Releases Notifications and E-mails reporting new releases of core Industrial Edge content | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Industrial Edge Announcements Announcements related with Industrial Edge Platform, which is being published by core industrial Edge Team | <input checked="" type="checkbox"/> | |
| Marketplace Updates Notifications and E-mails related with updates in marketplace | | <input checked="" type="checkbox"/> |

Decide on the kind of information you want to receive for [redacted] - core Organization-wide information can be switched on/off using the radio buttons in the table below.

| Information | E-mails | Notifications |
|--|-------------------------------------|-------------------------------------|
| Subscriptions and Purchases Notifications and E-mails related with subscription and purchase updates | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| License Updates Notifications and E-mails related with license updates | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Organization Updates Notifications and E-mails related with updates in organization | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| User Updates Notifications and E-mails related with updates in user data | <input checked="" type="checkbox"/> | |
| Application Provider Notifications and E-mails related with providing a new application to IEHub as application provider | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

- ① Information type
- ② Enable or disable e-mail notifications
- ③ Enable or disable IE Hub notifications via the "Notifications" screen

E-mail notification and IE Hub notification settings in the first table are system wide settings and are valid for all IE Hub organizations in which you are registered. Changing settings in this table will be also changed accordingly and automatically in all other IE Hub organizations in which you are registered. E-mail notification and IE Hub notification settings in the second table are just valid for the current IE Hub organization. Changing settings in this table will be applied only for this IE Hub organization.

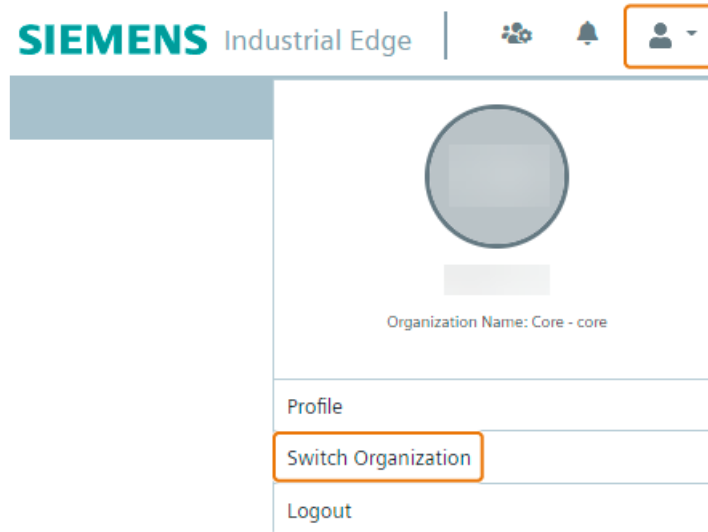
If you disable e-mail or IE Hub notifications of a specific information type, you will no longer receive any e-mails or IE Hub notifications respectively from this information type. Also if you disable IE Hub notifications of a specific information type, all notifications of this information type will be hidden in the "Notifications" screen in the IE Hub. If you enable an information type, you will again receive any e-mails or IE Hub notifications respectively from this information type. Also if you enable an information type, all notifications of that respective information type will be displayed again.

3.13 Switching IE Hub organization

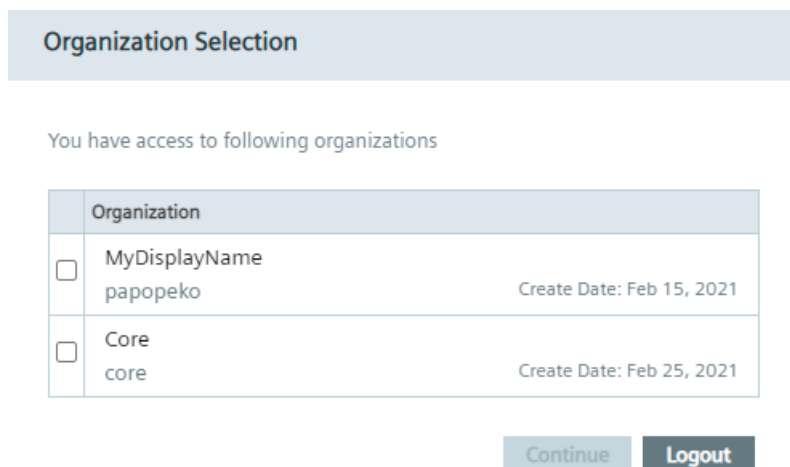
If you are registered in several IE Hub organizations, you can switch from 1 IE Hub organization to another one.

Procedure

1. Click the user icon in the top right corner.
2. Click "Switch Organization".



The "Organization Selection" screen is displayed.



3. Select the check box of the IE Hub organization you want to switch to.

3.14 Cancelling an IE Hub subscription

- Click "Continue".
The "Confirmation of delivery address and Export Control Clause" screen is displayed.

Confirmation of delivery address and Export Control Clause

Delivery Address

Email:

Country Code:

The user confirms that the download is executed on the displayed country.

Export regulations for DE

[export regulations \(en\)](#)

[export regulations \(de\)](#)

The export control clause for distribution contracts is accepted.

Continue Cancel

The available export regulations in the screen depend on your location, here for example Germany.

- If not done yet, read the export regulations.
- Accept the export regulations by selecting the 2 check boxes.
- Click "Continue".

3.14 Cancelling an IE Hub subscription

If you do not want to extend your IE Hub subscription, you can cancel the subscription. To cancel your IE Hub subscription, contact the Industrial Edge Support. Only the IE Support can cancel your IE Hub subscription. After your cancellation has been approved by the IE Support, the expiration date will be displayed in the header of your IE Hub organization. When the expiration date is reached, the header indicates that your account has been cancelled resulting in a limited access to the IE Hub for all users of the IE Hub organization.

With limited access to the IE Hub, the following is no longer possible:

- Creating IEM instances
- Downloading any content (inclusive IEM configuration files)
- Purchasing apps
- Inviting new users

With limited access to the IE Hub, the following is still available:

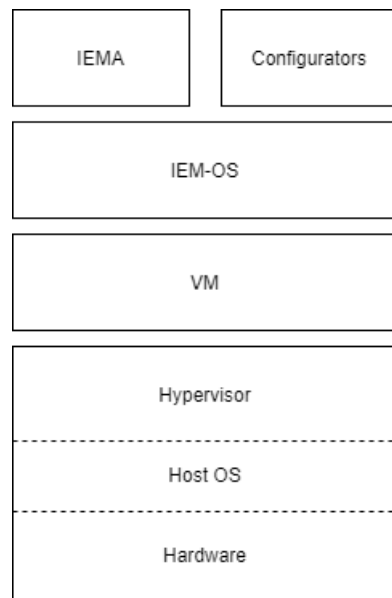
- List of existing IEM instances
- List of purchased apps in the "Library" section
- Download already purchased app licenses
- List existing users and delete users in the "User Management" section

Setting up the IEM

4.1 Setup steps

To deploy the IEM, you need access to the Industrial Edge Hub. After accessing and downloading the Industrial Edge Management OS (IEM-OS) from the Industrial Edge Hub, you must create an IEM instance. After creating the IEM instance, you run the downloaded Industrial Edge Management OS locally in a VM. This VM, including the Industrial Edge Management OS, enables the IEM. After activating the IEM-OS, the IEM gets installed as Industrial Edge Management App in the IEM-OS.

The following figure illustrates how the components are based on each other:



When you successfully install the IEM, you use the IEM to manage the on-premises Industrial Edge infrastructure.

Requirements for setting up the IEM

- A software is installed on the PC to extract zip-files, for example "7-Zip".
- A static IP address for the IEM which must not change after the IEM is set up. You can configure the IEM network interface either with a static IP address or via using a DHCP server which then needs a static lease from the DHCP server.
- UEFI Boot is enabled in the VM.
- Minimum 16 GB RAM.
- In total, minimum 200 GB (2x100 GB) hard disk space.
- Ensure that the time setting on the host system is correct.

4.2 Downloading the Industrial Edge Management OS

- Do not enable the feature for virtualizing the clock in the VM.
- Do not install additional virtualization packages in the VM, for example VMware Tools or VMware Workstation or Oracle VirtualBox Guest Additions.
- Siemens recommends the following additional settings to raise security:
 - VM is set up encrypted
 - Trusted Platform Module (TPM) is enabled for the VM

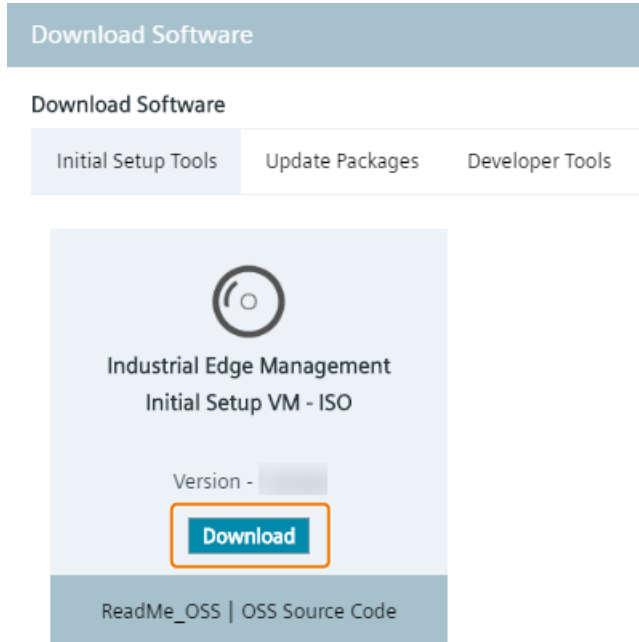
You find information on how to enable these settings in the documentation of the virtualization environment itself from the Internet.

4.2 Downloading the Industrial Edge Management OS

You download the Industrial Edge Management OS (IEM-OS) for the VM from the IE Hub. The Industrial Edge Management OS, that is running in a VM, enables the IEM.

Procedure

1. Sign into the IE Hub.
2. In the navigation, click "Download Software".
The "Download Software" screen is displayed.
3. In the "Initial Setup Tools" tab, click "Download" in the "Initial Setup VM - ISO" section.

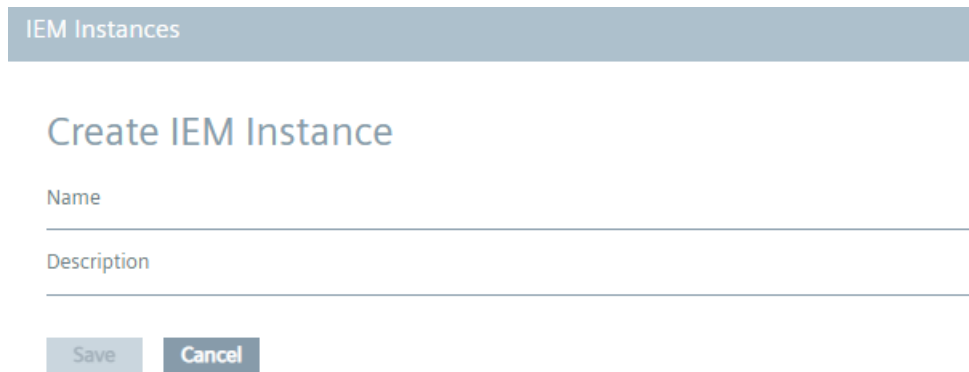


The ISO image of the Industrial Edge Management is downloaded to the standard download folder of your Internet browser. The version of the IEM is included in the file name. You run this ISO image later in the VM.

4.3 Creating an IEM instance and downloading the configuration file

Procedure

1. In the navigation menu in the IE Hub, click "IEM Instances".
2. Click "Create New IEM Instance".
The "Create IEM Instance" screen is displayed.



IEM Instances

Create IEM Instance

Name

Description

Save Cancel

3. In the "Name" input field, enter the name of the instance.
The name of the instance must match the following criteria:
 - Minimum 3 characters
 - Only lowercase letters and numbers
 - Must not start with a number
 - Must be unique within your IE Hub organization

Note

Recommendation for name of the instance


Siemens recommends using a name for the instance that corresponds to the URL of the IEM that you later configure during the setup of the IEM. Use, for example, "iem" as name of the instance and "iem.my.domain.name.com" as URL of the IEM.

4. Optionally, enter a description for the IEM instance in the "Description" input field.
5. Click "Save".
The IEM instance is added to the IEM instance table. The configuration of the IEM instance is saved to the configuration file.

Note

Changing the name of an IEM instance

You cannot change the name of an IEM instance. Instead, you must either create a new IEM instance or delete old IEM instances and recreate a new one.

6. To download the IEM configuration file, click the  icon of the respective instance.
The configuration file is downloaded to the standard download folder of your Internet browser.

4.4 VMware Workstation

4.4.1 Creating the VM

After downloading the Industrial Edge Management OS, you import and install the IEM-OS in the virtualization environment.

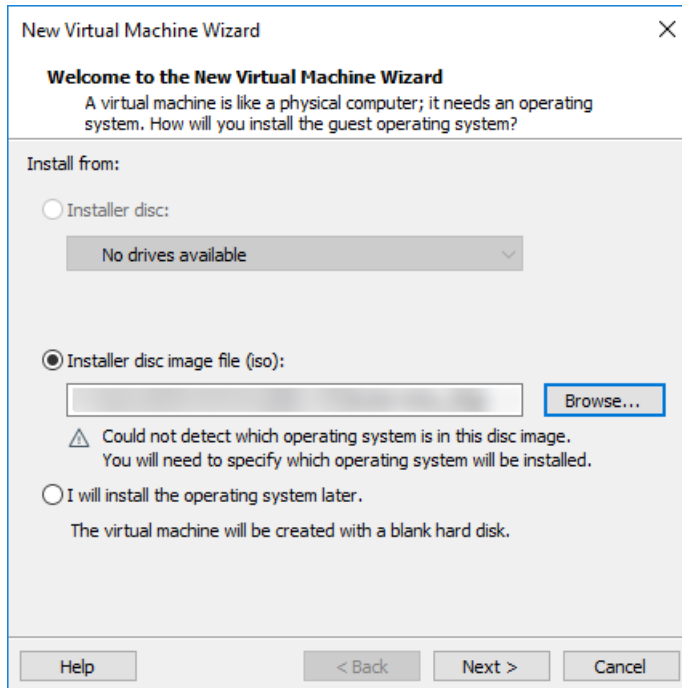
The following procedure describes the installation in the "VMware Workstation" virtualization environment.

Requirement

The ISO image of the IEM is downloaded to the PC.

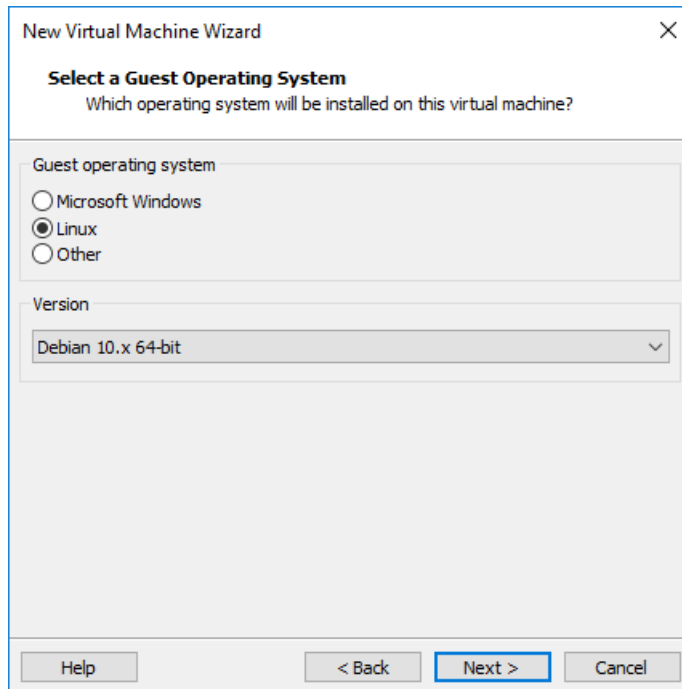
Procedure

1. Open "VMware Workstation".
2. Select the "File > New Virtual Machine" menu command.
The "New Virtual Machine Wizard" screen is displayed.
3. Select the "Typical (recommended)" option as configuration type.
4. Click "Next".
5. Select the "Installer disc image file (iso)" option.
6. Click "Browse" and select the extracted "industrial_edge_management.iso" file.

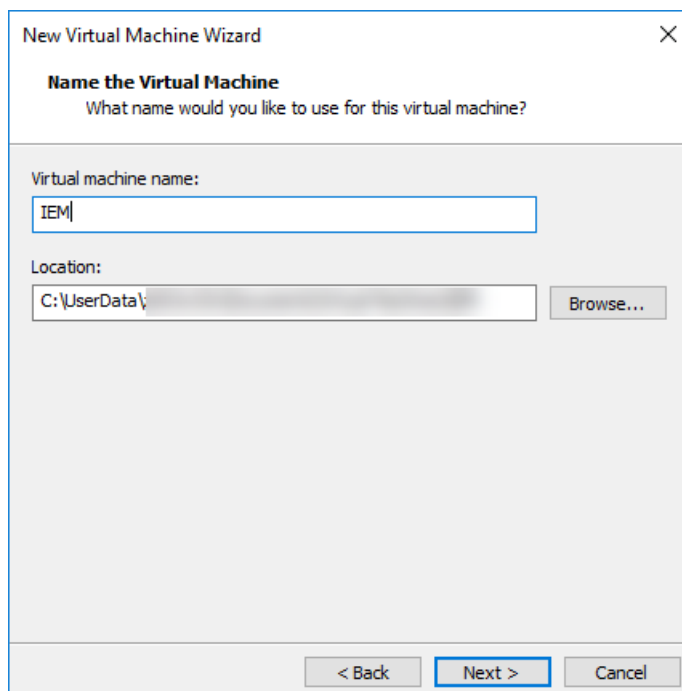


7. Click "Next".

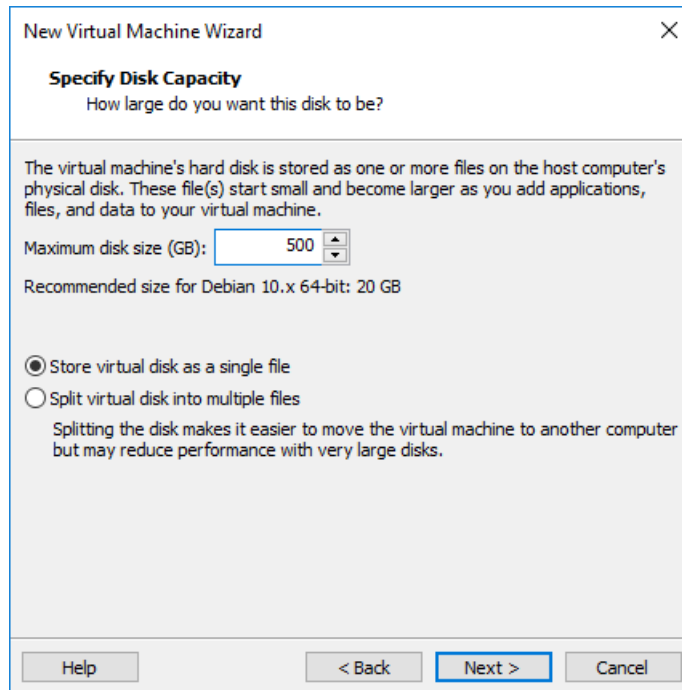
8. From the "Guest operating system" options, select "Linux".
9. From the "Version" drop-down list, choose a 64-bit version of a Linux distribution, for example "Debian 10.x 64-bit".



10. Click "Next".
11. In the "Virtual machine name" input field, enter a name for the VM.
12. If necessary, choose a storage location for the VM on your PC by clicking "Browse".

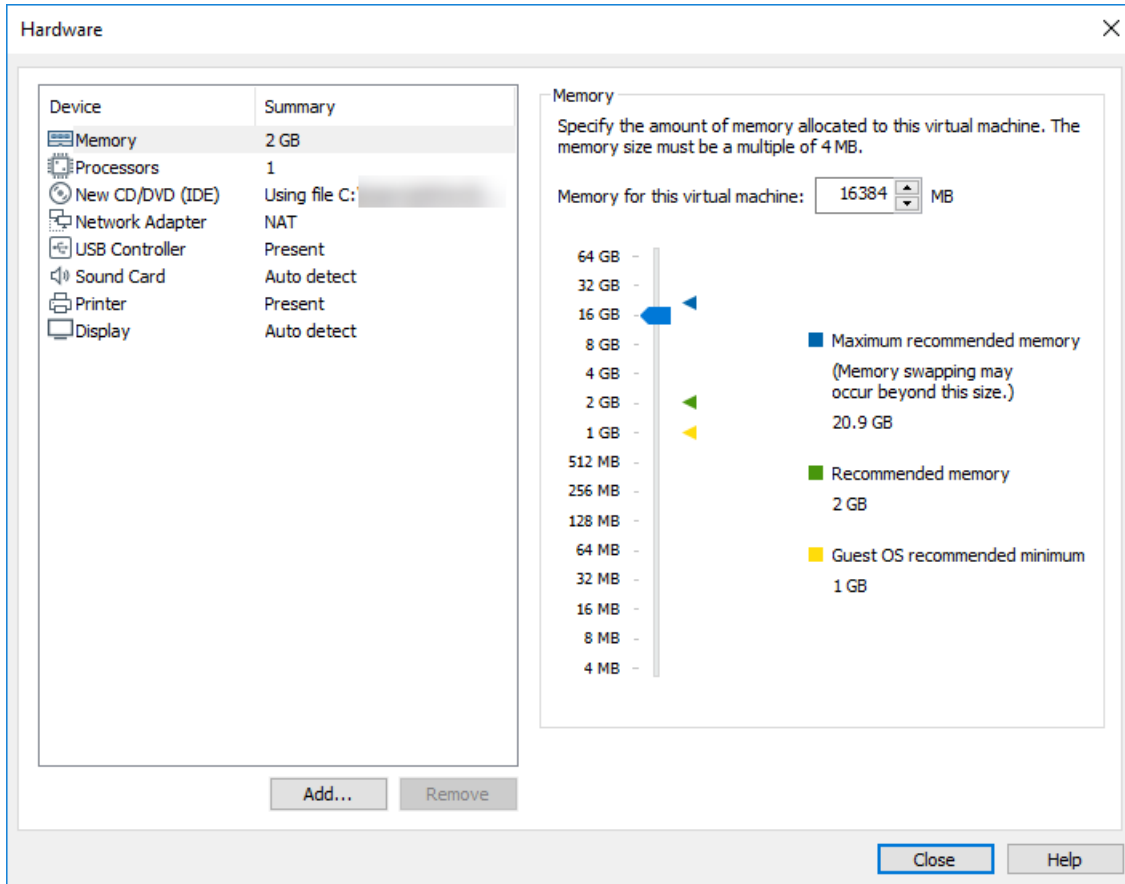


13. Click "Next".
14. In the "Maximum disk size (GB)" input field, enter a maximum disk size for the VM on the host PCs physical disk.
The disk is mandatory for the operating system and also stores IEM services.
Siemens recommends a maximum disk size of 500 GB, a minimum of 100 GB is mandatory.
15. Select the "Store virtual disk as a single file" option.

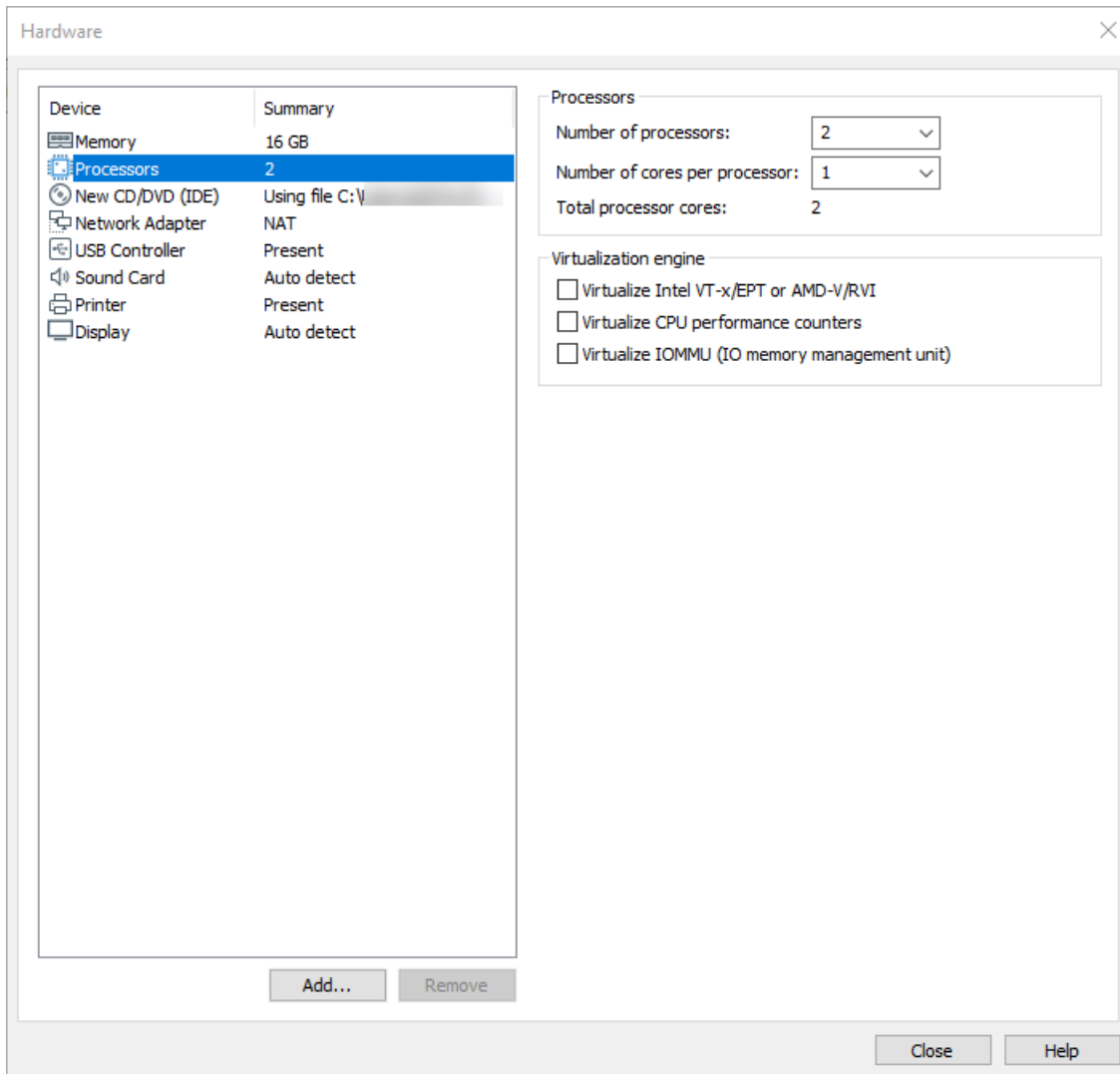


16. Click "Next".
17. Click "Customize Hardware".

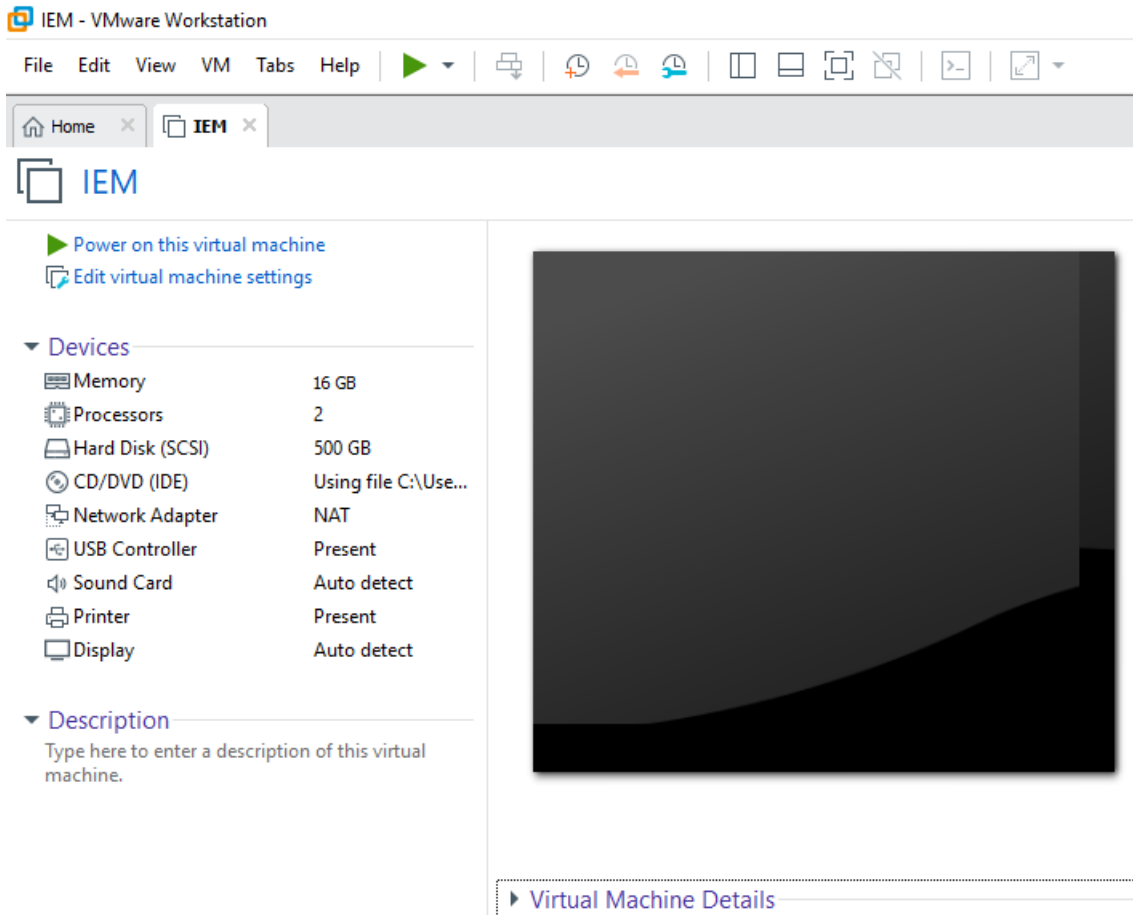
18. For the memory amount allocated to the VM, choose a minimum of 16 GB.



19. For the number of processors, choose minimum 2 processor cores for the VM.



20. Click "Close".
21. Click "Finish".
The VM is created.



4.4.2 Configuring the VM

Requirement

If you use a "Bridged" network connection for your VM, you need 1 additional network interface.

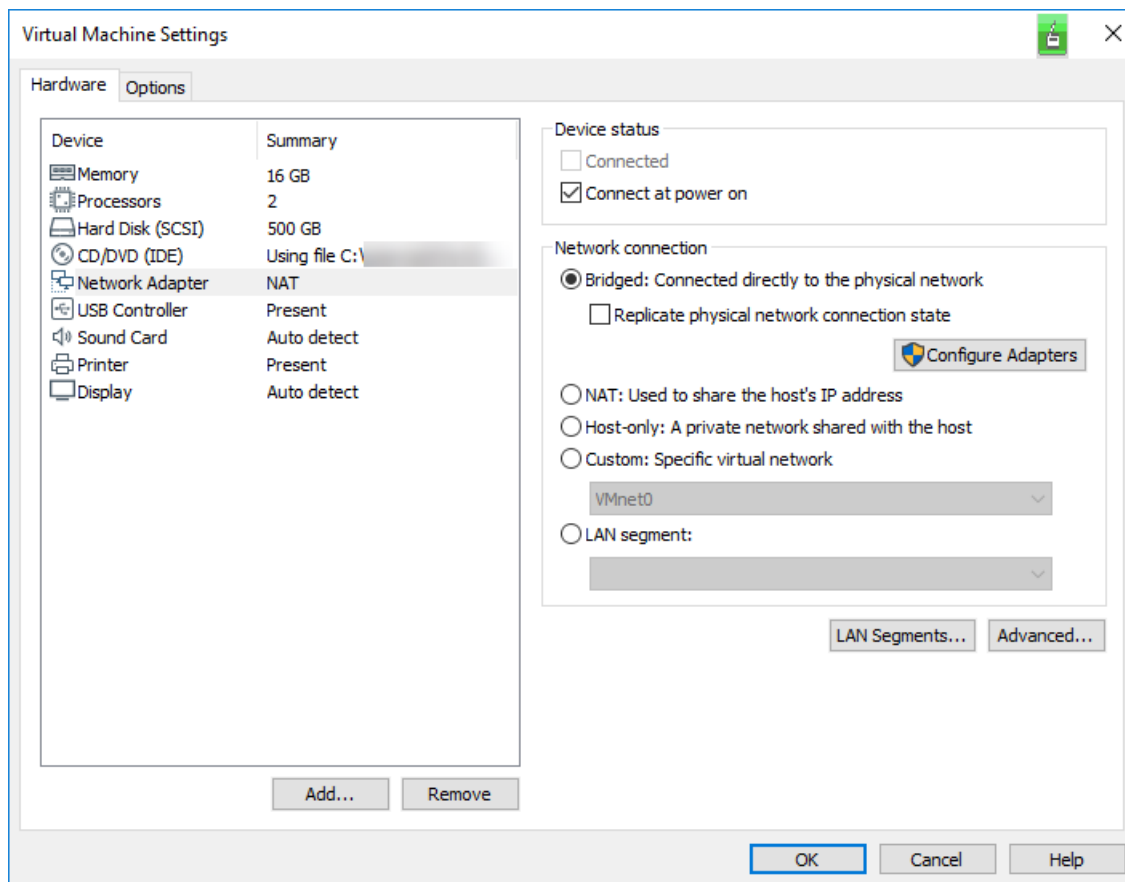
Note

USB network adapter

The following procedure describes the use of an USB network adapter as additional network interface. Proceed in the same manner for other additional network interfaces.

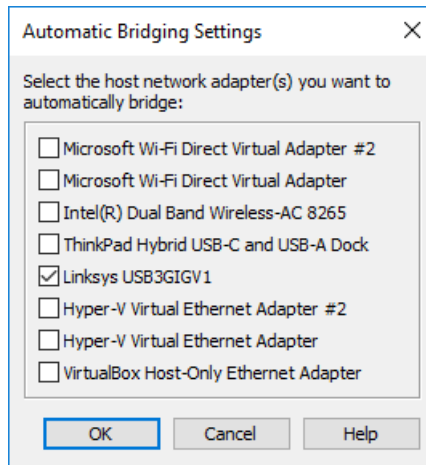
Procedure

1. Select the created VM.
2. Click "Edit virtual machine settings".
3. In the hardware list on the left side, choose "Network Adapter".
The steps 5. to 10. describe the configuration when you use an USB network adapter for the network connection of your VM. This configuration is optional. You can also use a "NAT" network connection.
If you use a "NAT" network connection for your VM, go to step 8.
4. On the right side under "Network connection", select "Bridged: Connected directly to the physical network".

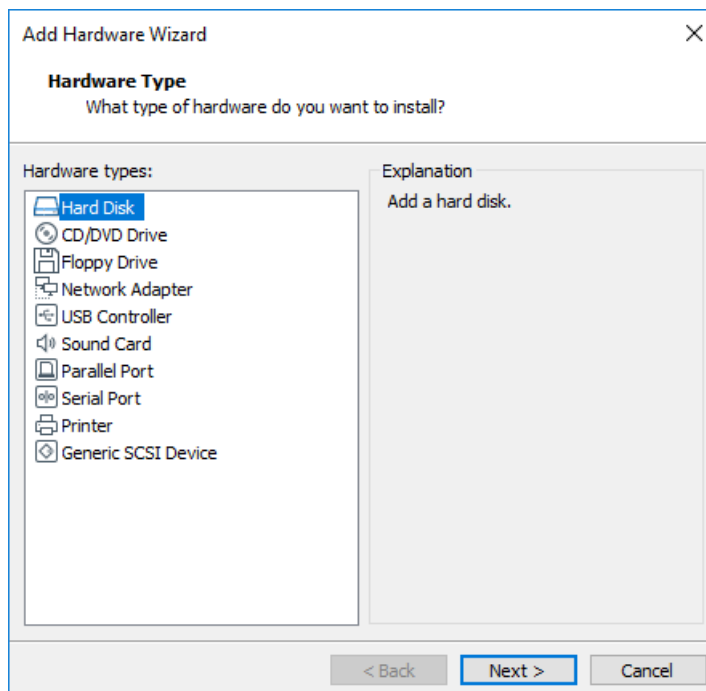


5. Click "Configure Adapters".
The "Automatic Bridging Settings" screen is displayed.

6. Activate only your connected USB network adapter.

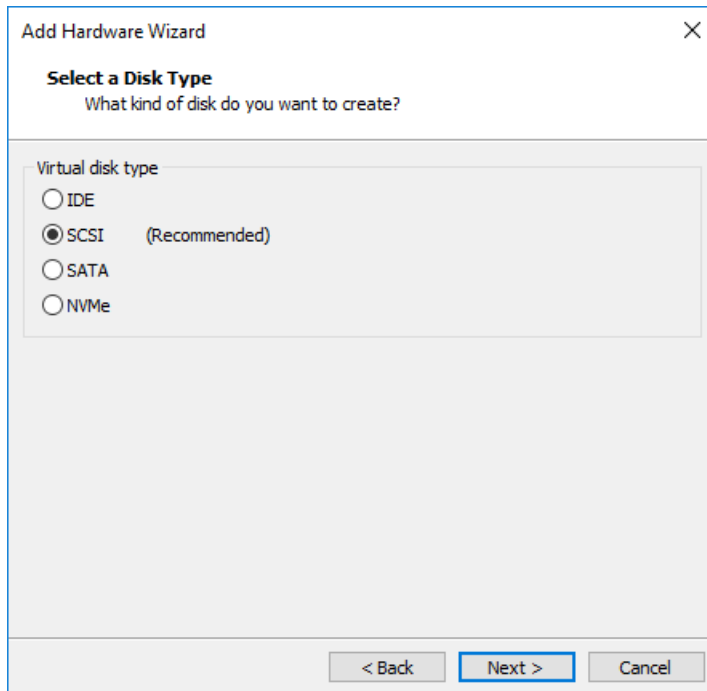


7. Click "Ok".
8. Below the left navigation, click "Add".
The "Add Hardware Wizard" screen is displayed.

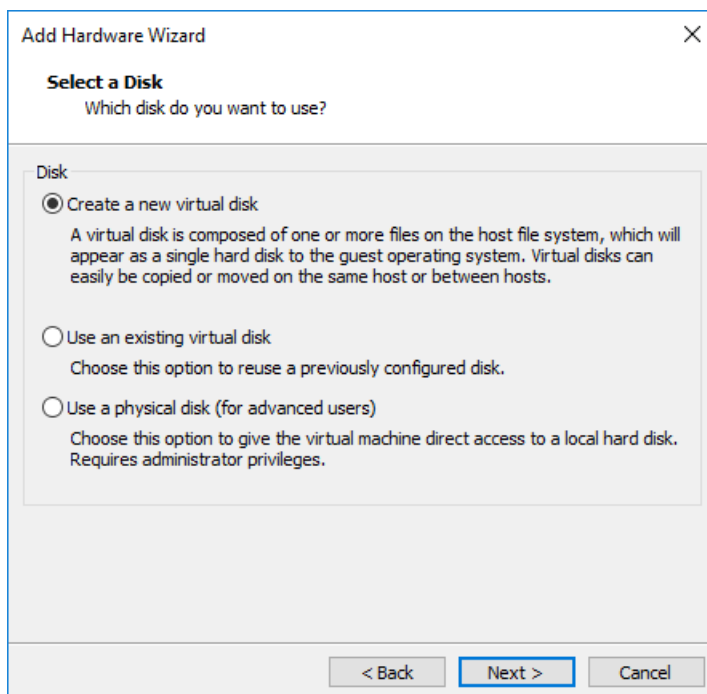


9. Select "Hard Disk" and click "Next".

10. As virtual disk type, select "SCSI" and click "Next".



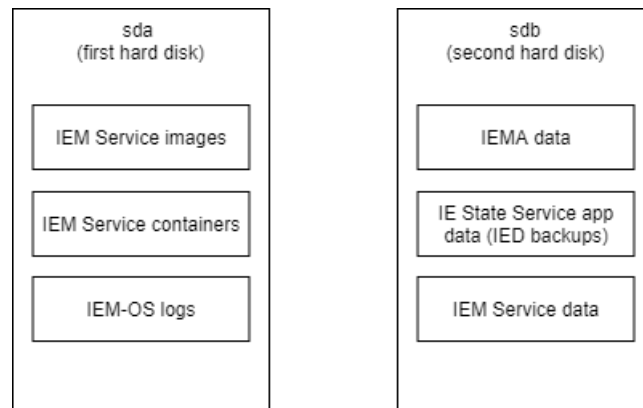
11. Select "Create a new virtual disk" and click "Next".



12. In the "Maximum disk size (GB)" input field, enter a maximum disk size that is lower than the first disk size.

The second hard disk is used for app images and containers in the IEMA, as well as for app's data storage.

The following figure shows a simplified representation of the data stored in each hard disk:



The size of the second hard disk depends on the apps and the apps sizes that you install in the IEMA. A minimum of 100 GB is mandatory.

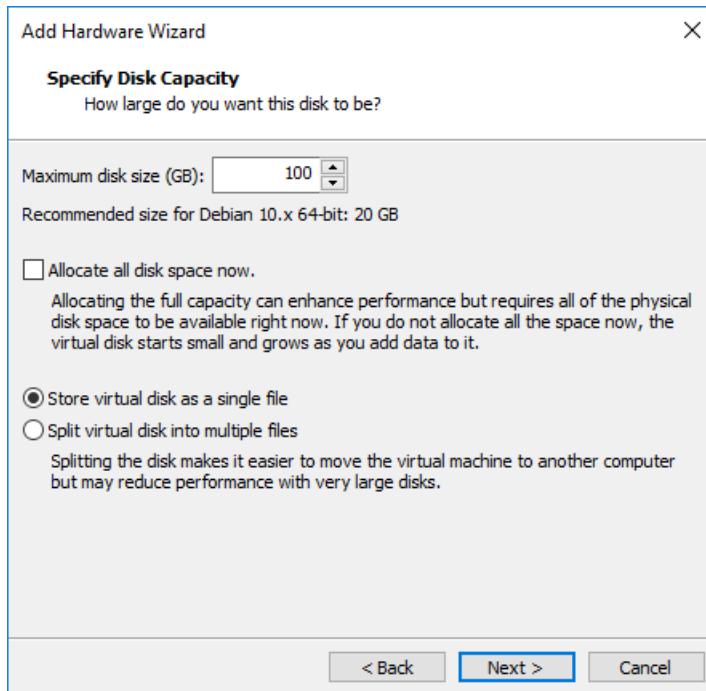
Note

IED backups via IE State Service

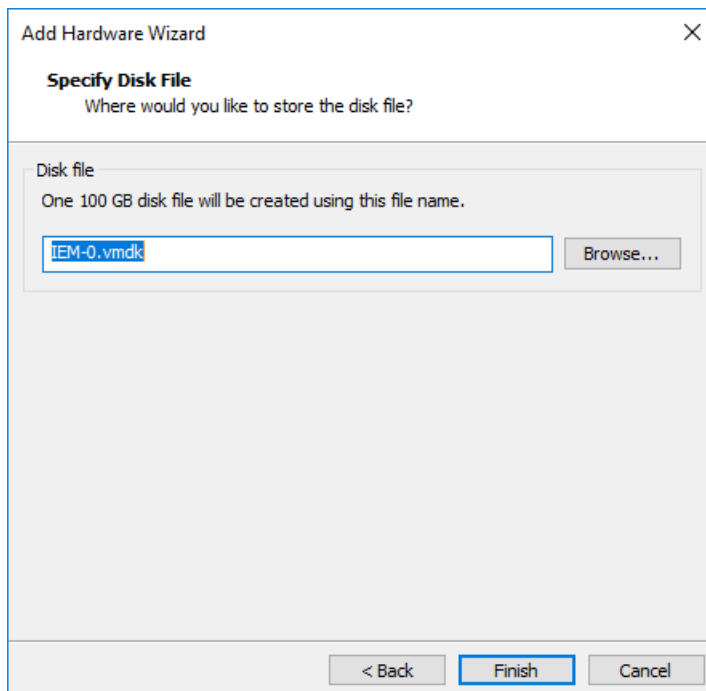
The IE State Service is used in the IEM for storing and restoring IED states. Ensure to choose an appropriate large hard disk space for the second hard disk (sdb) since the backup data of the IE State Service are being stored on this hard disk and cannot be changed afterwards. For more information on the IE State Service and IED backups, refer to the "Backups" section in the "Industrial Edge Management - Operation (<https://support.industry.siemens.com/cs/us/en/view/109804063>)" manual.

You can later on add additional storage to the IEM by adding additional hard disks to the VM after setting up the IEM. Each additional added hard disk is used for storing the same type of data as the second hard disk (sdb) is used for.

13. Select "Store virtual disk as a single file".

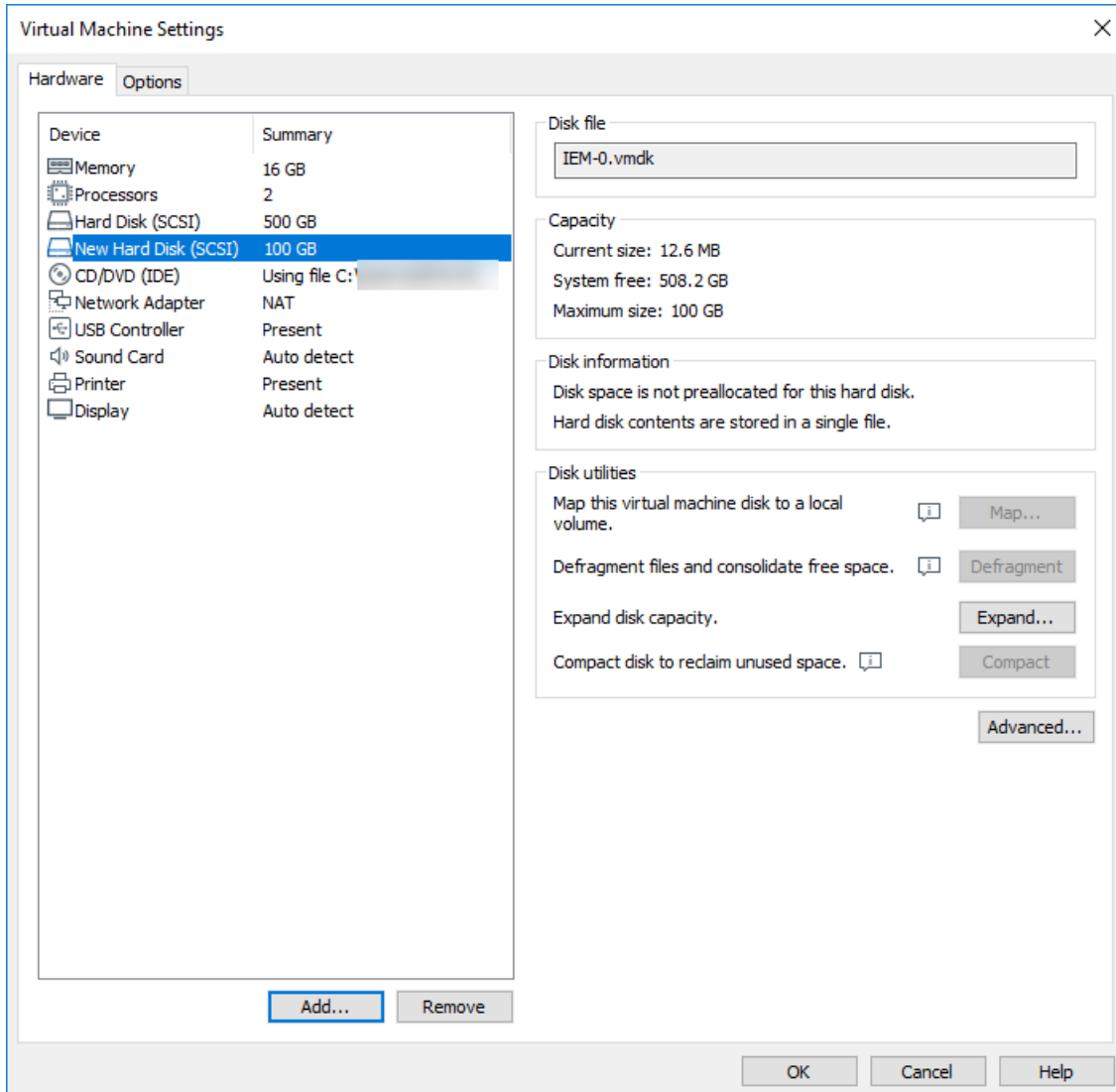


14. Enter a unique name for the created disk file. The disk file will be stored under the entered file name.



15. Click "Finish".

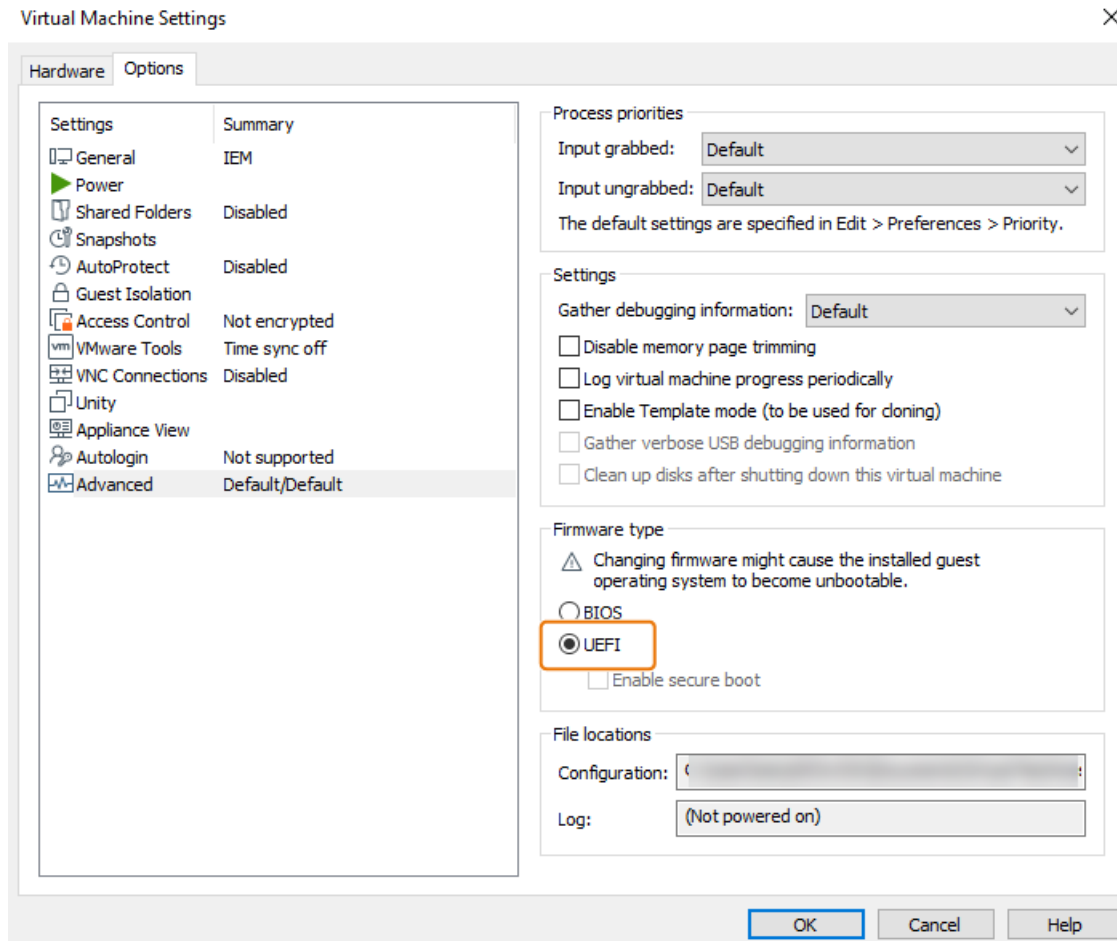
The second hard disk is added to the hardware list in the left navigation.



16. Click the "Options" tab.

17. In the navigation on the left side, choose "Advanced".

18. Under the "Firmware type" section, select the "UEFI" checkbox.



19. Click "Ok".
The VM is configured.

Note

Installed open-vm-tools

If open-vm-tools are installed, the IEM does not start after a reboot. When you want to use open-vm-tools, you must add the following configuration to the open-vm-tools config file ("tools.conf"):

```
[guestinfo]
exclude-nics=docker*,veth*
```

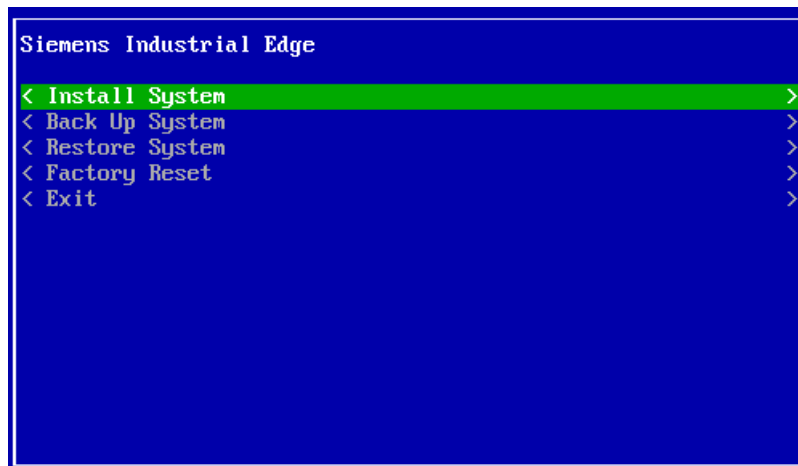
4.4.3 Installing the Industrial Edge Management OS

Requirement

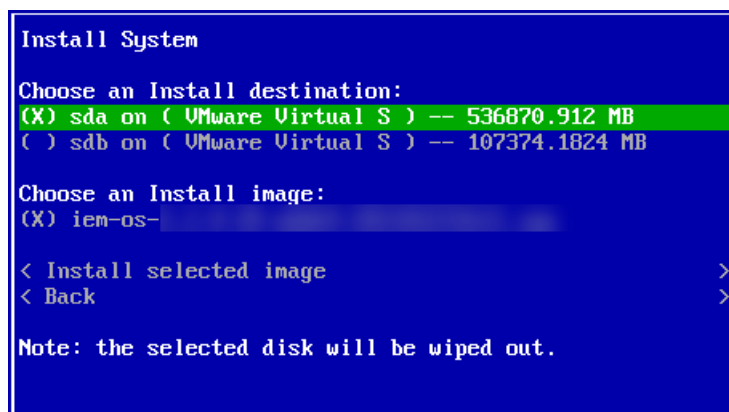
UEFI Boot is enabled in the VM settings.

Procedure

1. Start the VM.
The "Siemens Industrial Edge" screen is displayed.



2. Select "Install System".
The "Install System" screen is displayed.
3. Select the 500 GB partition as installation destination.



4. Select "Install selected image".
If Trusted Platform Module (TPM) is not configured in the VM settings, a warning, indicating that no usable TPM is detected, is displayed. Otherwise, the TPM setup will occur.

5. Select "Yes" to continue without TPM.

Note

It is strongly recommended to use a virtual TPM to minimize risks of unauthorized access to the VM.

Note

No TPM enabled

If Trusted Platform Module (TPM) is not configured in the VM settings and you select "No", the installation of the Industrial Edge Management OS will not start.

The installation of the Industrial Edge Management OS is starting.

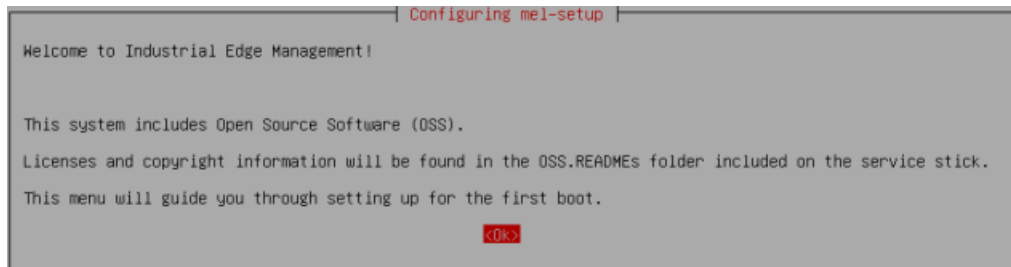
6. Wait until the installation is completed.
7. When the installation is completed, reboot the VM by selecting "Reboot".
The VM is getting rebooted.

Note

Changing boot order

When the "Siemens Industrial Edge" screen is displayed again after the reboot, you must change the boot order in the UEFI settings. Open the UEFI settings and set the disk at first place respectively the disk as boot disk in which the Industrial Edge Management OS has been installed.

After the reboot is finished, the welcome screen is displayed through which you configure the IEM-OS.



The "Configuring the Industrial Edge Management OS (Page 103)" subsection describes how to configure the IEM-OS.

4.5 Oracle VirtualBox

4.5.1 Creating the VM

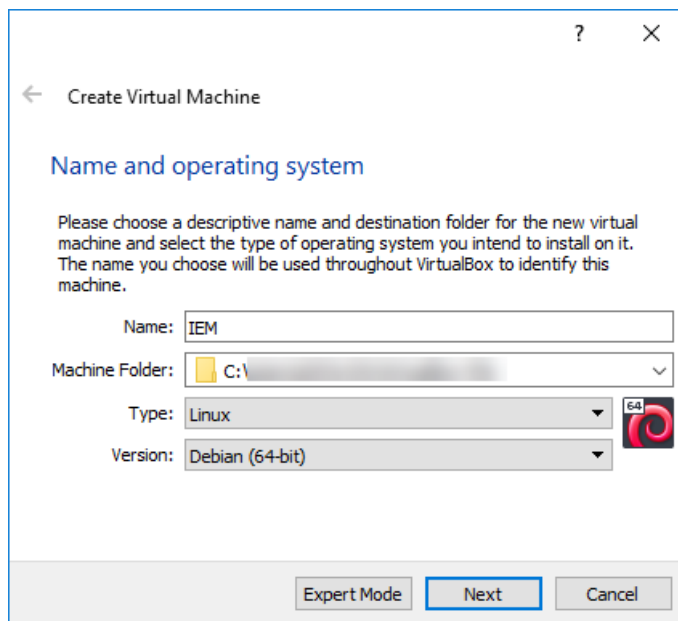
The following procedure describes the installation in the "Oracle VirtualBox" virtualization environment.

Requirement

The ISO image of the IEM is downloaded to the PC.

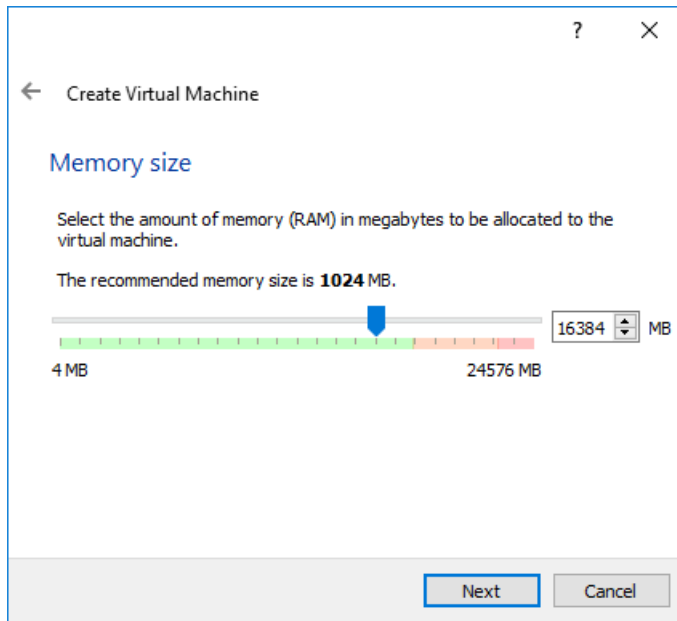
Procedure

1. Open "Oracle VirtualBox".
2. Click "New".
The "Create Virtual Machine" screen is displayed.
3. In the "Name" input field, enter the name for the VM.
4. From the "Type" drop-down list, select "Linux".
5. From the "Version" drop-down list, select "Debian(64-bit)".



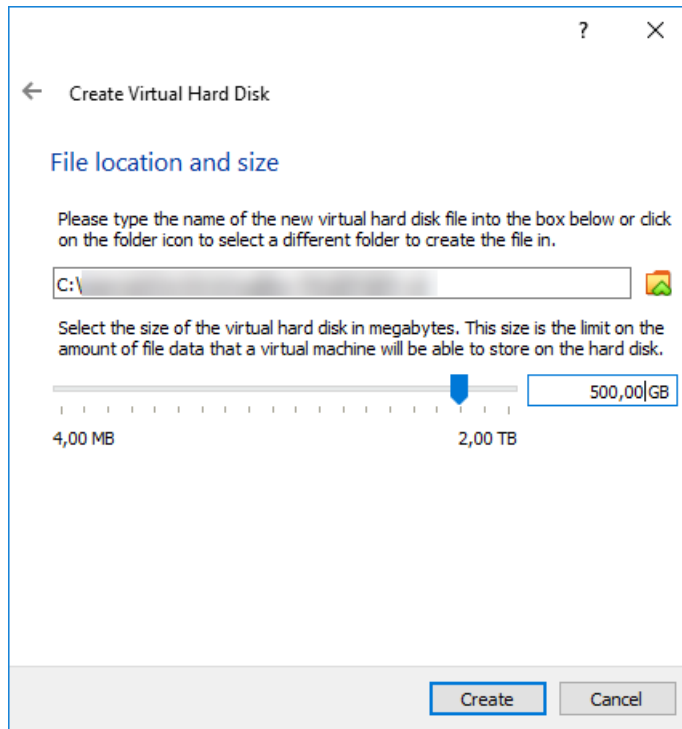
6. Click "Next".

7. For the memory amount allocated to the VM, set a minimum of 16 GB and click "Next".



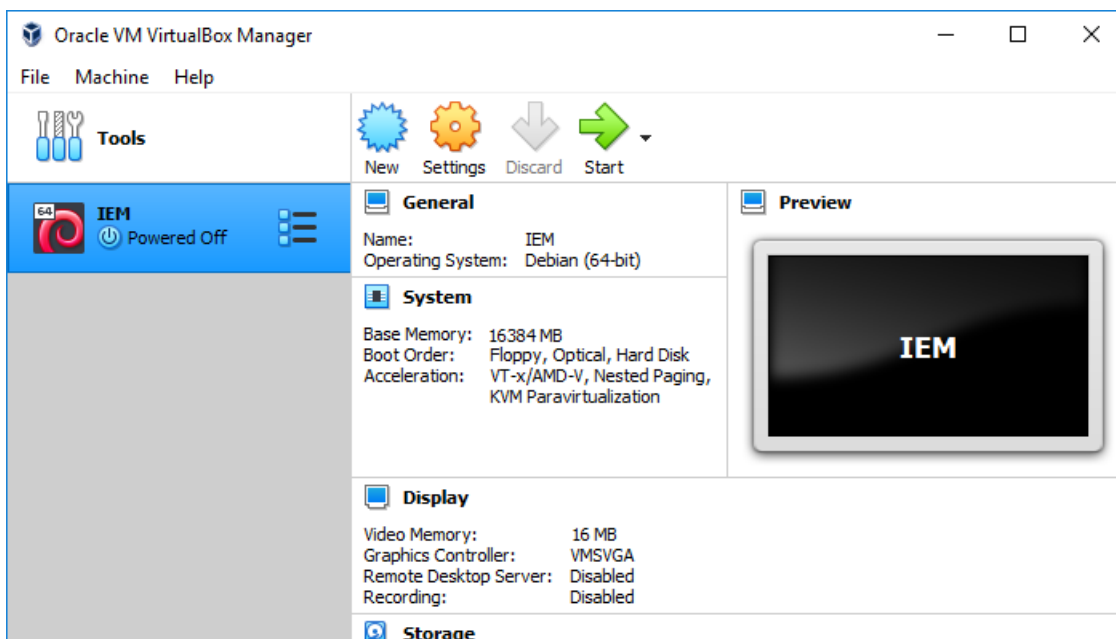
8. For the hard disk, select "Create a virtual hard disk now" and click "Create".
9. For the hard disk file type, select "VDI (VirtualBox Disk Image)" and click "Next".
10. For the storage on the physical hard disk, select "Dynamically allocated" and click "Next".
11. Choose a storage location for the hard disk file.

12. For the hard disk size, set a maximum disk size for the VM on the host PC's physical disk.



The disk is mandatory for the operating system and also stores IEM services. Siemens recommends a maximum disk size of 500 GB, a minimum of 100 GB is mandatory.

13. Click "Create".
The VM is created.



4.5.2 Configuring the VM

Requirement

If you use a "Bridged" network connection for your VM, you need 1 additional network interface.

Note

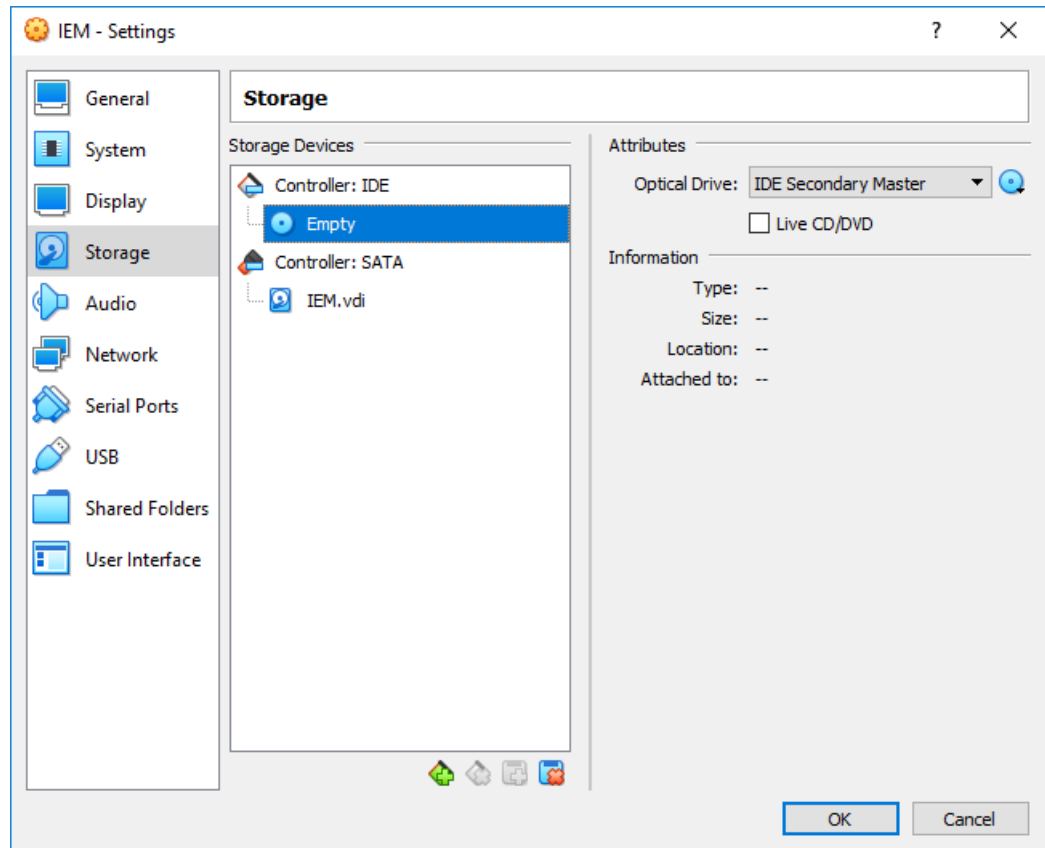
USB network adapter


The following procedure describes the use of an USB network adapter as additional network interface. Proceed in the same manner for other additional network interfaces.

Procedure

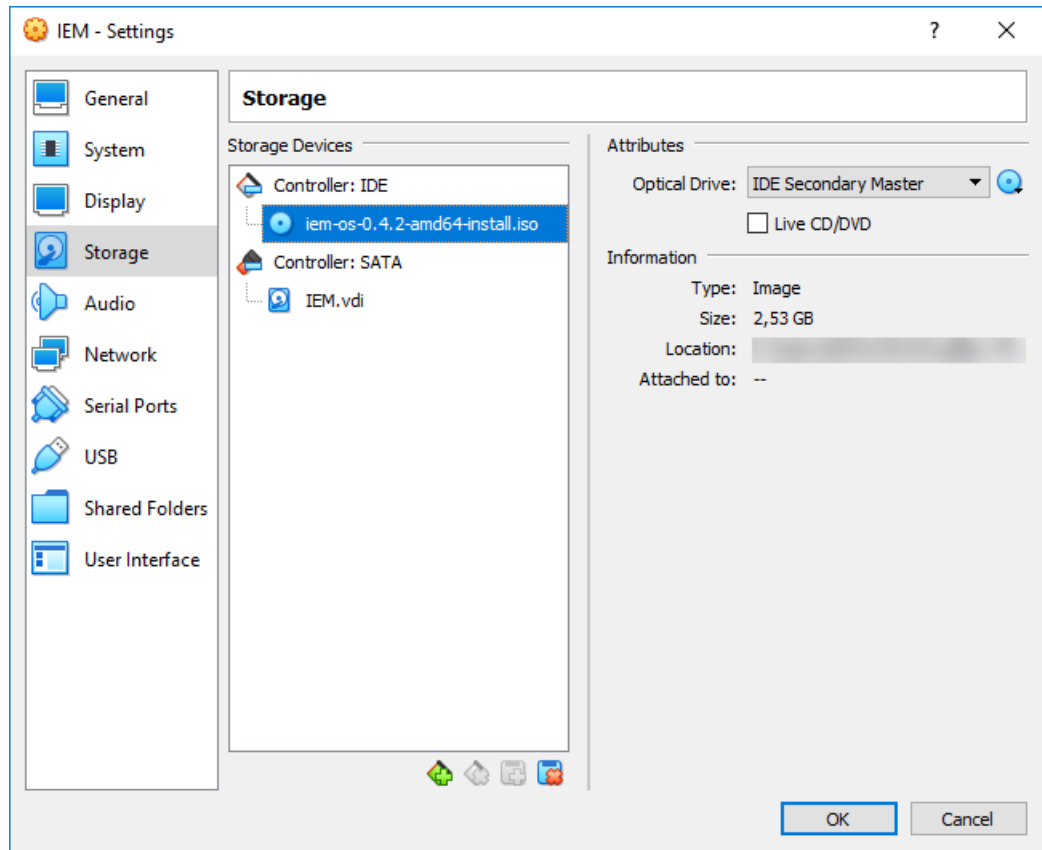
1. Select the created VM.
2. Click "Settings".
3. In the navigation on the left side, click "System".
4. Click the "Processor" tab.
5. For the number of processors, choose minimum 2 processor cores for the VM.
6. In the navigation on the left side, click "Storage".


7. Under "Controller: IDE", click "Empty".

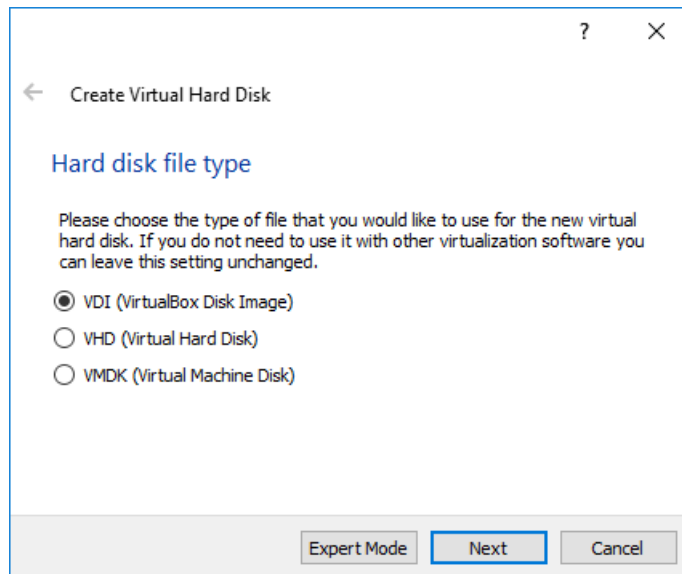


8. On the right side, click the  icon.
9. Click the "Choose/Create a Virtual Optical Disk" command.
10. Click "Add" and browse the ISO image of the Industrial Edge Management.

- Click "Choose".
The selected ISO image is added under "Controller: IDE".

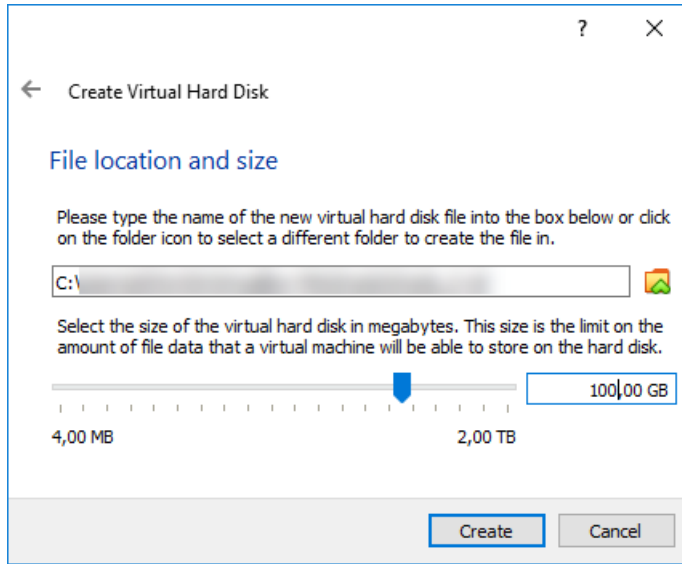


- To add the second hard disk, select "Controller: SATA" and click the  icon.
The "Hard Disk Selector" screen is displayed.
- Click "Create".
The "Create Virtual Hard Disk" screen is displayed.



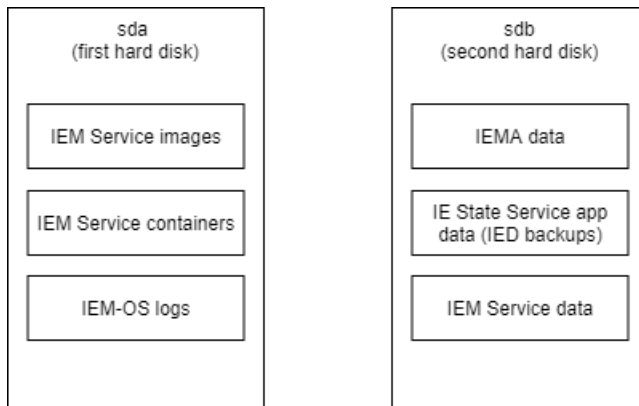
14. Select the "VDI (VirtualBox Disk Image)" check box and click "Next".
15. Select the "Dynamically allocated" check box and click "Next".

16. Select a maximum disk size that is lower than the disk size that you configured before.



The second hard disk is used for app images and containers in the IEMA, as well as for app's data storage.

The following figure shows a simplified representation of the data stored in each hard disk:



The size of the second hard disk depends on the apps and the apps sizes that you install in the IEMA. A minimum of 100 GB is mandatory.

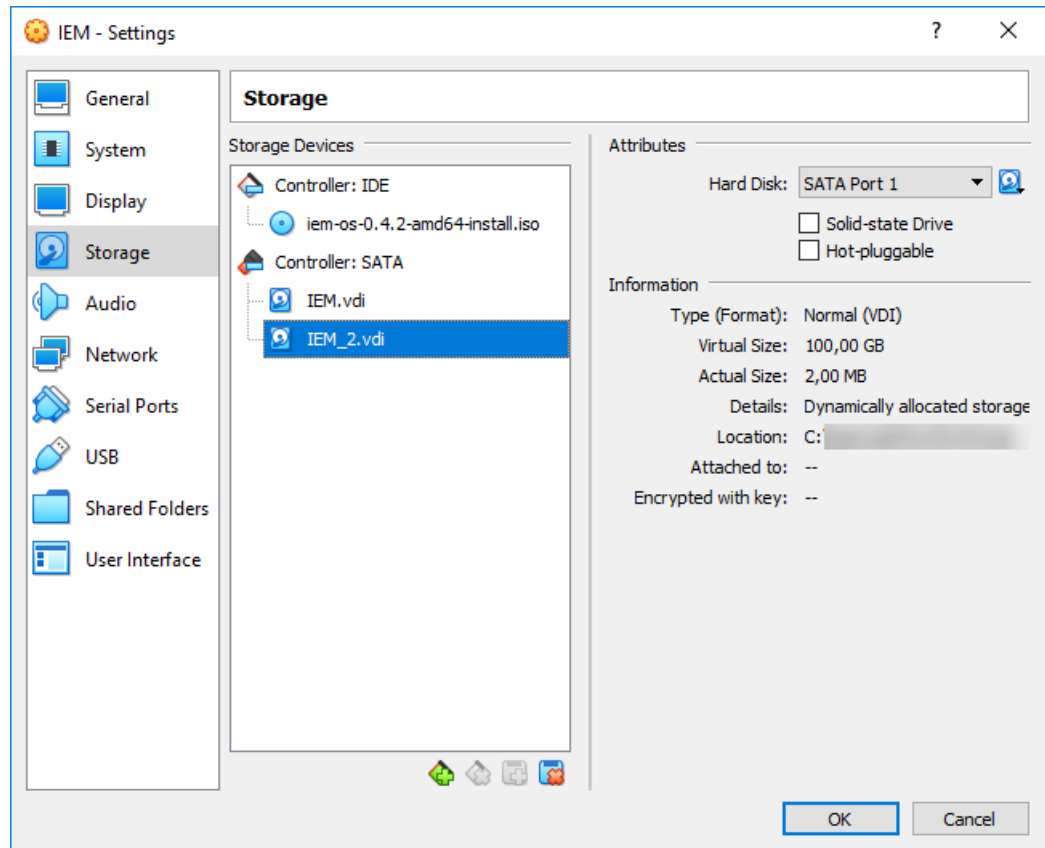
Note

IED backups via IE State Service

The IE State Service is used in the IEM for storing and restoring IED states. Ensure to choose an appropriate large hard disk space for the second hard disk (sdb) since the backup data of the IE State Service are being stored on this hard disk and cannot be changed afterwards. For more information on the IE State Service and IED backups, refer to the "Backups" section in the "Industrial Edge Management - Operation (<https://support.industry.siemens.com/cs/us/en/view/109804063>)" manual.

You can later on add additional storage to the IEM by adding additional hard disks to the VM after setting up the IEM. Each additional added hard disk is used for storing the same type of data as the second hard disk (sdb) is used for.

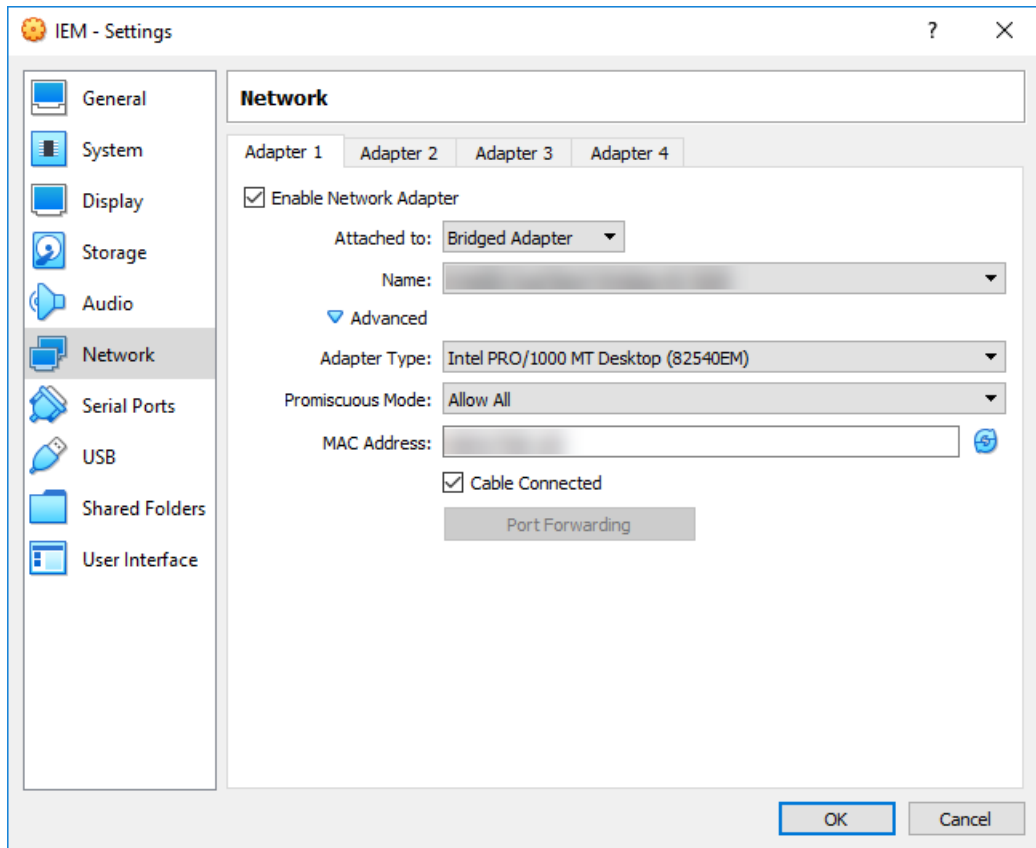
17. Click "Create".
18. Click "Choose".
The second hard disk is added under "Controller: SATA".



19. In the navigation on the left side, click "Network".

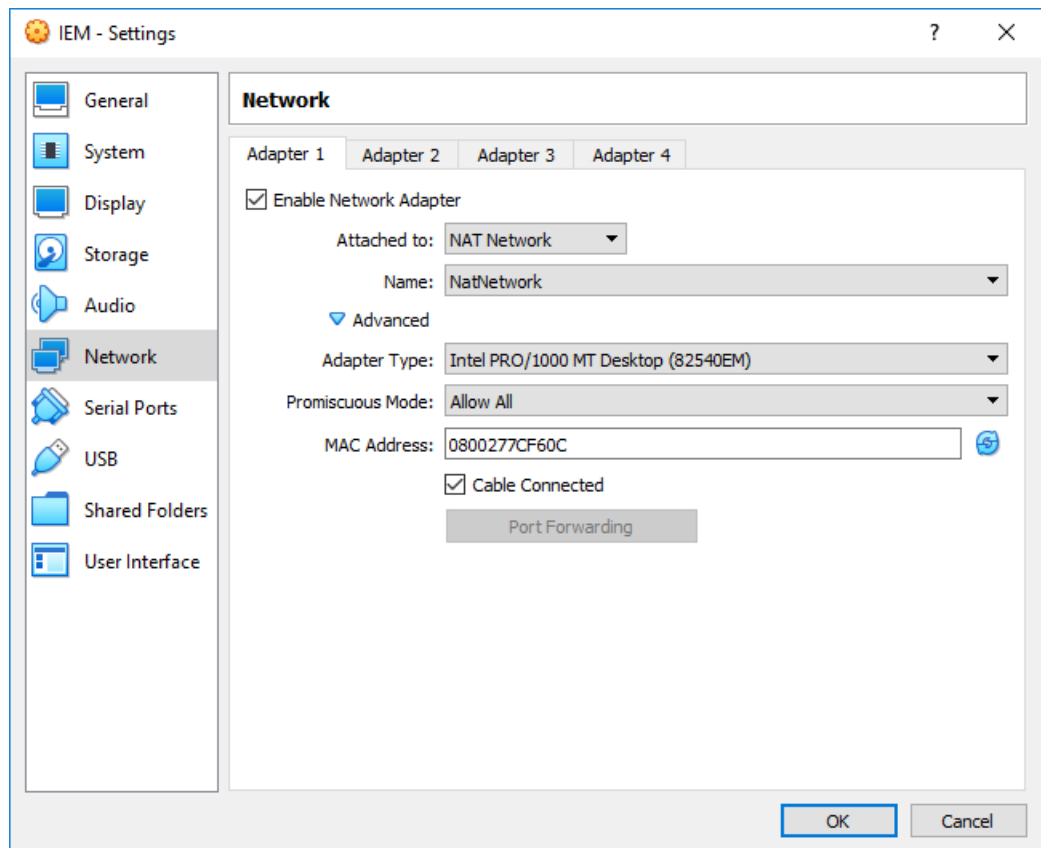
20. If you use a bridged network connection, the following settings must be configured under the "Adapter 1" tab:

- Checkbox "Enable Network Adapter" selected
- Attached to: "Bridged Adapter"
- Name: Name of the additional network interface
- Adapter type: Intel PRO/1000 MT Desktop (82540EM)
- Promiscuous Mode: Allow All
- MAC Address: Random MAC address
- Checkbox "Cable Connected" selected



21. If you use a NAT network connection, the following settings must be configured under the "Adapter 1" tab:

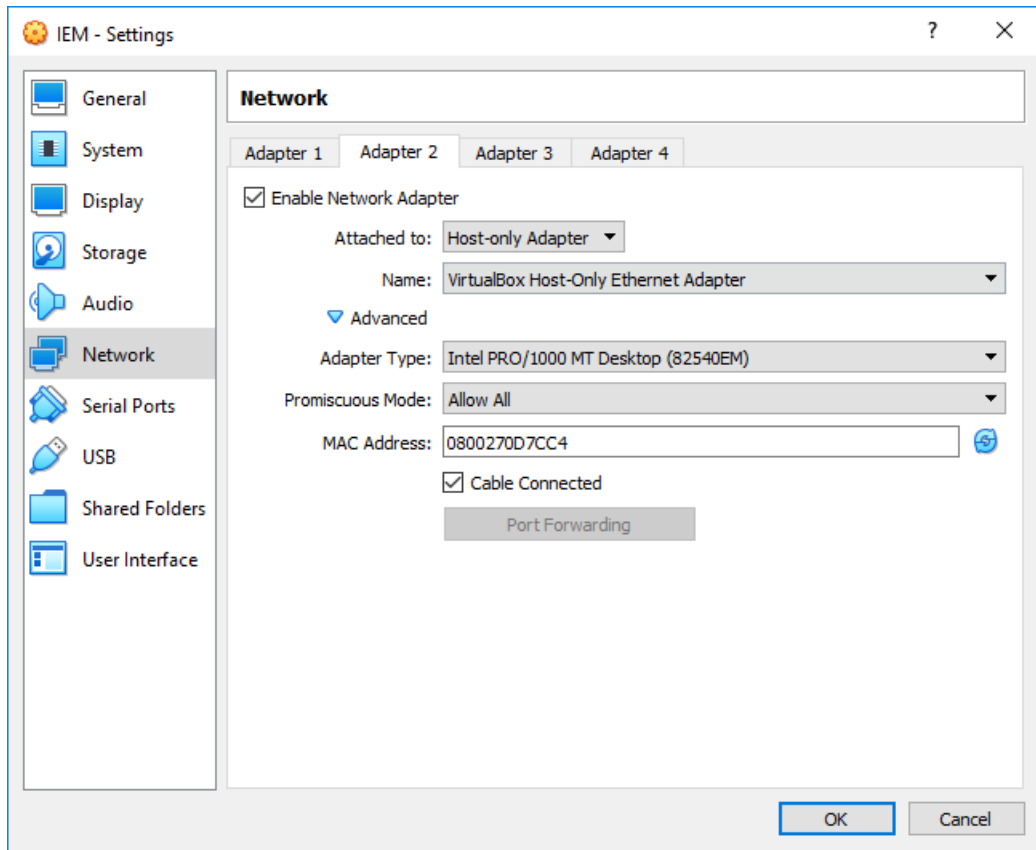
- Checkbox "Enable Network Adapter" selected
- Attached to: "NAT Network"
- Name: Name of the NAT network
- Adapter type: Intel PRO/1000 MT Desktop (8254OEM)
- Promiscuous Mode: Allow All
- MAC Address: Random MAC address for the VM
- Checkbox "Cable Connected" selected



For a NAT network connection, the following settings must be also configured under the "Adapter 2" tab:

- Checkbox "Enable Network Adapter" selected
- Attached to: "Host-only Adapter"
- Name: Name of the host network manager
- Adapter type: Intel PRO/1000 MT Desktop (8254OEM)
- Promiscuous Mode: Allow All
- MAC Address: Random MAC address for the VM

- Checkbox "Cable Connected" selected




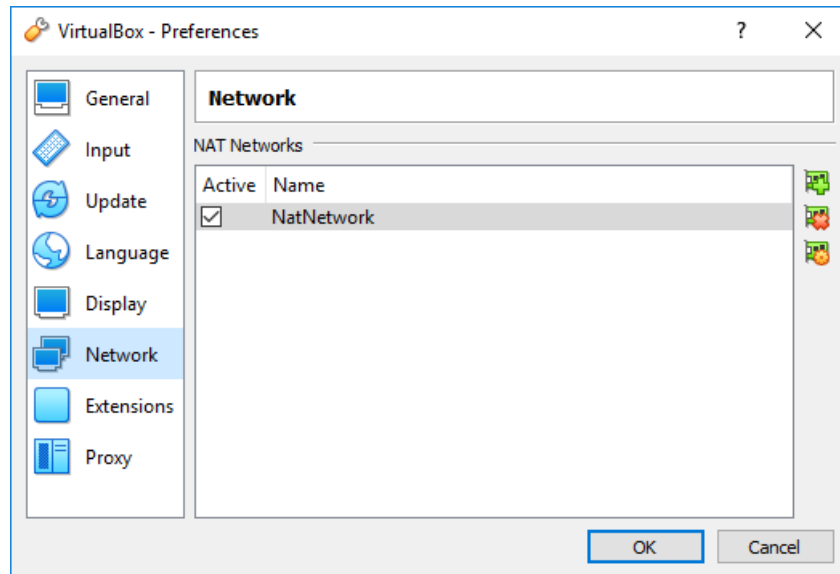
22. Click "OK".
The VM is configured.

Creating a NAT network and a host network manager

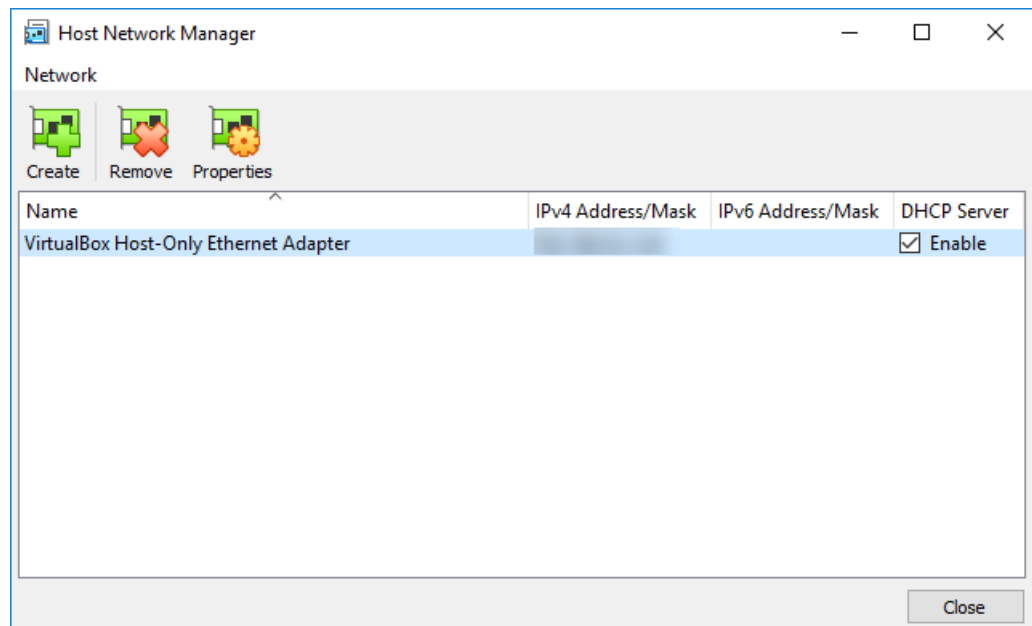
When you use a NAT network connection for the VM and neither NAT network nor host network manager are available, proceed as follows to create a NAT network and a host network manager:

1. Click the "File > Preferences" command in the "Oracle VM VirtualBox Manager" screen.
The "Preferences" screen is displayed.
2. In the navigation, click "Network".

3. To create a new NAT network, click the  icon.
The NAT network is created.



4. Click "Ok".
5. Click the "File > Host Network Manager" command in the "Oracle VM VirtualBox Manager" screen.
The "Host Network Manager" screen is displayed.
6. To create a new host network manager, click "Create".
The host network manager is created.
7. To enable the host network manager, activate the "Enable" check box.

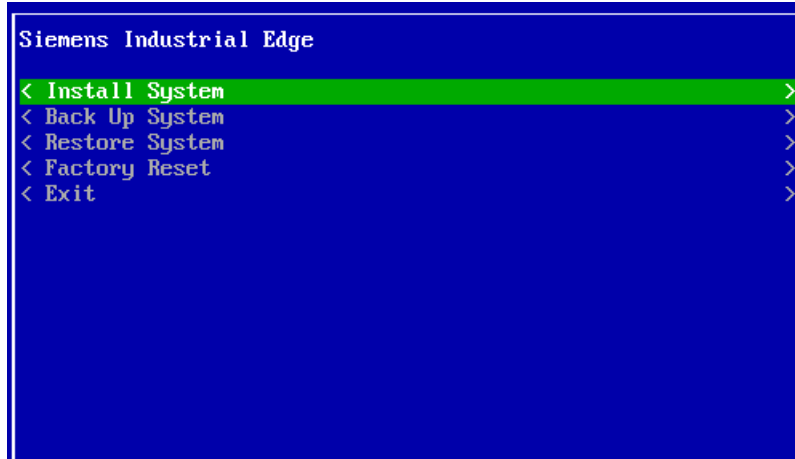


8. Click "Close".

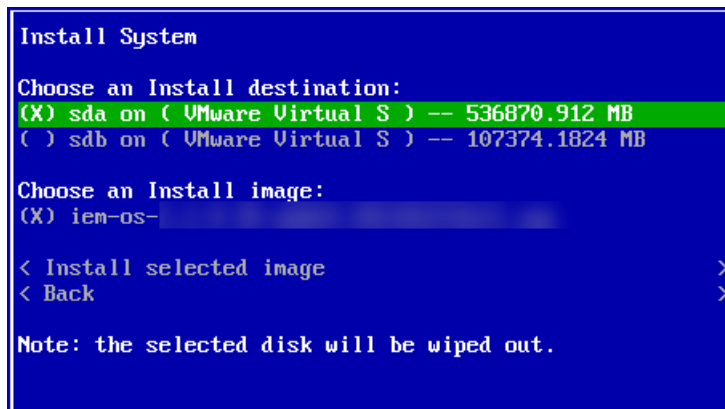
4.5.3 Installing the Industrial Edge Management OS

Procedure

1. Start the VM.
The "Siemens Industrial Edge" screen is displayed.



2. Select "Install System".
The "Install System" screen is displayed.
3. Select the 500 GB partition as installation destination.



4. Select "Install selected image".
If Trusted Platform Module (TPM) is not configured in the VM settings, a warning, indicating that no usable TPM is detected, is displayed. Otherwise, the TPM setup will occur.

5. Select "Yes" to continue without TPM.

Note

It is strongly recommended to use a virtual TPM to minimize risks of unauthorized access to the VM.

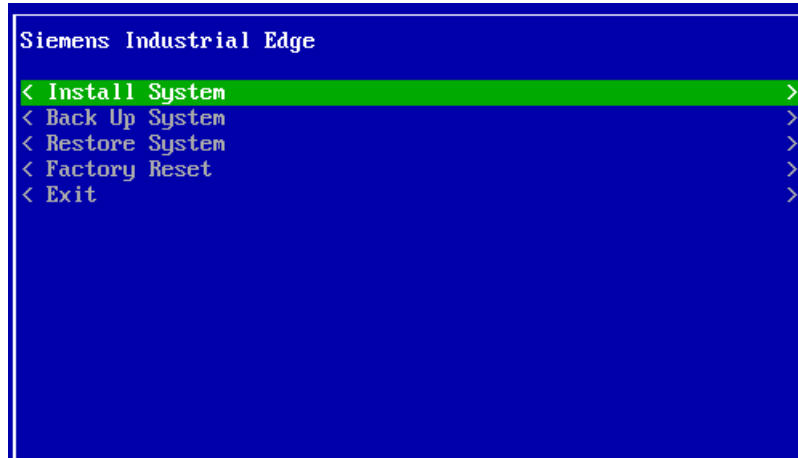
Note

No TPM enabled

If Trusted Platform Module (TPM) is not configured in the VM settings and you select "No", the installation of the Industrial Edge Management OS will not start.

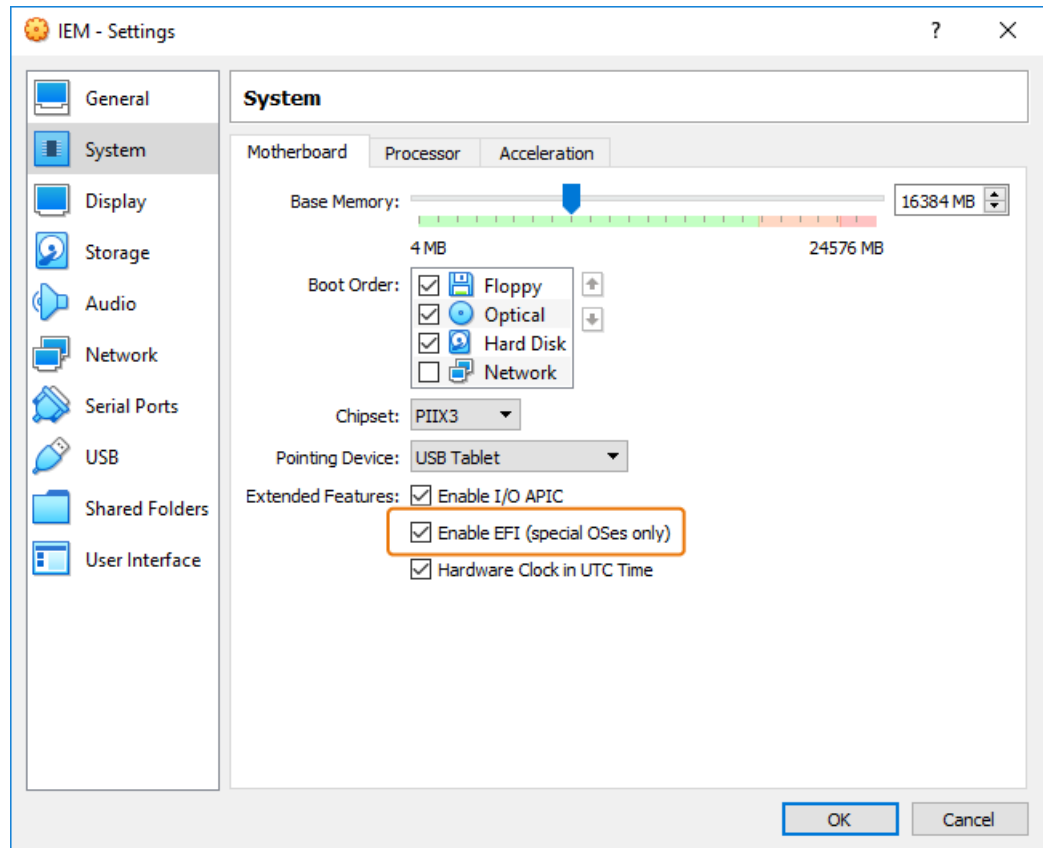
The installation of the Industrial Edge Management OS is starting.

6. Wait until the installation is completed.
7. When the installation is completed, reboot the VM by selecting "Reboot".
The VM is getting rebooted.
When the VM is rebooted, the "Siemens Industrial Edge" screen is displayed again.



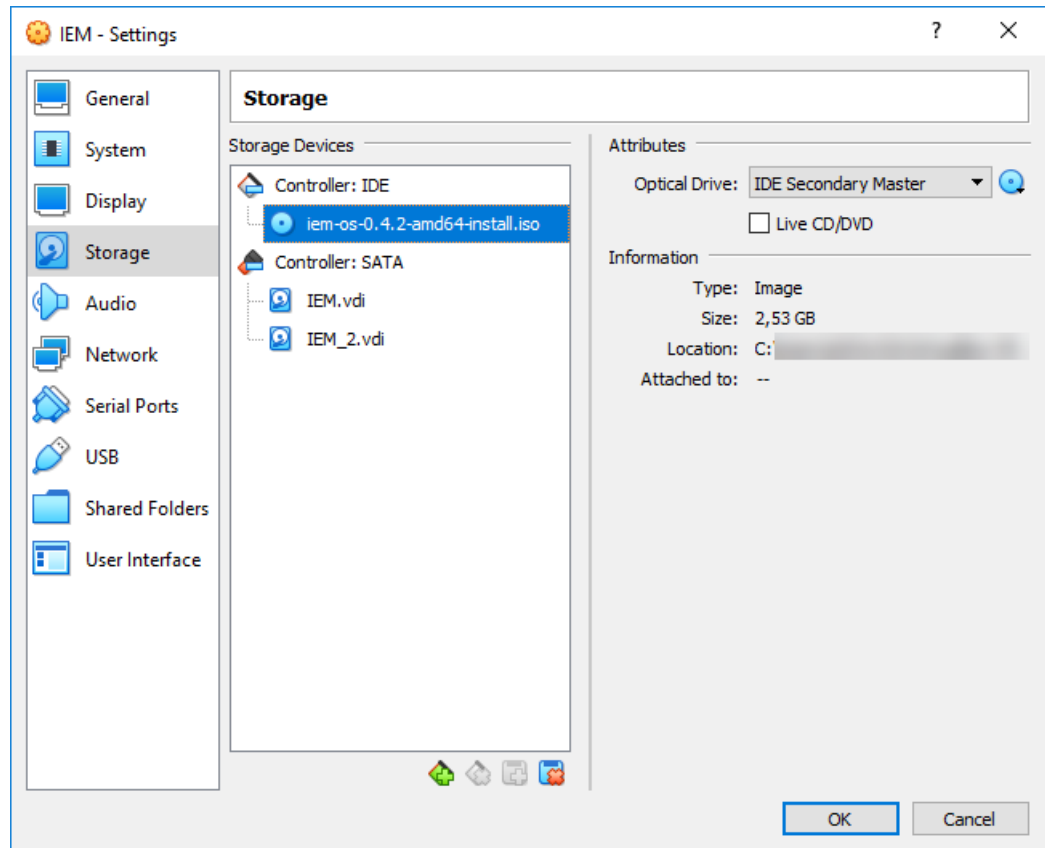
8. Close and shut down the VM.
9. After the VM is shut down, select the VM and click "Settings".
10. In the navigation on the left side, click "System".


11. Select the "Enable EFI (special OSes only)" check box.



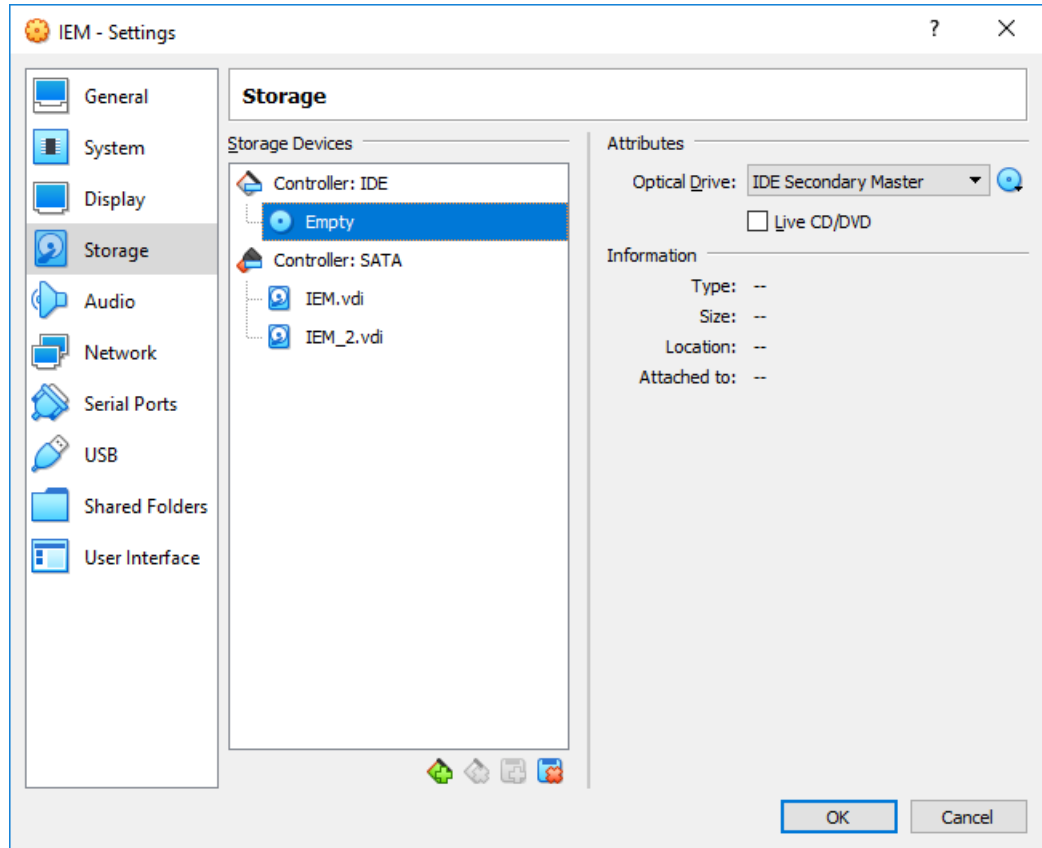
12. In the navigation on the left side, click "Storage".

13. Under "Controller: IDE", select the ISO image.



14. On the right side, click the  icon.

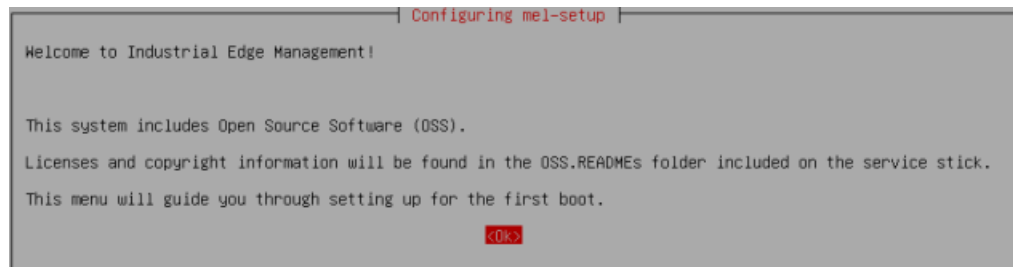
- Click the "Remove Disk from Virtual Drive" command. Under "Controller: IDE", "Empty" is displayed again.



- Click "OK".

- Start the VM.

The welcome screen is displayed through which you configure the IEM-OS.



The "Configuring the Industrial Edge Management OS (Page 103)" subsection describes how to configure the IEM-OS.

4.6 VMware ESXi

4.6.1 Creating and configuring the VM

The following procedure describes the installation in the "VMware ESXi" virtualization environment.

Note

VMware ESXi V7.0 U2

The described procedure and displayed screenshots are related to VMware ESXi V7.0 U2.

Requirement

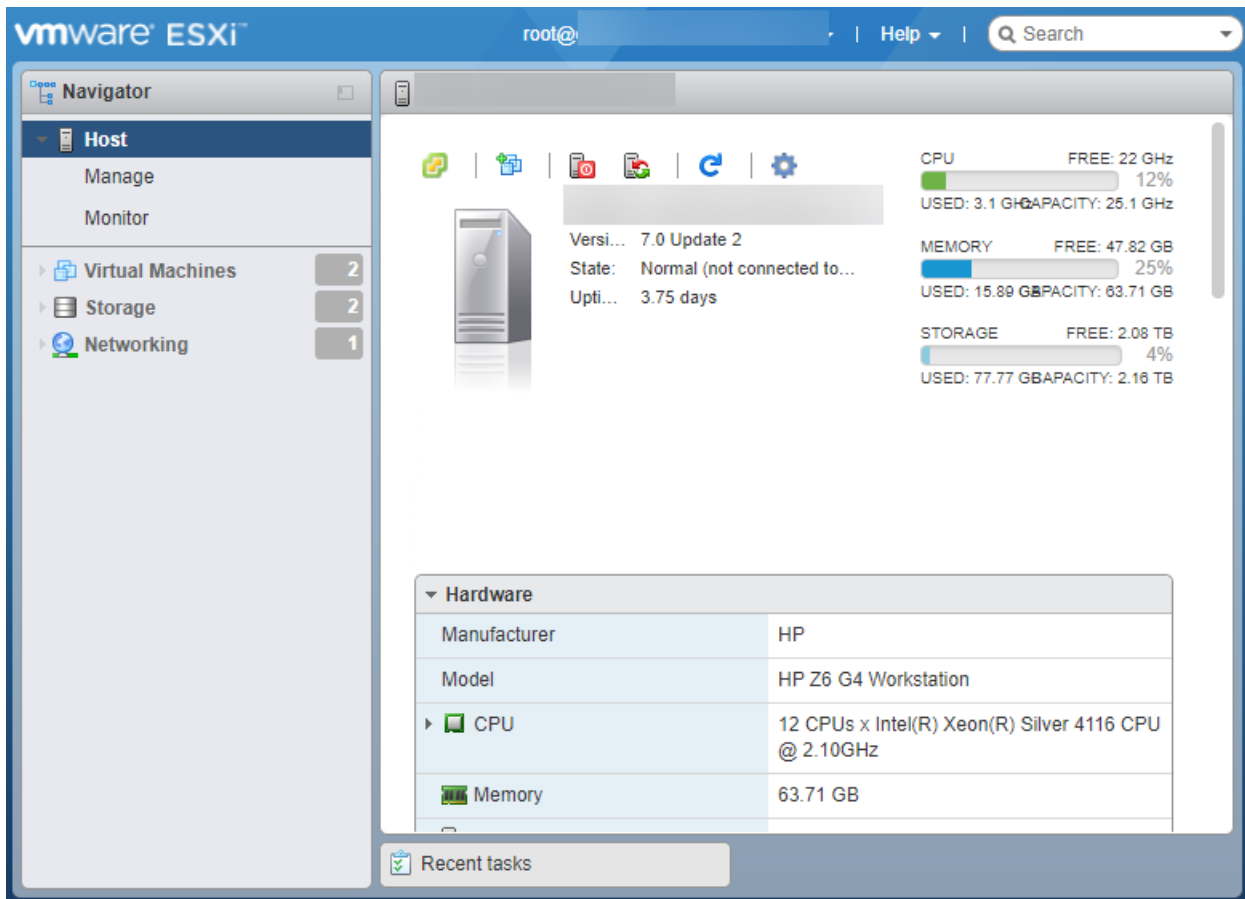
The ISO image of the IEM is downloaded to the PC.

Procedure

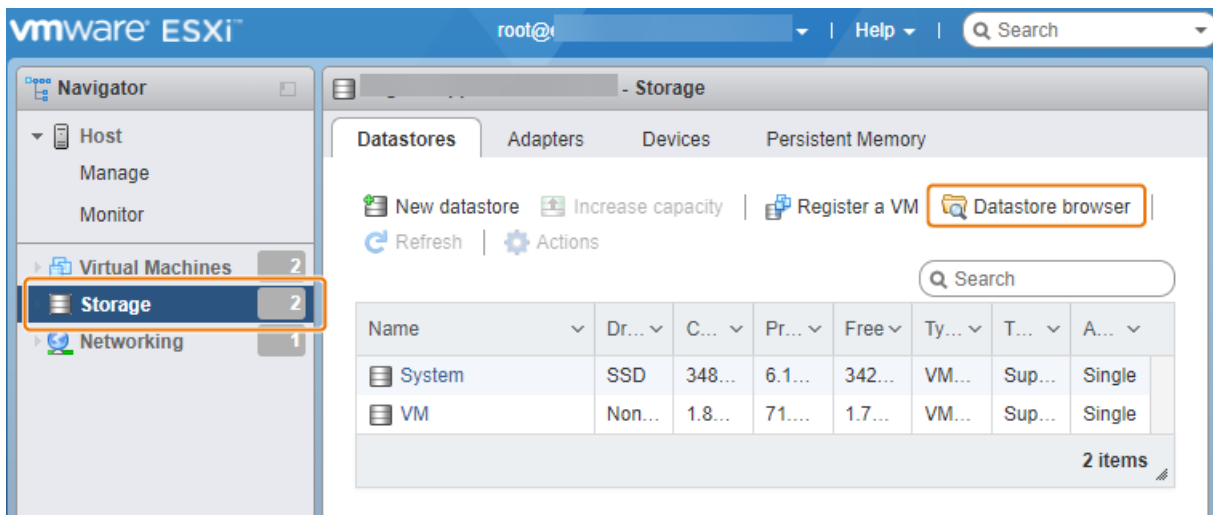
1. Open the VMware ESXi server UI by entering the URL or IP address into an Internet browser. The login screen is displayed.



2. Log in with the credentials set during the ESXi setup. The home screen of VMware ESXi is displayed.



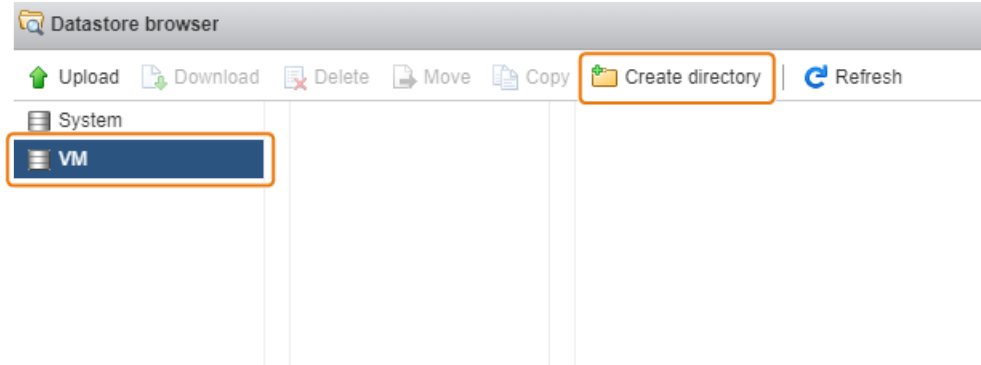
3. In the navigation on the left, click "Storage".
4. Click "Datastore browser".



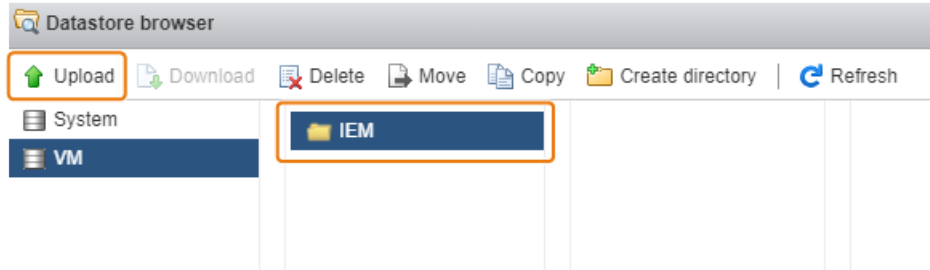
The "Datastore browser" screen is displayed.

5. On the left, select any datastore in which you want to upload and store the ISO image of the IEM.

- 6. To create a directory for the ISO image, click "Create directory".

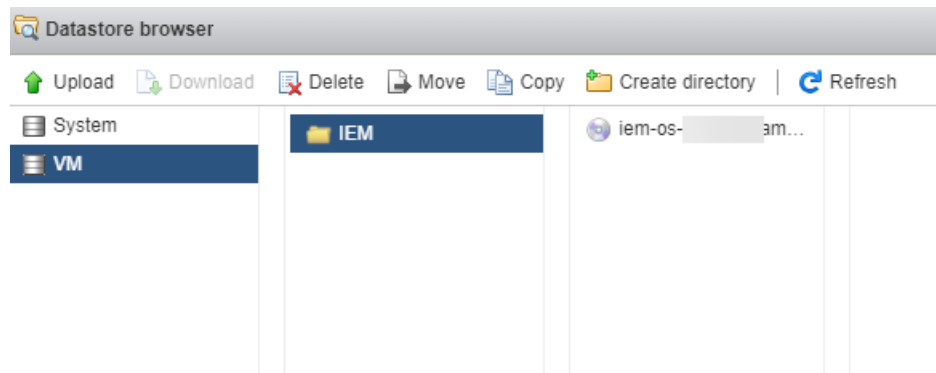


- 7. Enter a name for the directory and click "Create directory".
The ISO image you upload afterwards will be stored in this directory of the selected datastore.
- 8. Select the directory.
- 9. Click "Upload" and select the ISO image of the IEM.



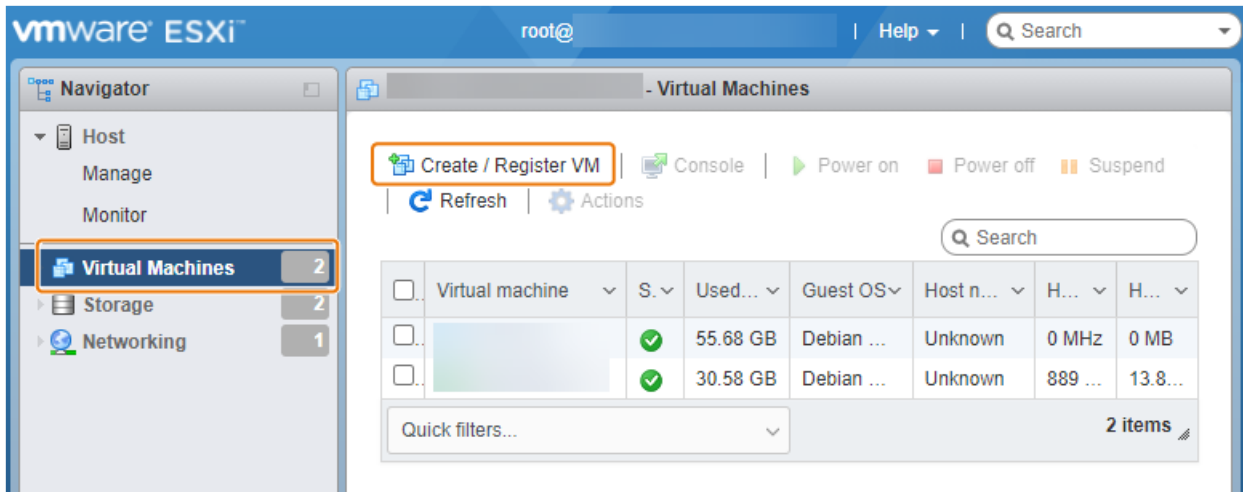
The ISO image is being uploaded to use it in the VM.

- 10. Wait until the upload process is completed.
After the upload is completed, you can check that the ISO image has been uploaded to the directory.

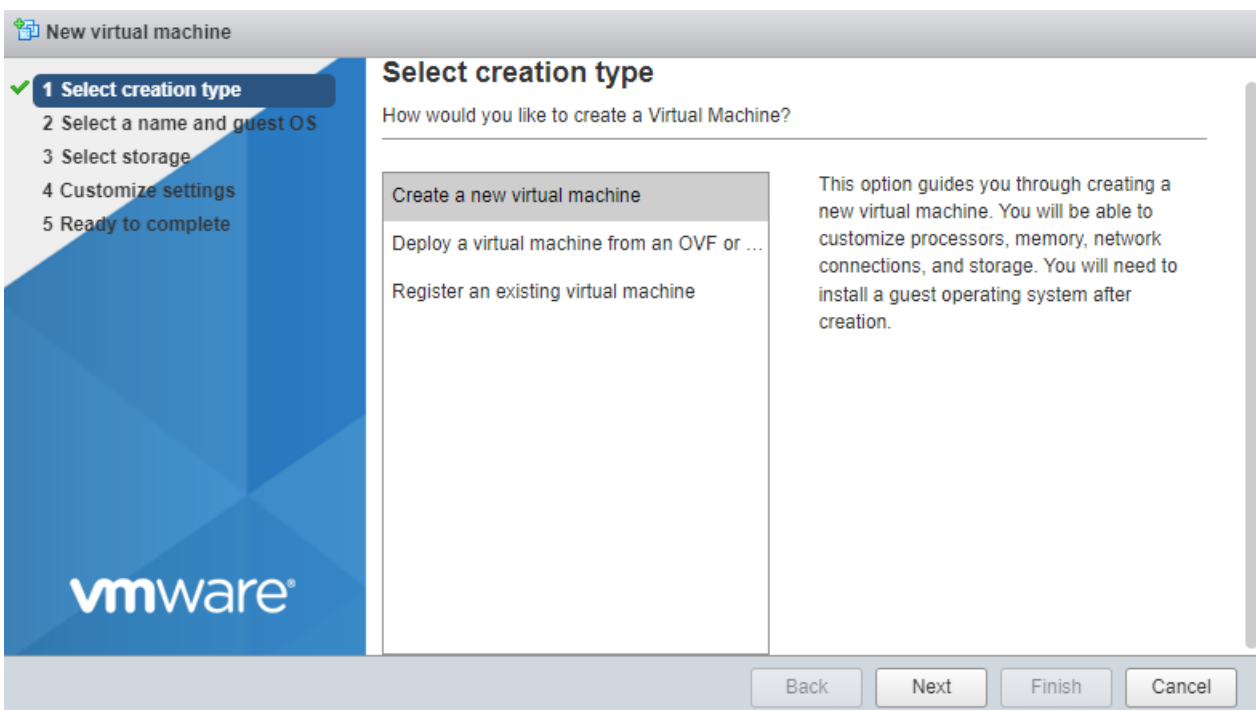


- 11. Click "Close".
- 12. In the navigation on the left, click "Virtual Machines".

13. Click "Create/Register VM".



The "New virtual machine" screen is displayed.



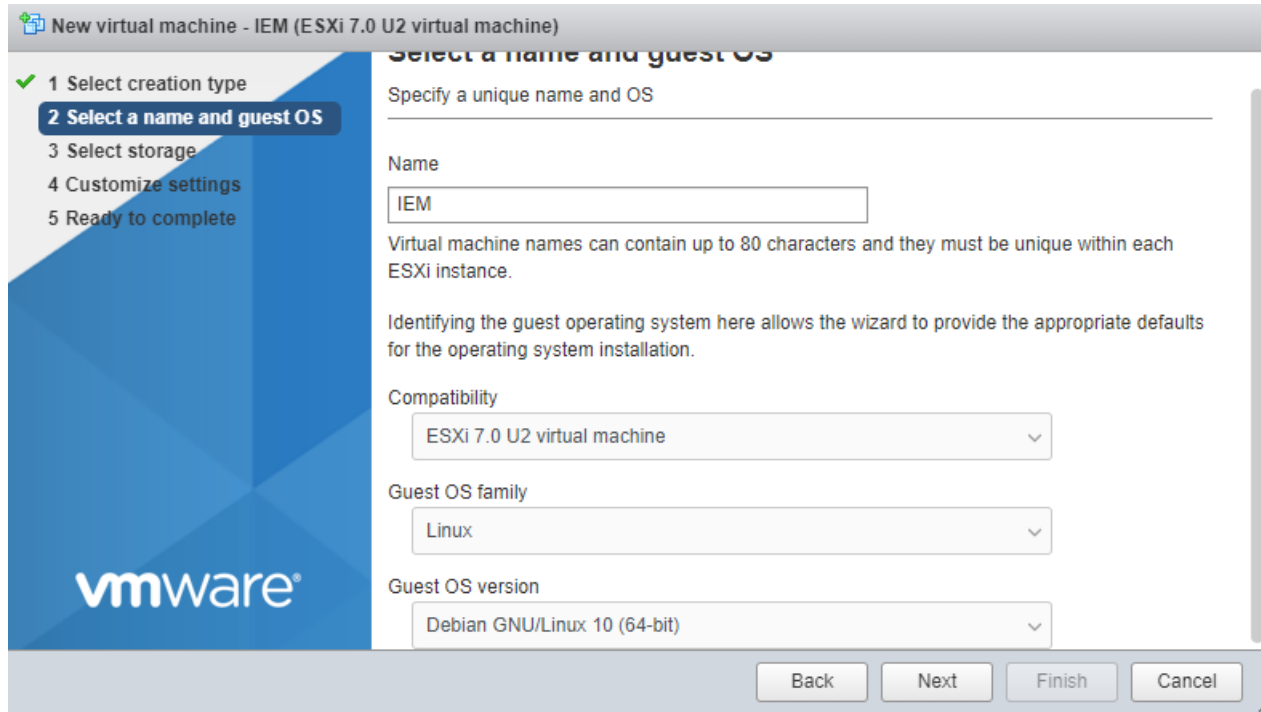
14. Select "Create a new virtual machine" and click "Next".

15. In the "Name" input field, enter a unique name for the VM.

16. From the "Compatibility" drop-down list, select the compatibility according to your setup.

17. From the "Guest OS family" drop-down list, select "Linux".

18. From the "Guest OS version" drop-down list, choose a 64-bit version of a Linux distribution, for example "Debian 10.x 64-bit".



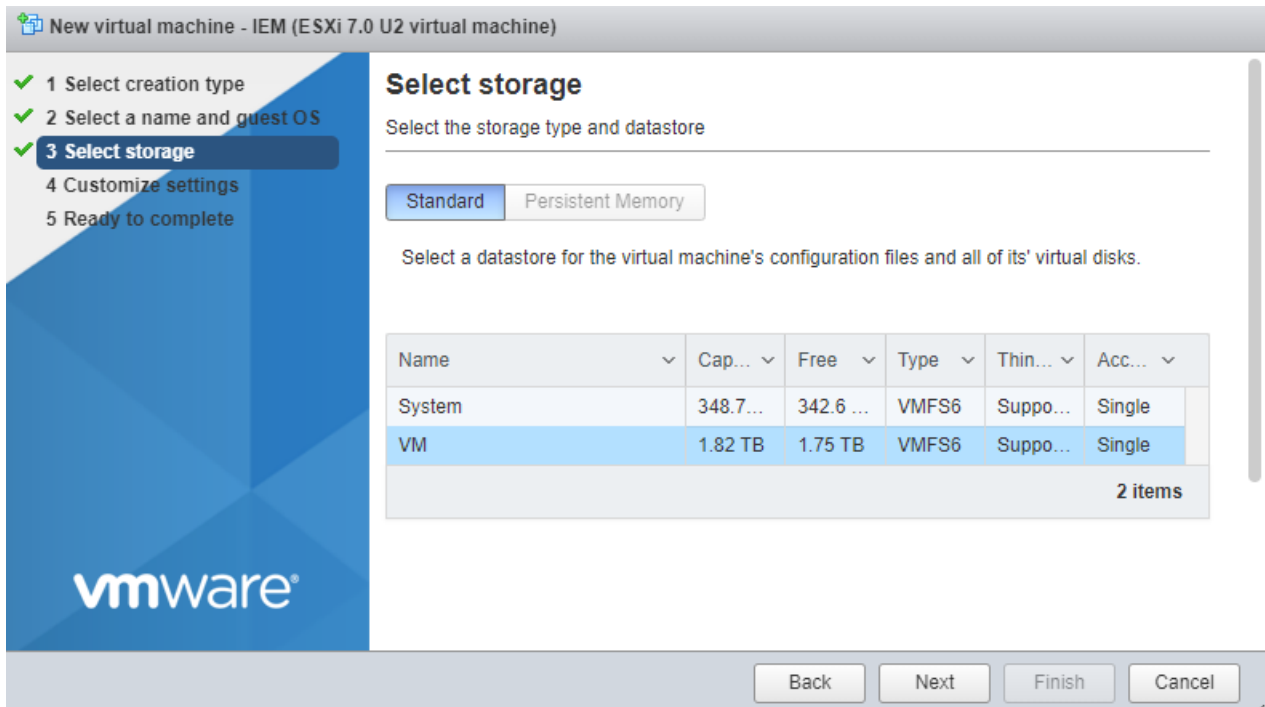
Note

Debian GNU/Linux 10 (64-bit)

"Debian GNU/Linux 10 (64-bit)" is only available when selecting a compatibility of ESXi versions 6.7 or higher. The shown setup is done in V7.0 U2.

19. Click "Next".

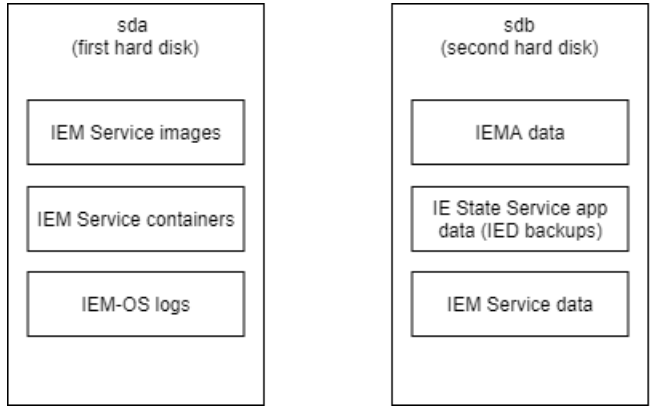
20. Select the datastore on which you want to store the VM.



According to the IEM requirements, the datastore must have minimum 600 GB of free space for 2 virtual hard disks.

21. Click "Next".

- 22. Add a second hard disk by clicking "Add hard disk".
The first hard disk is mandatory for the operating system and also stores IEM services.
The second hard disk is used for app images and containers in the IEMA, as well as for app's data storage.
The following figure shows a simplified representation of the data stored in each hard disk:



The size of the second hard disk depends on the apps and the apps sizes that you install in the IEMA. A minimum of 100 GB is mandatory.

Note

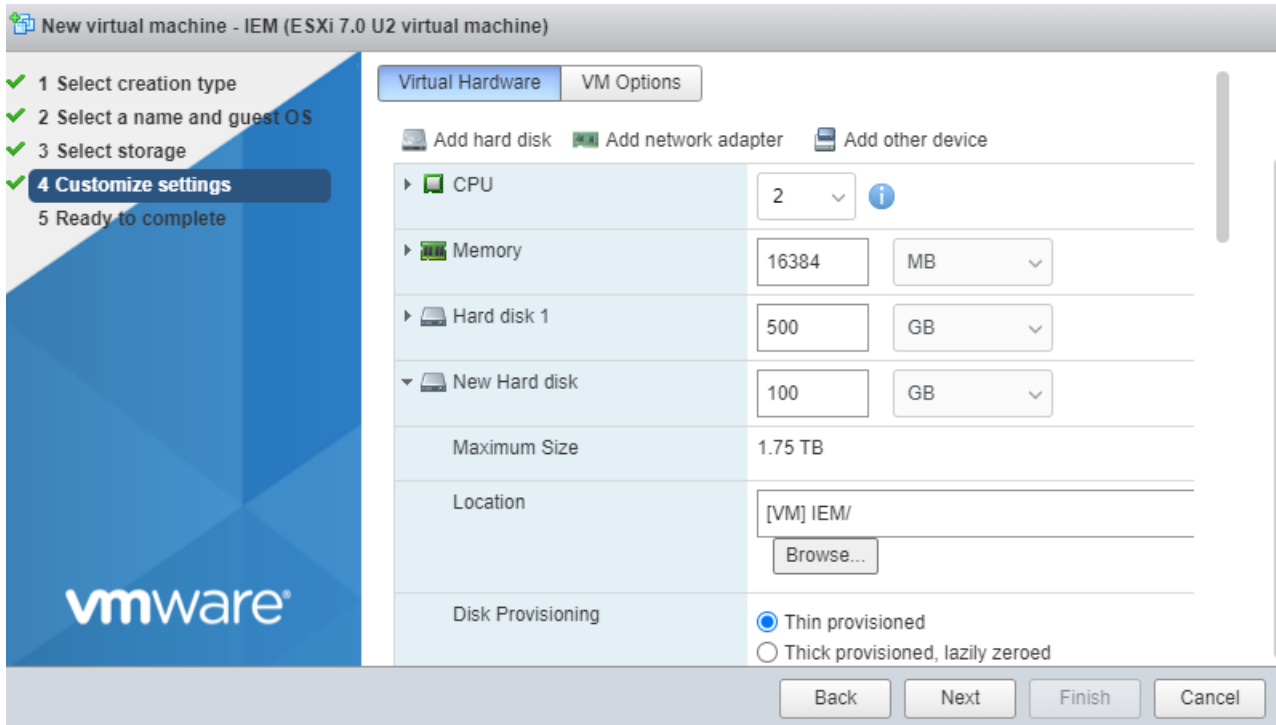
IED backups via IE State Service

The IE State Service is used in the IEM for storing and restoring IED states. Ensure to choose an appropriate large hard disk space for the second hard disk (sdb) since the backup data of the IE State Service are being stored on this hard disk and cannot be changed afterwards. For more information on the IE State Service and IED backups, refer to the "Backups" section in the "Industrial Edge Management - Operation (<https://support.industry.siemens.com/cs/us/en/view/109804063>)" manual.

You can later on add additional storage to the IEM by adding additional hard disks to the VM after setting up the IEM. Each additional added hard disk is used for storing the same type of data as the second hard disk (sdb) is used for.

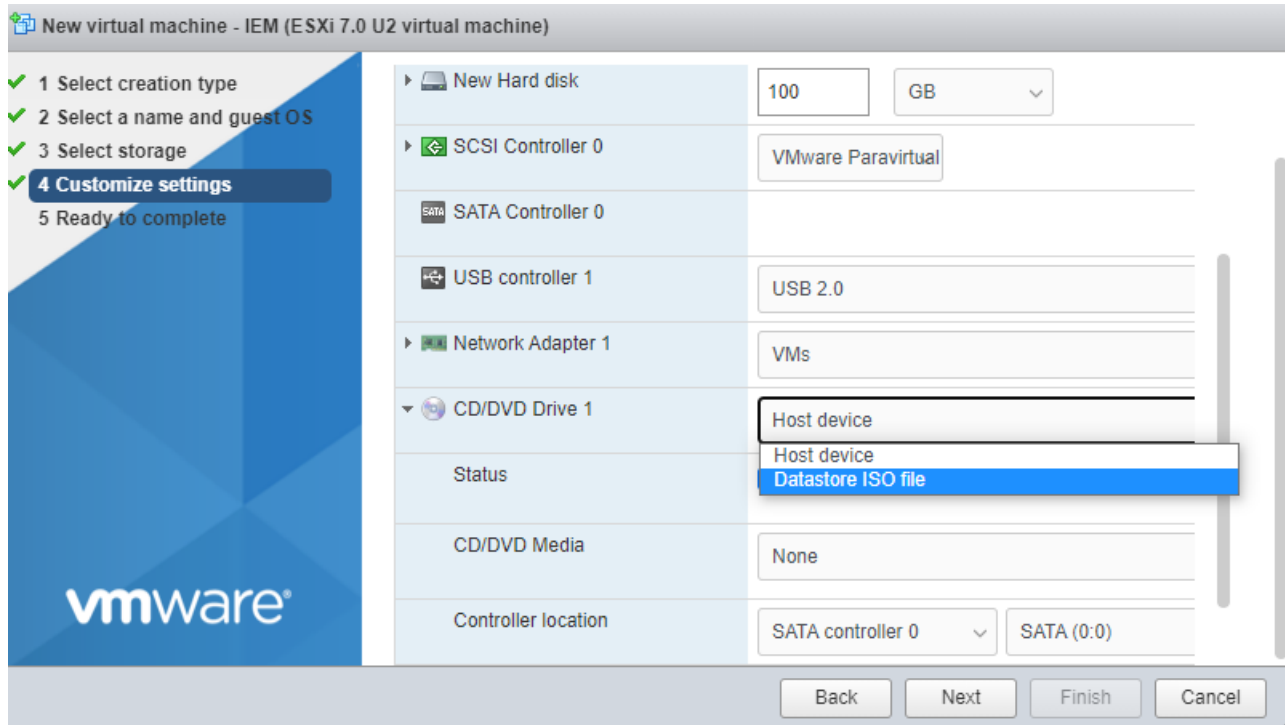
23. Specify the virtual hardware resources as follows:

- CPU: 2 cores
- Memory: 16 GB
- Hard disk 1: 500 GB
Disk Provisioning: Thin provisioned
- Hard disk 2: 100 GB
Disk Provisioning: Thin provisioned

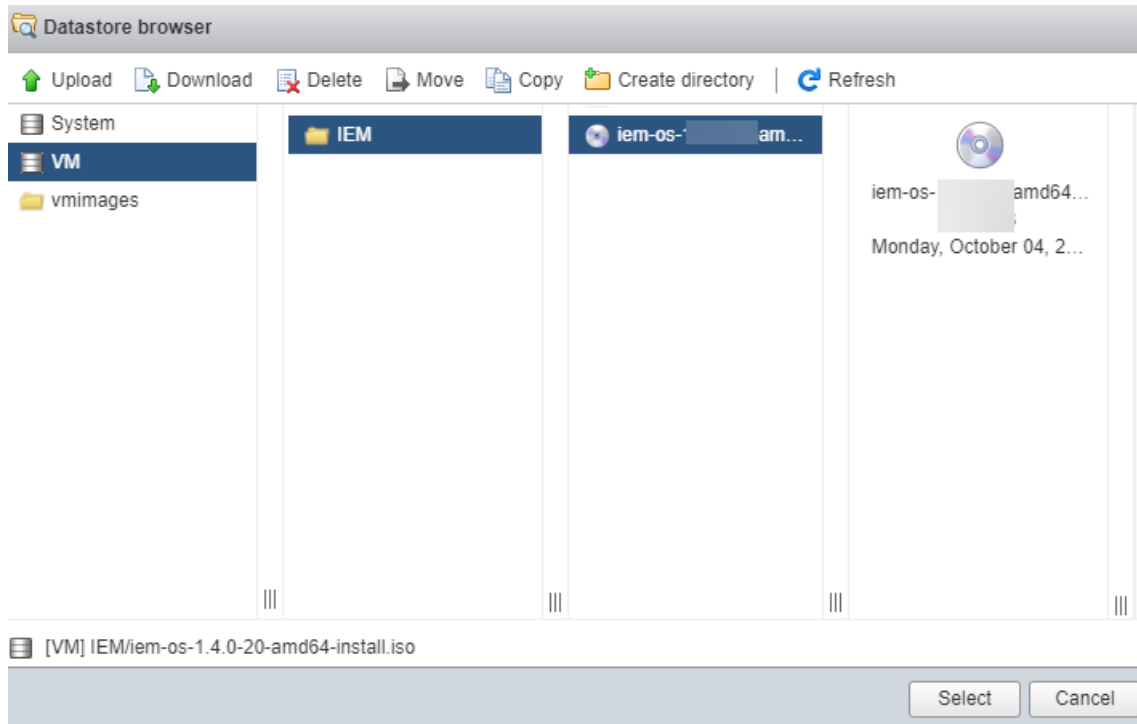


Thin provisioned means that the storage on the physical hard disk is only allocated when needed. Otherwise, the disk's storage size remains small.

24. Expand "CD/DVD Drive 1" and select "Datastore ISO file".



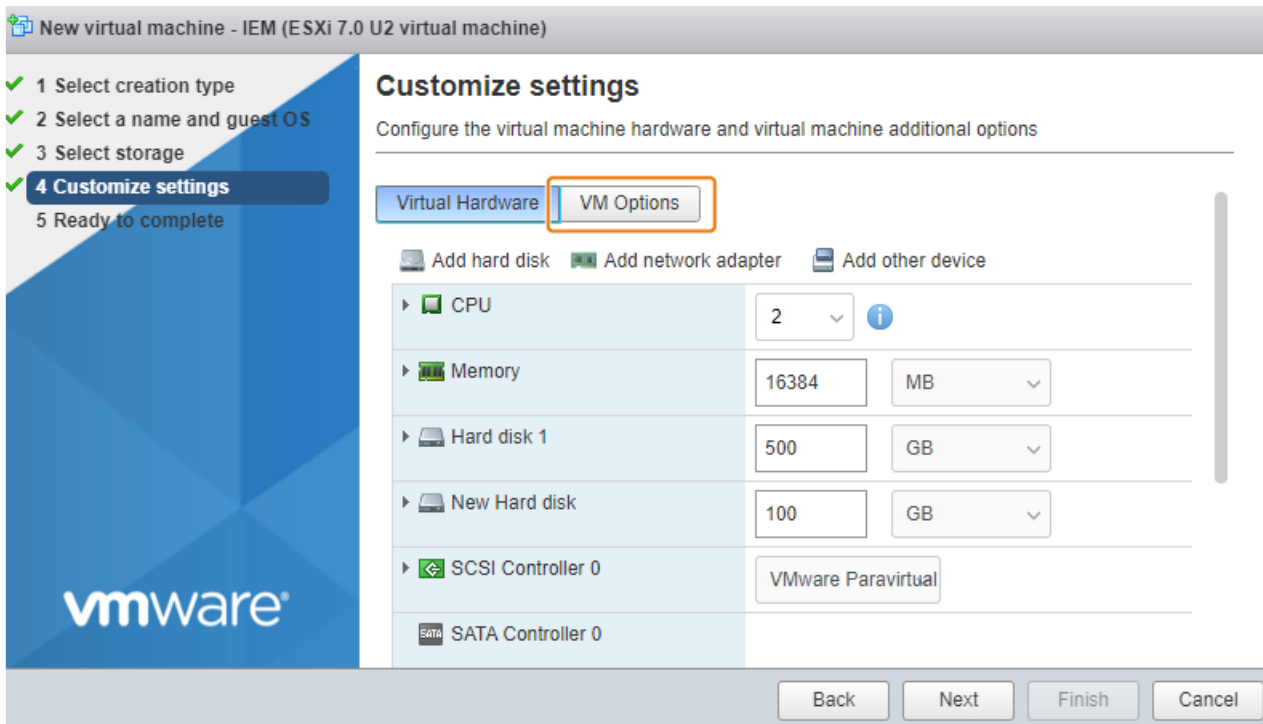
25. Select the previously uploaded ISO file and click "Select".



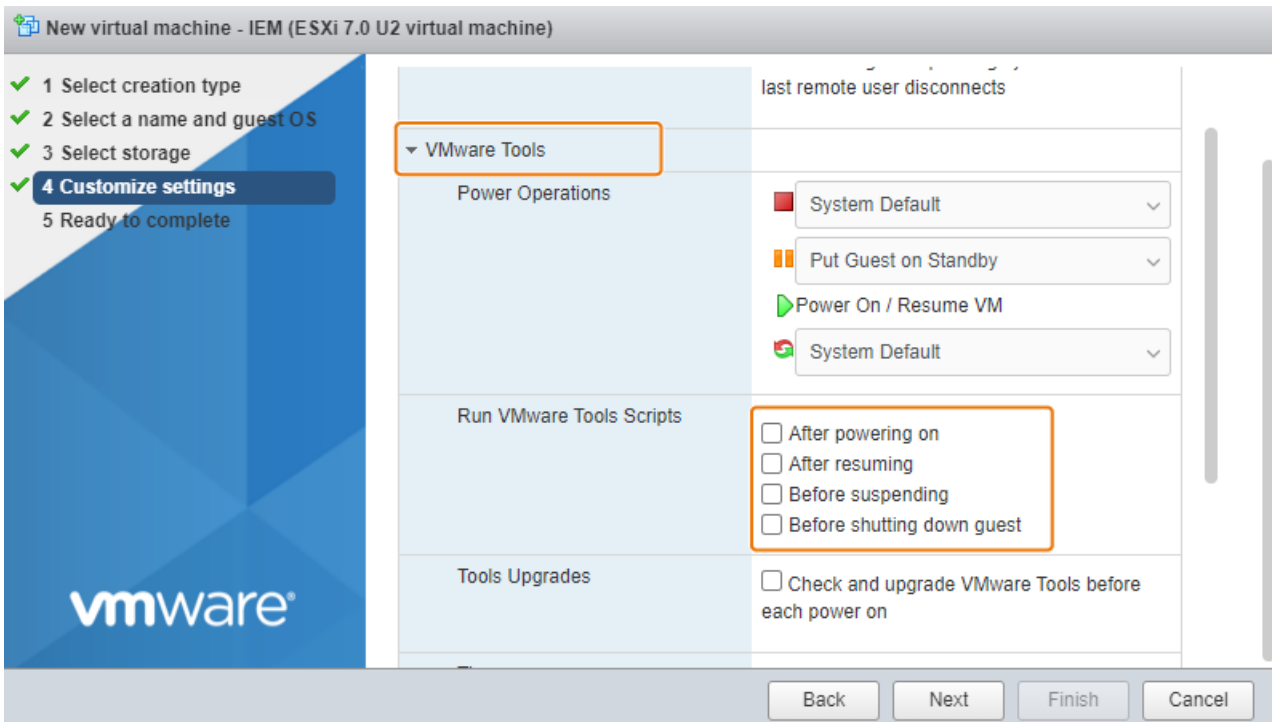
26. Enable the "Connect at power on" check box.

By that, the ISO image will be mounted when you start the VM.

27. Select "VM Options".

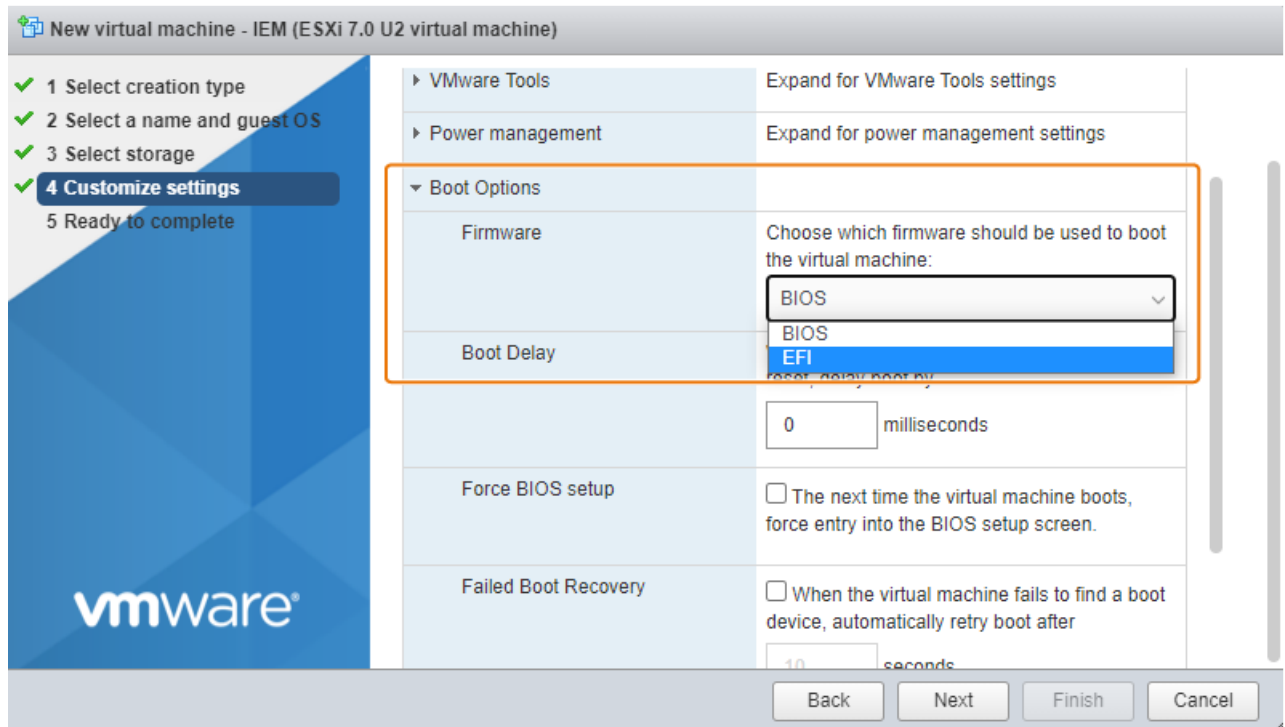


28. Expand "VMware Tools" and disable the VMware tools scripts.



29. Expand "Boot Options".

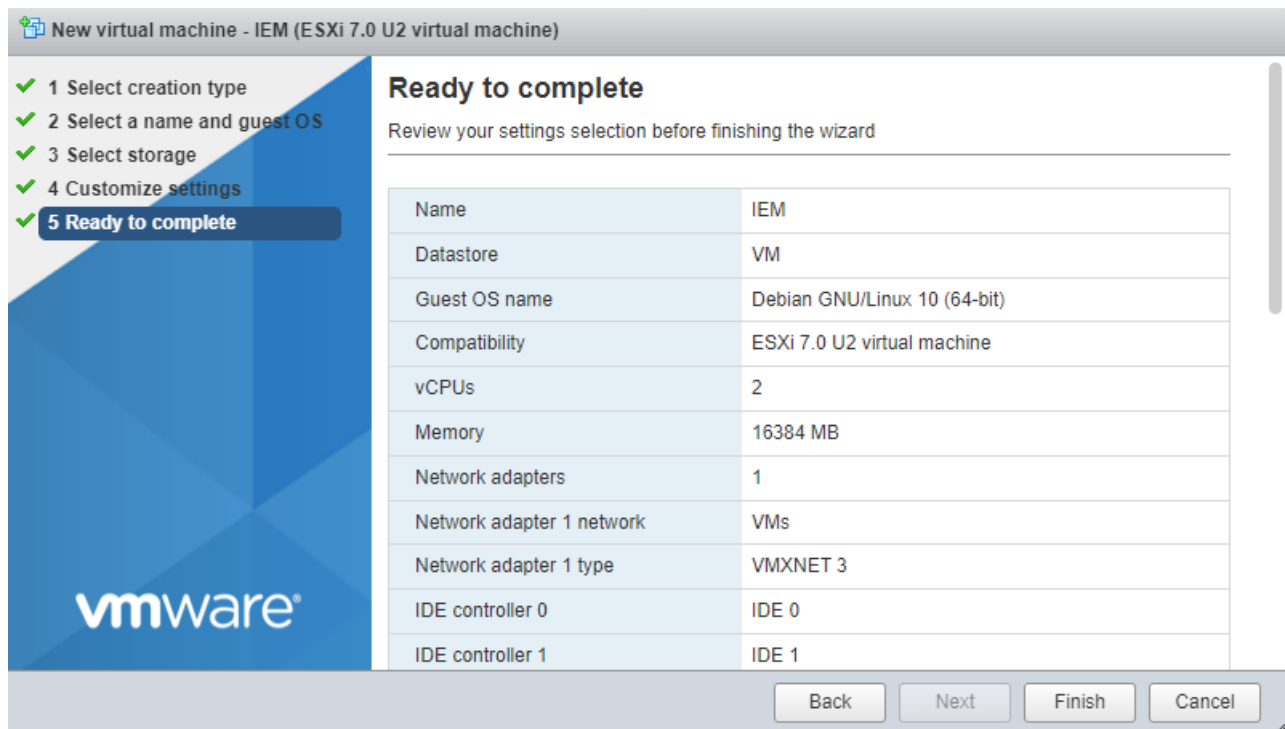
30. Under "Firmware", click the drop-down list and select "EFI" as boot firmware.



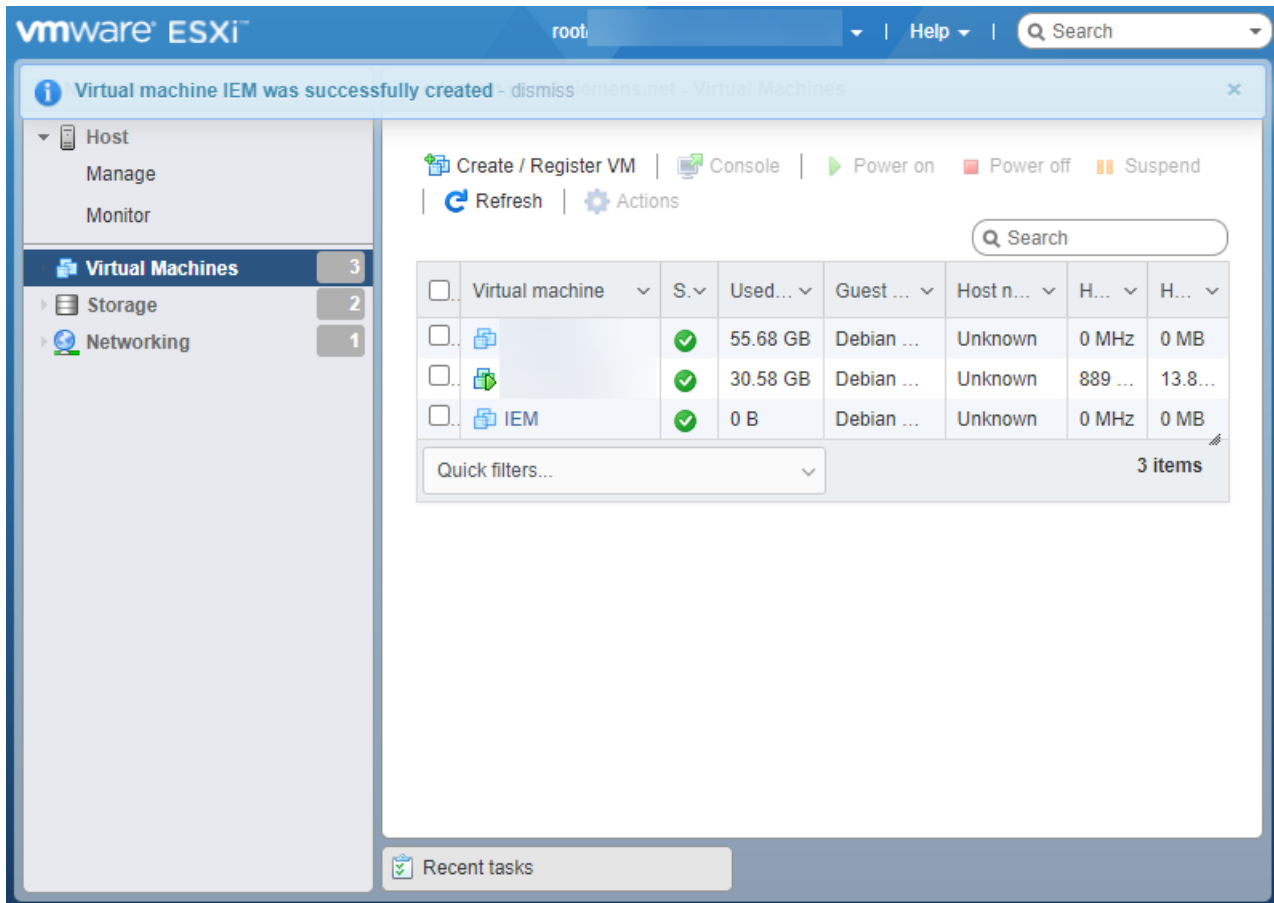
31. Enable UEFI secure boot by selecting the check box under "Enable UEFI secure boot".

32. Click "Next".

A summary of the VM settings is displayed.



33. Check again all provided details.
34. Click "Finish".
The VM is created and configured.



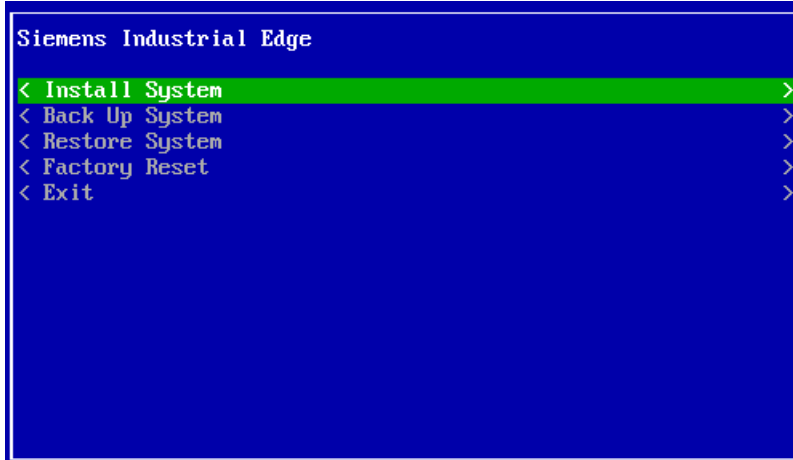
4.6.2 Installing the Industrial Edge Management OS

Requirement

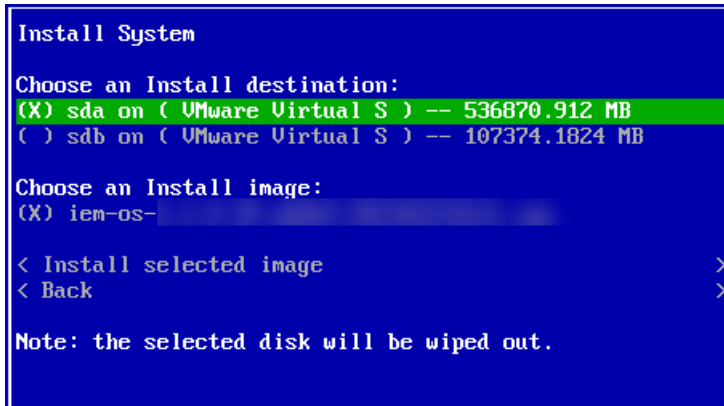
UEFI Boot is enabled in the VM settings.

Procedure

1. Under "Virtual Machines" select the VM and start the VM by clicking "Power on". The "Siemens Industrial Edge" screen is displayed.



2. Select "Install System". The "Install System" screen is displayed.
3. Select the 500 GB partition as installation destination.



4. Select "Install selected image". If Trusted Platform Module (TPM) is not configured in the VM settings, a warning, indicating that no usable TPM is detected, is displayed. Otherwise, the TPM setup will occur.
5. Select "Yes" to continue without TPM.

Note

It is strongly recommended to use a virtual TPM to minimize risks of unauthorized access to the VM.

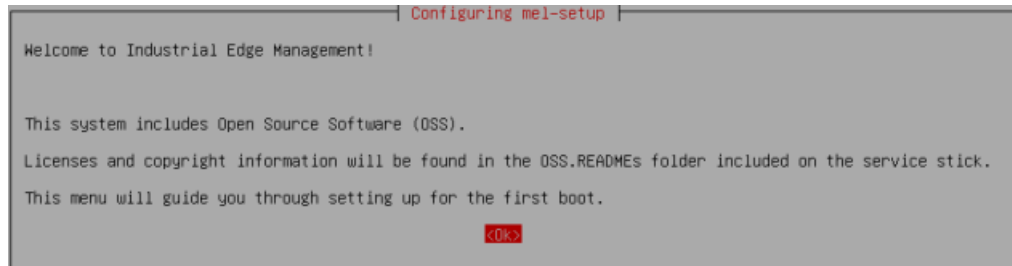
Note

No TPM enabled

If Trusted Platform Module (TPM) is not configured in the VM settings and you select "No", the installation of the Industrial Edge Management OS will not start.

The installation of the Industrial Edge Management OS is starting.

6. Wait until the installation is completed.
7. When the installation is completed, reboot the VM by selecting "Reboot".
The VM is getting rebooted.
After the reboot is finished, the welcome screen is displayed through which you configure the IEM-OS.



The "Configuring the Industrial Edge Management OS (Page 103)" subsection describes how to configure the IEM-OS.

4.7 Configuring the Industrial Edge Management OS

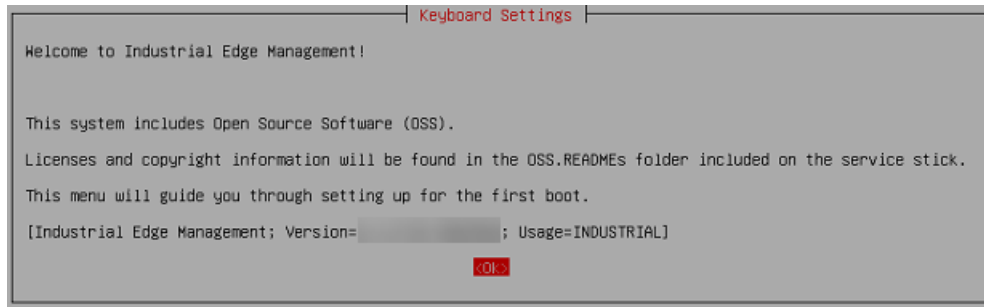
Procedure

1. In the welcome screen, select "Ok".
2. Select the localization settings as required.
3. Select the keyboard model as required.
4. Select the keyboard layout as required.
5. Select the default "None" keyboard variant.

6. In the "Keyboard Settings", select "No" for ctrl-alt-backspace to kill xserver.

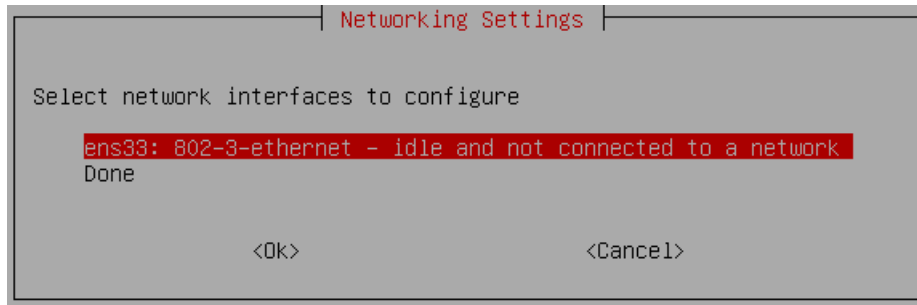


An initialization is being performed. After the initialization process has been completed, an enhanced welcome screen is displayed.



The version of the IEM is displayed in the last row.

7. Select "OK".
The "Network Settings" screen is displayed.

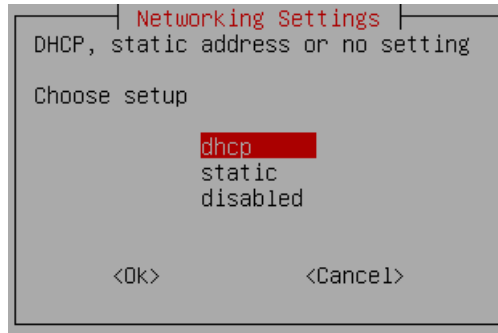


Note

Multiple network interfaces via Oracle VirtualBox

If you set up the IEM via Oracle VirtualBox and with a NAT network connection inclusive host only adapter, 2 interfaces are displayed in this screen. In this case, configure both network interfaces as required.

- To start configuring your network settings, select the "ens33" network interface. The following screen is displayed.



- Select your network settings as required. To use a DHCP network configuration, select "dhcp".

Note**DHCP IP address assignment**

If you are using DHCP, ensure that always the same IP address is being used. Otherwise, if the IP address changes in a running IEM environment, the Industrial Edge Management will not run anymore.

When using DHCP, select "No" for obtaining the hostname via DHCP.



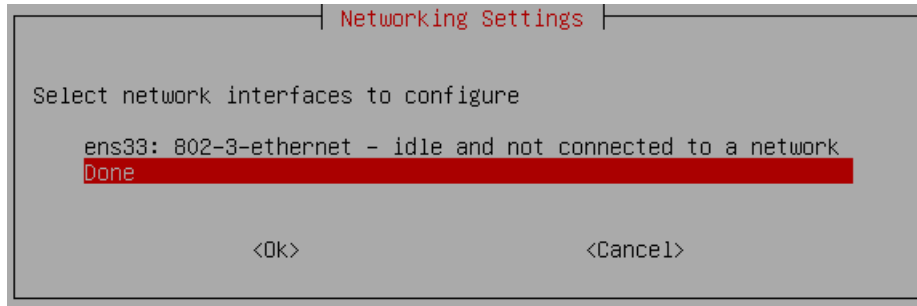
To use a static IP configuration for the VM, select "static".

When you choose a static IP configuration, enter the following information:

- Static IP address
- IP netmask
- IP gateway
- DNS server

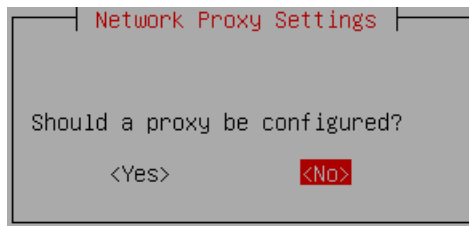
After you have configured your network settings, the "Network Settings" screen is displayed again.

10. Select "Done".



The "Network Proxy Settings" screen is displayed.

11. Select "No" for the configuration of a proxy.

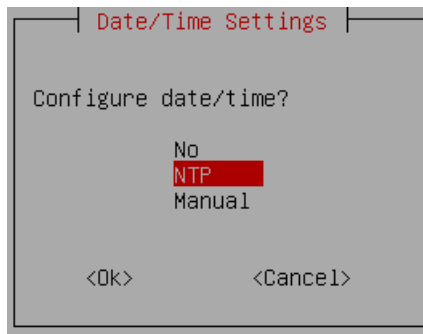


To use a proxy server, you can set and configure a proxy server in the Industrial Edge Management UI.

The "Timezone Settings" screen is displayed.

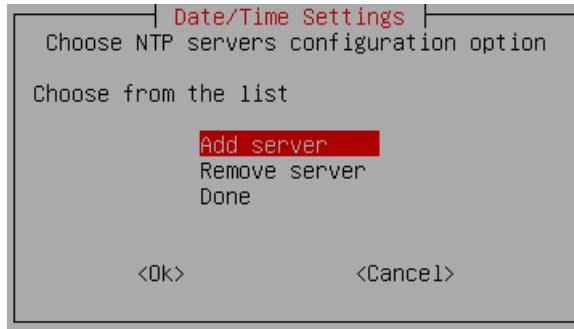
12. Select the timezone as required.

The "Date/Time Settings" screen is displayed.

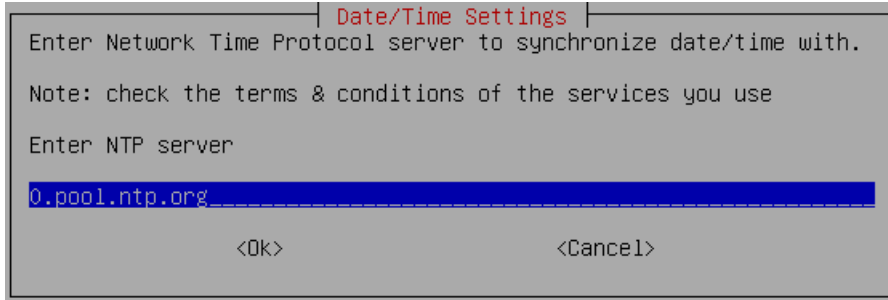


13. Use an NTP server by selecting "NTP".

14. Select "Add server".

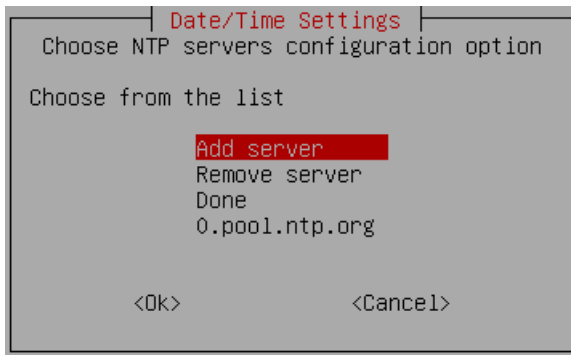


15. Enter the NTP server.



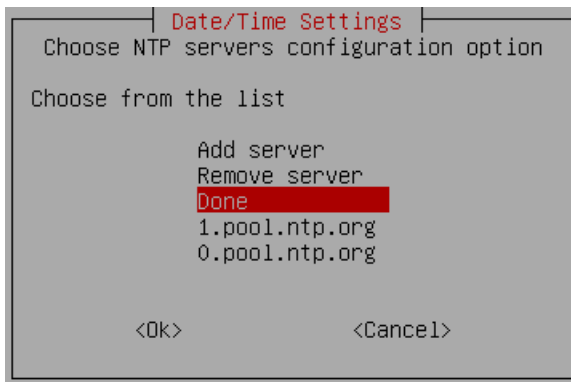
A flawless operation of the Industrial Edge Management and Edge Devices require time synchronization of the Industrial Edge Management and Edge Devices. To properly synchronize the time on the Industrial Edge Management and Edge Devices, minimum 1 NTP server is mandatory.

After you have entered the NTP server, the NTP server is added to the server list.

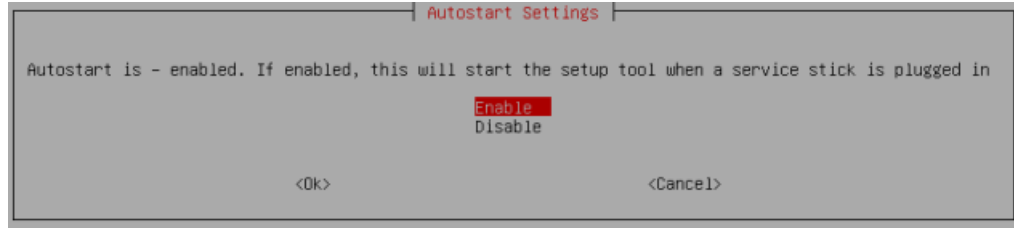


If you want to add further NTP servers, select again "Add server" and enter the next NTP server.

All entered NTP servers are added to the server list.



16. After adding your NTP servers, select "Done".
The "Autostart Settings" screen is displayed.



17. To lock the settings, select "Disable". To allow reconfiguration of the setup, select "Enable".

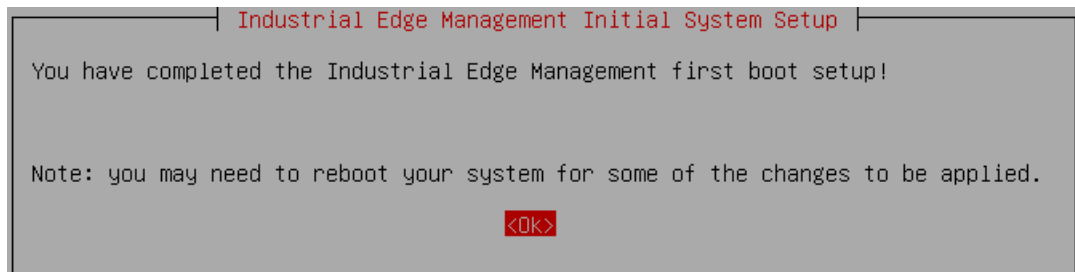
Note

Reconfiguration of the setup

After you have set up the IEM-OS, you can recall and reconfigure the setup by hotplugging the installation medium. For that, select "Enable".

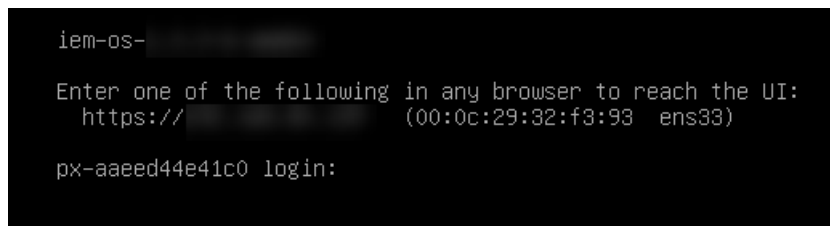
The setup is being performed.

When the setup is completed, the following screen is displayed.



18. Select "Ok".

The VM is getting rebooted. This may take up to 10 minutes. When the reboot is finished, the login screen is displayed.



The configuration of the IEM-OS is completed.

Note

NAT network connection in Oracle VirtualBox

In case you use Oracle VirtualBox and a NAT network connection inclusive host only adapter, 2 IP addresses are displayed. To set up the Industrial Edge Management, use the second displayed IP address ("enp0s8" network interface).

4.8 Activating & Installing the Industrial Edge Management

4.8.1 Activating the Industrial Edge Management

To activate and install the IEM, use an Internet browser on a client that is in the same network and subnet as the VM.

Procedure

1. Enter the IP address of the VM respectively of the Maintenance UI in the HTTPS protocol into an Internet browser, for example "https://178.123.11.54".
The IP address is shown in the login screen in the VM.
A certificate warning is displayed.



Your connection is not private

Attackers might be trying to steal your information from [redacted] (for example, passwords, messages, or credit cards). [Learn more](#)

NET::ERR_CERT_AUTHORITY_INVALID

Automatically send some [system information and page content](#) to Google to help detect dangerous apps and sites. [Privacy policy](#)

ADVANCED

Back to safety

2. Click "Advanced".

Activate IEM Instance

1 Onboarding 2 Certificate

Onboarding Configuration

Configuration File

Admin Accounts

IEM OS Email

IEM OS Password

Confirm IEM OS Password

Use same credentials for IEM

[Settings](#)

- In the "Onboarding Configuration" section, click "Browse" and select the downloaded IEM configuration file that you created in the Industrial Edge Hub. This IEM configuration file contains a key that is just valid for 1 hour. After 1 hour, the configuration file is expired and you have to download a new IEM configuration file.
- In the "Admin Accounts" section, create an admin user for the IEM-OS by entering the email address and password of the admin user. The password must meet the following criteria:
 - Minimum 8 characters
 - Minimum 1 upper case letter
 - Minimum 1 special character
 - Minimum 1 number

The following characters are recognized as special characters: ! @ # \$ % ^ & * . () _ +

6. If you want the admin user for the IEM-OS to be also the admin user for the IEM, activate the "Use same credentials for IEM" check box.

Activate IEM Instance

1 Onboarding 2 Certificate

Onboarding Configuration

Configuration File
configuration-8dd45a440863436687af2f9d26a8112f.json x Browse

Admin Accounts

IEM OS Email

IEM OS Password
.....

Strong

Confirm IEM OS Password
.....

Use same credentials for IEM

[Settings](#) **Next**

7. If you want to create a different admin user for the IEM, disable the "Use same credentials for IEM" check box and enter the email address and password of the admin user for the IEM in the "IEM Email" and "IEM Password" input fields.
Creating an admin account for the IEM-OS and for the IEM is mandatory.

Note**Resolved DNS entries**

If you want to use resolved DNS entries for domain names to access the IEM, ensure to resolve the DNS entries in the cloud or configure the local DNS server. Before you create the IEM-OS, add the DNS server addresses to the network settings by clicking "Settings" and then clicking the edit icon under the "LAN" tab.

8. After configuring the settings, click "Next".
The "Certificate" tab is displayed.

The screenshot shows a web interface titled "Activate IEM Instance". At the top, there are two tabs: "1 Onboarding" and "2 Certificate", with "2 Certificate" being the active tab. Below the tabs is a "Details" section containing several input fields: "Common Name", "Organization Unit", "Organization", "Street Address", "Locality", "State / Province", and "Country". The "Country" field is a dropdown menu currently showing "United States". At the bottom of the form, there are two buttons: "Back" and "Activate". A "Settings" link is also visible at the bottom left of the form area.

9. In the "Common Name" input field, enter the Fully Qualified Domain Name (FQDN). Typically, the FQDN is composed of the host domain name. The FQDN is used to generate a rootCA on the IEM-OS for the following purposes:
- Generating certificates to configure the Edge Device's reverse proxy server TLS settings.
 - Generating certificates to configure the IEM's reverse proxy server TLS settings if the IEM is set up with default settings.
 - Generating certificates to configure the IEM-OS's reverse proxy server TLS settings.

The "Common Name" input field is mandatory, should not have multiple "@" symbols and must not exceed 253 characters.

The other input fields are optional.

10. Before activating the IEM instance, configure the system settings respectively ensure that your settings are correct by clicking "Settings".
You can configure the following settings:

- Network
- Proxy server
- Docker network
- NTP server

You find more information on the system settings in the "Settings (Page 123)" subsection.

11. Click "Activate".

When the activation of the IEM instance was successful, an according screen is displayed.

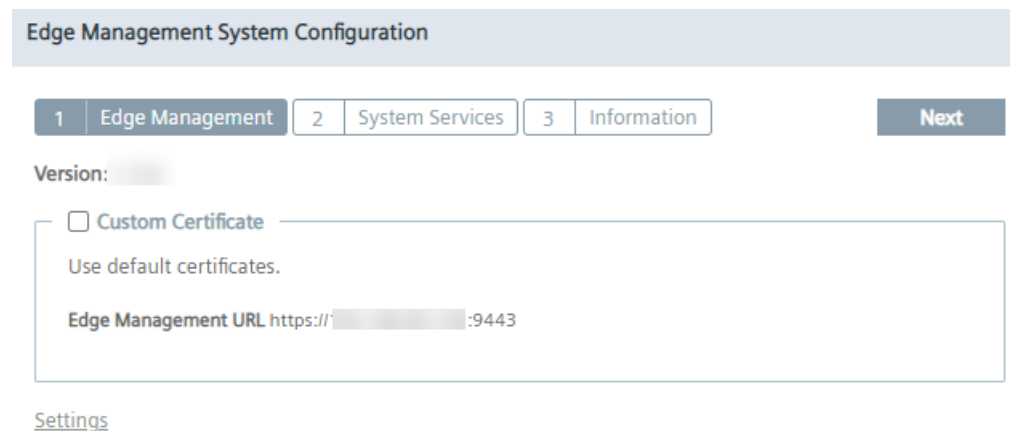


12. Click "OK".

You will be redirected to the "Sign in" screen.

13. Sign in with the admin user for the IEM-OS that you created during the setup.

The "Edge Management System Configuration" screen is displayed.



4.8.2 Installing the Industrial Edge Management

The Industrial Edge Management can be configured to use custom certificates or certificates from the IEM itself during the setup.

Note

In the following, the term "cluster" is a synonym for the IEM-OS.

Procedure

1. To use self-signed certificates by the IEM itself, disable the "Custom Certificate" check box in the "Edge Management System Configuration" screen and go to step 11.

Note

Industrial Edge Management App version

The version of the Industrial Edge Management App, in the UI displayed as "Edge Management" app, that you install is displayed above the "Custom Certificate" check box.

Note

Edge Management URL

The URL of the Management UI of the IEM is displayed at the bottom of the screen.

Note

Importing certificates after the setup

When you do not use your own certificates but the certificates from the IEM, you cannot import your own certificates after the setup of the IEM anymore.

2. If you want to use your own certificates, enable the "Custom Certificate" check box. The IEM and its components require full certificate chains with root-CA, that means that the used certificates must be certificated and trusted by a higher certificate instance. These certificates are used to setup the IEM App with HTTPS communication. You find more information on the certificate requirements and the certificate chain in the "Certificate requirements (Page 132)" subsection.
The private keys and certificates must be uploaded in the *.pem format, for example "portal.key" and "portal.crt" files.
You must select certificates for the IEM and for the Registry server.
3. In the "Edge Management SSL Key" field, click "Browse" and select your private key for the IEM.
4. In the "Edge Management SSL Certificate" field, click "Browse" and select your certificate for the IEM.
When you use 2 different certificates with different domain names, select 1 for the IEM and 1 for the Registry server.
When you use wildcard certificates issued for the "*.<domain.name>" domain, you can use the certificates for both the IEM and the Registry server.
When you use SAN certificates with 2 different domain names, you can use the certificates for both the IEM and the Registry server.

5. In the "Edge Management URL" input field, enter the FQDN of the IEM that you want to use to open the IEM, for example "iem.my.domain.name.com".
The "Edge Management URL" is needed for the API and the UI of the IEM. If you use resolved DNS entries for domain names, you can use the URL of the IEM to access the IEM by entering the domain name instead of the IP address.

Note**Avoid warnings**

Add the IP address into the SAN field. By that, the IEM can be opened without warnings by systems which cannot resolve the DNS.

Note**Multiple DNS servers**

If you are using multiple DNS servers, ensure to resolve the URL of the IEM in each DNS server. Otherwise, connection problems can occur during the access to the IEM.

The "Edge Management URL" text field is being adapted according to your configuration. When you enter the URL of your IEM, the "Public Trusted" check box is enabled.

6. In the "Registry SSL Key" field, click "Browse" and select your private key for the Registry server.
7. In the "Registry SSL Certificate" field, click "Browse" and select your private certificate for the Registry server.
Adding your private certificates and keys is mandatory when you do not use the created and self-signed certificates by the IEM itself.
8. In the "Registry URL" input field, enter a FQDN for the Registry server, for example "iem-registry.my.domain.name.com".

Note**Registry URL**

Use for the "Registry URL" input field an own FQDN like for the "Edge Management URL" input field.

The "Registry URL" is needed for using Docker images of Edge Apps.

9. If the selected certificates are wildcard or SAN certificates and thus signed by a public CA, activate the "Public Trusted" check box.
If the certificates are signed by a public CA, you do not have to manage certificates for other components, for example the IE App Publisher or Edge Devices, to accept and use your certificates.
You can only enable this during the IEM setup and you cannot change this setting afterwards.

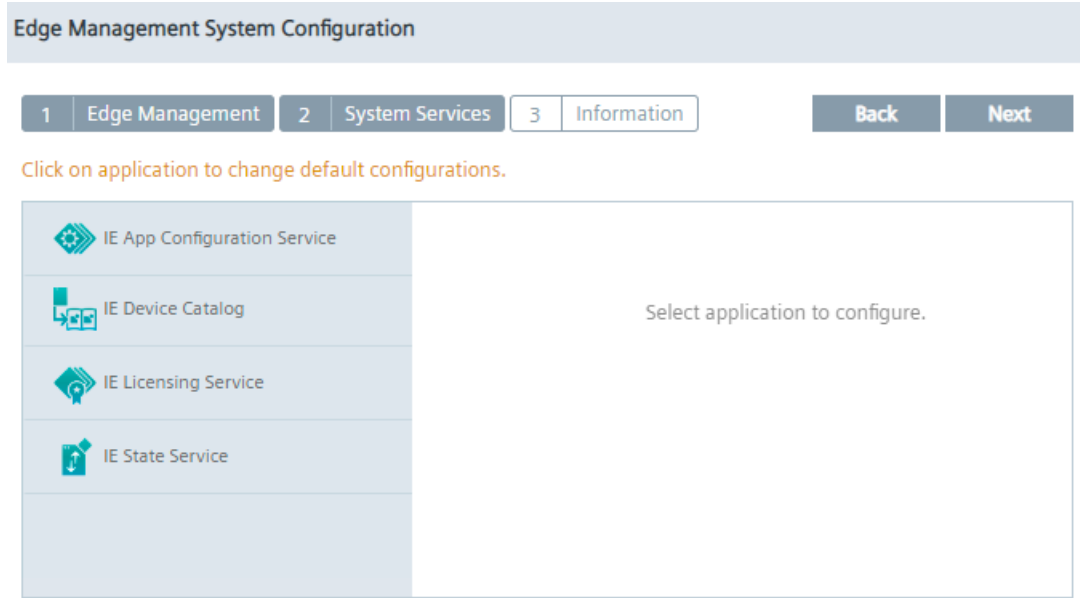
Note**Public CA**

As long as the "Public Trusted" check box is not enabled, the custom certificate chain of trust is also transferred as trusted root certificate to the IEDs.

10. If the certificates are not public trusted, deselect the "Public Trusted" check box.
In that case, you must import and accept the full chain certificates with root-CA for each other component in Industrial Edge.

4.8 Activating & Installing the Industrial Edge Management

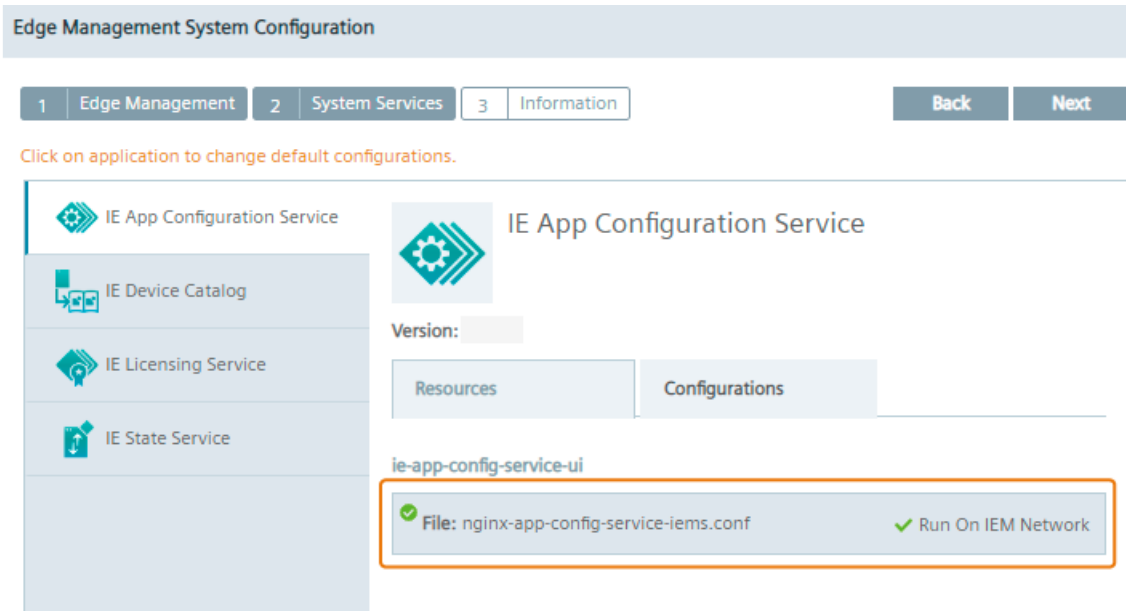
- 11. Click "Next".
The "System Services" tab is displayed.



[Settings](#)

In this screen, you can change, if needed, the default installation configurations of IEM Services.

- 12. Select an IEM Service on the left.
The version of the IEM Service that is being installed is displayed below the app icon.
- 13. Ensure that the available resource files in the "Resources" tab are activated.



[Settings](#)

14. If needed, you can change the default installation configuration in the "Configurations" tab. For the IE State Service, you can enable the monitoring service in the "Configurations" tab. You find the procedure on enabling the monitoring service and further information on the service under "Backups > Industrial Edge State Service > Configuration" in the "Industrial Edge Management - Operation (<https://support.industry.siemens.com/cs/us/en/view/109804063>)" manual.

Note

Except the IE State Service, Siemens recommends not changing the installation configurations.

15. Ensure that for each IEM Service the available resource files in the "Resources" tab are activated.

- 16. Click "Next".
The "Information" tab is displayed.

Edge Management System Configuration

1 Edge Management 2 System Services 3 Information Back Create Cluster

IEM Cluster Network

| | |
|-----------------|---------|
| Service Network | |
| IP address | Netmask |
| 67.64.0.0 | 12 |

| | |
|-------------|---------|
| Pod Network | |
| IP address | Netmask |
| 77.32.0.0 | 12 |

Configuration

| | |
|--------|----------|
| CPU | 1 |
| Cores | 2 |
| Memory | 15.67 GB |
| NICs | 1 |

Network interface to access IEM

| Name | Boot Protocol | IP address |
|-------|---------------|------------|
| ens33 | DHCP | |

Storage

/dev/sdb

[Settings](#)

The "IEM Cluster Network" section is editable, the "Configuration", "Network" and "Storage" sections are non-editable and are just displayed for your information.

- 17. If needed, edit the "Service Network" and the "POD Network" sections.
The networks are needed for internal services. These network ranges must not overlap the LAN network in which the IEM is installed and both network ranges must not overlap each other.
The "Netmask" entry indicates a network subnet and is the subnet in the Classless Inter-Domain Routing (CIDR) format, for example "67.67.0.0/12".

Note

IEM Cluster Network settings

Siemens recommends not changing these settings.

18. Click "Create Cluster".

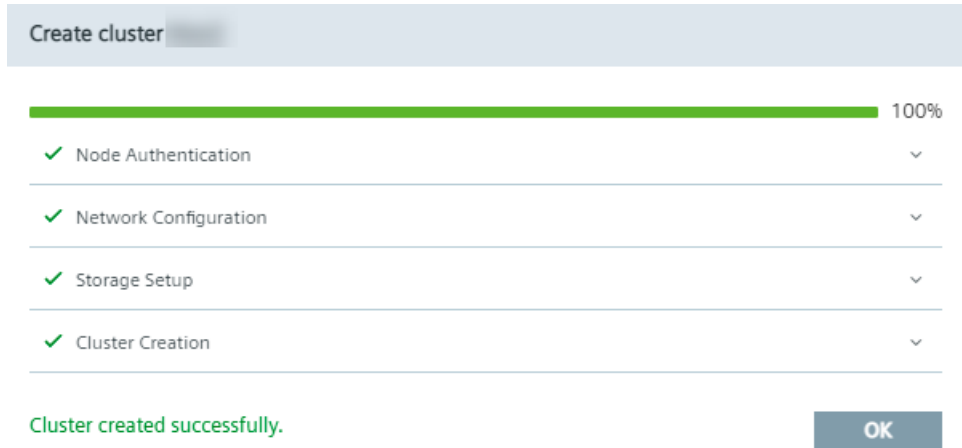
You will be redirected to the Maintenance UI.

The "Create cluster" screen is displayed.




The IEM-OS is being created automatically. This process takes approximately 15 minutes.

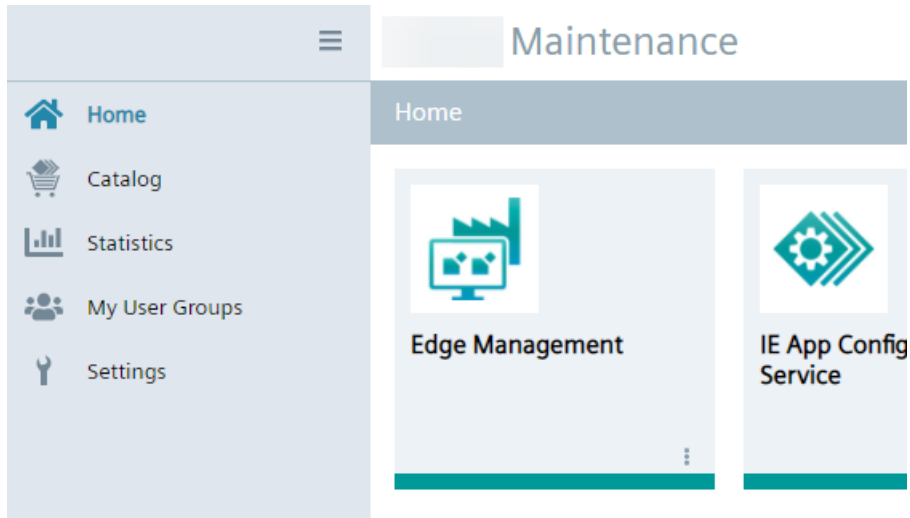
19. When the "Cluster created successfully" message is displayed, click "OK".



Automatically, the Industrial Edge Management App is being installed. Via the app, you open the Management UI, the central UI of the IEM.

20. Wait until the Industrial Edge Management App is installed.

You can check the installation progress by clicking the  icon. When the installation was successful, the "Edge Management" app is displayed in the "Home" section of the Maintenance UI.




Note

Installation of the IEM App

When the IEM App is installed, automatically few images and containers are getting downloaded to use the IEM App. Depending on the Internet speed, the download of these images and containers takes approximately 10 minutes.

Note**Automatic installation of IEM Services**

With upcoming releases, several IEM Services, for example the IE State Service and the IE App Configuration Service, are also getting installed automatically. You can check which IEM Services are getting installed automatically, and also the installation progress respectively status of the IEM Service, by clicking the  icon.

4.8.3 Settings

4.8.3.1 Settings

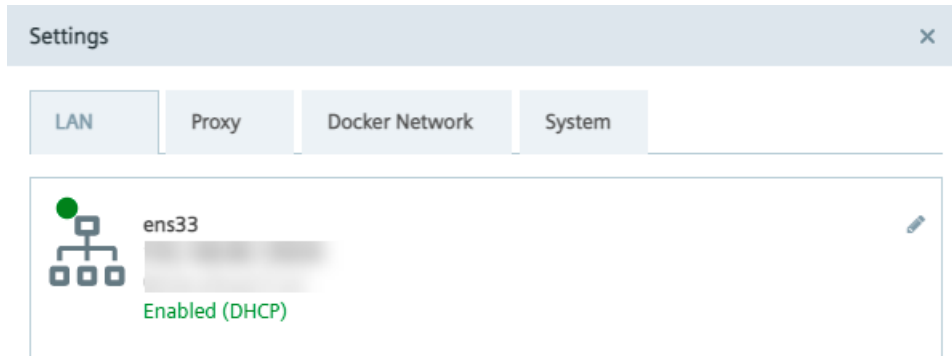
You can edit the following settings before you install the Industrial Edge Management:

- Network settings
- Proxy settings
- Docker network settings
- NTP settings


4.8.3.2 Editing network settings

Procedure

1. In the "Activate IEM instance" screen, click "Settings".
The "Settings" screen is displayed.



In the "LAN" tab, the configured network settings are displayed.

2. To edit the network settings, click the  icon.
The "Configure NIC" screen is displayed.

Configure NIC×

Obtain an IP address automatically from DHCP server

Use the following IP address

IP address

Netmask

Default gateway

Obtain DNS server address automatically from DHCP server

Use the following DNS server address

Preferred DNS server

Alternate DNS server

Tertiary DNS server

Change Mac Address

Mac Address

Save

- Configure the IP address and the DNS server as required, either automatically through DHCP server or through static information.

Note

Resolved DNS entries

If you want to use resolved DNS entries for domain names to access the IEM, ensure to resolve the DNS entries in the cloud or configure the local DNS server. Before you create the IEM-OS, add the DNS server addresses to the network settings.

- If you want to use a specific MAC Address, activate the "Change Mac Address" check box and enter the desired MAC address.
- Click "Save".

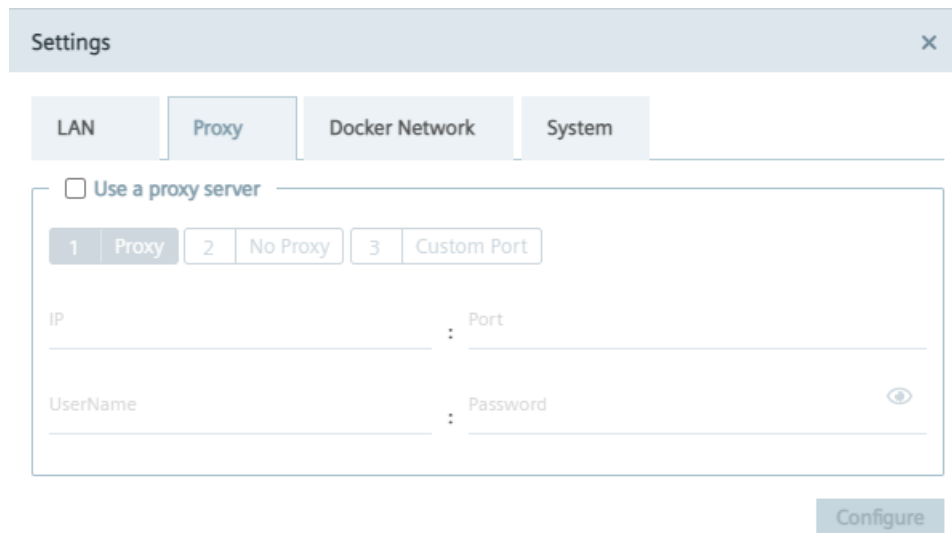
4.8.3.3 Setting up a proxy server

With the use of a proxy server, the admin of the IEM (and of Edge Devices) can add, edit and remove proxy rules to redirect specific data traffic. The admin can also disable redirection of specific data traffic through the proxy.

App developers do not need to implement their own proxy settings. The proxy settings described in this procedure apply for all IEM components.

Procedure

1. Click the "Proxy" tab.



The screenshot shows a "Settings" window with a close button (X) in the top right corner. Below the title bar are four tabs: "LAN", "Proxy", "Dockers Network", and "System". The "Proxy" tab is selected. Underneath the tabs, there is a checkbox labeled "Use a proxy server". Below the checkbox are three radio button options: "1 Proxy", "2 No Proxy", and "3 Custom Port". The "1 Proxy" option is selected. Below these options are four input fields: "IP", "Port", "UserName", and "Password". The "IP" and "Port" fields are on the top line, and "UserName" and "Password" are on the bottom line. There is a small eye icon to the right of the "Password" field. At the bottom right of the form area is a "Configure" button.

2. To use a proxy server, click the "Use a proxy server" check box. The input fields for the proxy server settings are enabled.
3. Enter the IP address and the corresponding port of the proxy server in the according input fields.
4. If needed, enter username and corresponding password in the according input fields in case of an additional authentication for the proxy server. When authentication is required, the password must match the following criteria:
 - The password must start with an alphabetic character
 - The password must not contain complex characters, such as \ . * "
 - The password must not be longer than 21 charactersThe settings apply for HTTP and HTTPS proxy servers.

- Click "Next".
The "No Proxy" tab is displayed.

Settings

LAN Proxy Docker Network System

Use a proxy server

1 Proxy 2 No Proxy 3 Custom Port

IP +

| IP address | Action |
|----------------|--------|
| 0.0.0.0/8 | — |
| 10.0.0.0/8 | — |
| 127.0.0.0/8 | — |
| 169.254.0.0/16 | — |
| 172.16.0.0/12 | — |
| 192.168.0.0/16 | — |
| 224.0.0.0/4 | — |
| 240.0.0.0/4 | — |

Back Next

In the "No Proxy" tab, add all the IP addresses which shall be accessed directly (without use of proxy).
By default, several no proxy addresses are listed which are required by the IEM.

- If you want to add a further IP address which shall be accessed directly, enter the IP address inclusive subnet, for example <IP/32>, or the domain of the no proxy address in the "IP" input field and click the + icon.
The address is added to the no proxy list.
When you use a proxy server to connect to the IEM after you have installed the IEM, you must add the Industrial Edge Management URL and the Industrial Edge Management App registry URL to the no proxy address list. Otherwise, several errors can occur when you use the IEM. Also, ensure adding the proxy server address to the no proxy list. This is required for supporting transparent proxy feature and for supporting HTTP proxy aware IEM extensions at same time.

7. Click "Next".
The "Custom Port" tab is displayed.

Settings

LAN Proxy Docker Network System

Use a proxy server

1 Proxy 2 No Proxy 3 Custom Port

Protocol
http

Port

| Protocol | Port | Action |
|----------|------|--------|
| http | 80 | — |
| https | 443 | — |
| https | 2020 | — |

Back Configure

In the "Custom Port" tab, you configure ports for apps which use the configured ports for outgoing communication through the proxy on HTTPS or HTTP protocols. By default, several ports are listed which are required by the IEM.

Note

Default no proxy addresses and ports

The default no proxy addresses and ports are essential for running the IEM and cannot be deleted.

8. If you want to add a further port, select the required protocol from the "Protocol" drop-down list and enter the required port.
9. To add the port, click the icon.
The port is added to the port list.
10. To add the proxy settings, click "Configure".
11. Confirm the proxy settings by clicking "Ok".
The proxy settings are saved.

Note

Setting up a proxy server after IEM installation

You can also configure and update the proxy settings after the IEM installation. In the Maintenance UI, navigate to the "Settings > Connectivity > Proxy" section and set the proxy settings.

4.8.3.4 Configuring the Docker network

By default, the Docker server creates and configures the host system's network interface called docker0. The Docker server configures the docker0 network with an IP address, a netmask and an IP allocation range. The default docker0 network range is 172.17.0.0/16. If this network range conflicts with the existing system's network configuration, certain services do not work and you are not able to access the Maintenance UI in a browser.

To prevent this scenario, you can configure the docker0 network range as described in the following.

Procedure

1. In the "Settings" screen, click the "Docker Network" tab.

The screenshot shows the "Settings" window with the "Docker Network" tab selected. Below the tabs, there are two rows of input fields: "IP address" and "Netmask". Each row contains four individual input boxes, all of which currently contain the value "0". A "Configure" button is located at the bottom right of the form.

2. In the "IP address" input field, enter the IP address that you want to use for the docker0 network.
The IP address of the docker0 network is the start of the docker0 network.
3. In the "Netmask" input field, enter the subnet mask of the docker0 network.

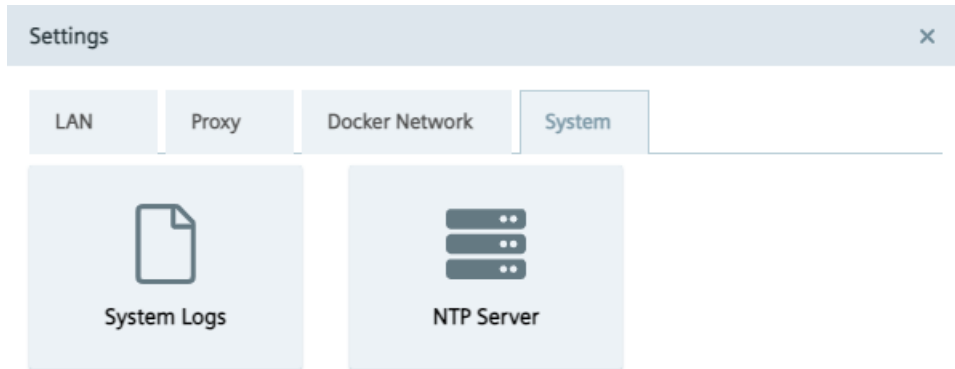
This screenshot is similar to the previous one, but the "IP address" field now contains the values "172", "18", "1", and "2" in its four boxes. The "Netmask" field contains the values "255", "255", "0", and "0". The "Configure" button is now highlighted in a darker blue, indicating it is the next step in the procedure.

4. To save the settings, click "Configure".

4.8.3.5 Downloading system logs

Procedure

1. Click the "System" tab.



2. Click the "System Logs" tile.
The log file is being downloaded to the standard download folder of your Internet browser.

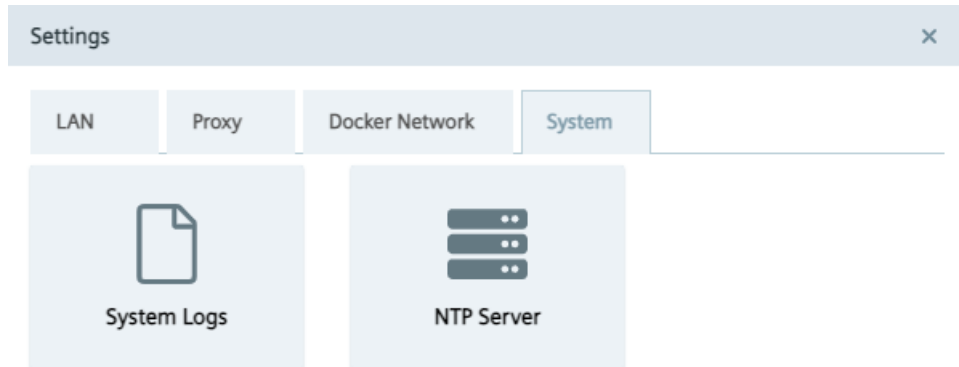
4.8.3.6 Adding an NTP server

A flawless operation of the Industrial Edge Management and Edge Devices require time synchronization of the Industrial Edge Management and Edge Devices. To properly synchronize the time on the Industrial Edge Management and Edge Devices, an NTP server is mandatory.

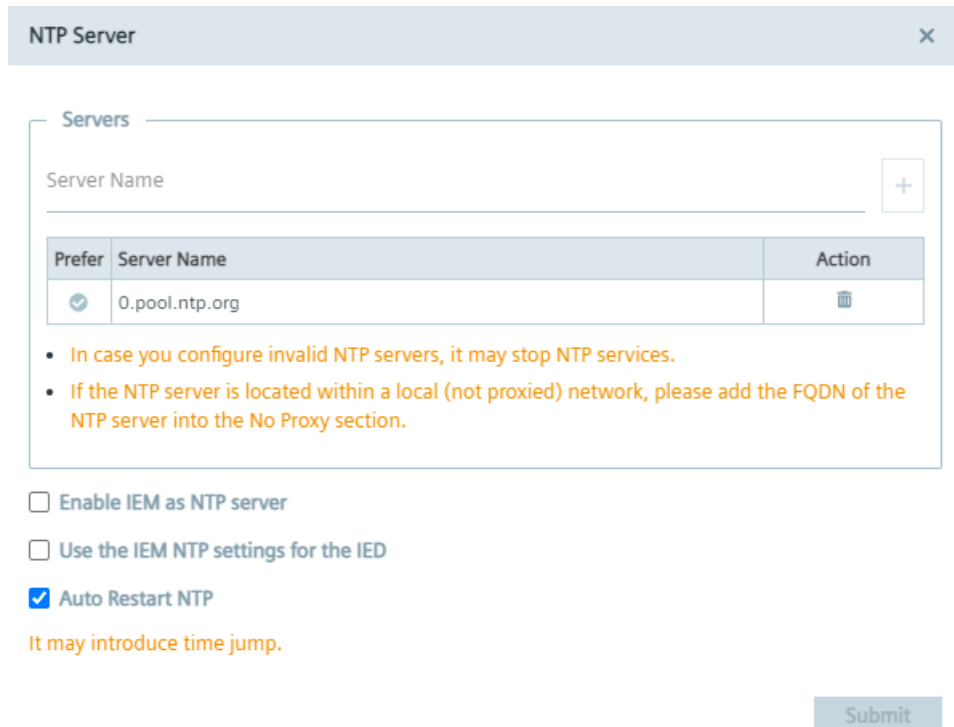
If you already have added an NTP server during the configuration of the Industrial Edge Management OS, you can skip this procedure.

Procedure

1. Click the "System" tab.





2. Click the "NTP Server" tile.
The "NTP Server" screen is displayed.



If you have added an NTP server during the configuration of the Industrial Edge Management OS, the NTP server is displayed in the server list.

3. If you have not added minimum 1 NTP server or you want to add an other NTP server, enter the NTP server in the "Server Name" input field.
4. To add the NTP server, click the plus icon.
The NTP server is added to the server list.

5. By clicking the  icon, you select the NTP server as preferred NTP server which signals the NTP service to always select this NTP server as synchronization source, in case the server is available.
Preferred NTP servers are marked with .
6. By selecting the "Enable IEM as NTP server" check box, the NTP services in the IEM serve as an NTP server for other NTP clients, for example Edge Devices.
This option removes the dependency that an NTP server must be configured in the local automation network and serves Edge Devices which cannot access any global or local servers within the local network.
7. By selecting the "Use the IEM NTP settings for the IED" check box, Edge Devices that are getting connected to this IEM use the same preferred NTP server for time synchronization.

Note

Selecting NTP server

You can just select either the "Enable IEM as NTP server" or the "Use the IEM NTP settings for the IED" at the same time.

8. By selecting the "Auto Restart NTP" check box, the automatic restart of NTP services is enabled.
By default, the "Auto Restart NTP" check box is enabled. If, due to any kind of reason, NTP services in the IEM have stopped and the "Auto Restart NTP" check box is enabled, the NTP monitoring service will automatically restart the NTP services.

Note

Data loss due to leap in time

If NTP services in the IEM have stopped and the automatic restart of NTP services is enabled via this option, a leap in time might occur after automatically restarting NTP services. Be aware that time series based applications might be affected by this leap in time resulting in losing data. If you do not want this risk of losing data, disable the "Auto Restart NTP" check box.

9. Click "Submit".

4.8.4 Certificate requirements

Industrial Edge certificates require the following mandatory fields to be configured:

- Common Name (CN)
- Subject Alternative Name (SAN)

If you set up the IEM using custom certificates, ensure that these mandatory fields are configured in the provided certificates. Moreover, the provided information must fit into the root or intermediate CA's policies.

Beside these mandatory fields, you can also provide optional information. The following fields are optional:

- Country Name (C)
- State or Province Name (S)
- Organization Name (O)
- Organization Unit (OU)

Checked certificate properties

Currently, the following properties are checked upon import of the certificate:

- CA certificate existence
- Key file validity

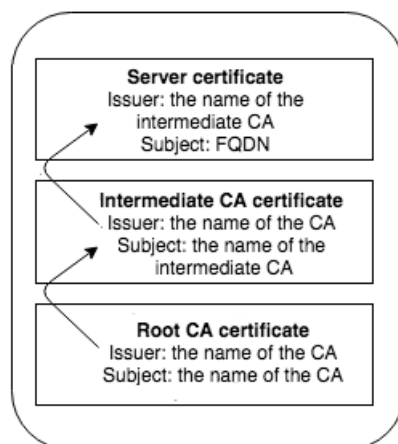
Some properties are not checked and need to be checked by the user manually:

- All necessary fields are filled
- Validity of certificate chain (your certificate – intermediate certificate – root-CA certificate)
- Corresponding of server names in the certificates to the used DNS names

Certificate chain

The used certificates require to contain the whole certificate chain in the *.crt file.

The certificate chain starts with your certificate followed by intermediate certificates and ends with the root-CA certificate. The issuer of any certificate in the certificate chain must be equal to the subject of the next certificate, ending with the root-CA certificate where subject and issuer are equal.



Up to IEM V1.2, line breaks in the certificate text files must be \LF only (Linux style). \CR\LF (Windows style) and \CR (Mac style) are not supported.

4.9 Installing configurators

Configurators are essential for using the "IE Databus" System App and some other special apps. Apps that are being configured by a configurator and that are installed on Edge Devices are also considered as runtime apps. The configurators can configure and launch each decentrally installed runtime app on your Edge Devices. To use these runtime apps, the respective configurator must be installed in the Maintenance UI of the IEM.

Configurators are for example:

- IE Databus Configurator
- IE Cloud Connector Configurator
- SIMATIC S7 Connector Configurator

More configurators will follow with further IE releases.

The following procedure describes the installation of the "IE Databus Configurator". To install other configurators, proceed in the same manner.

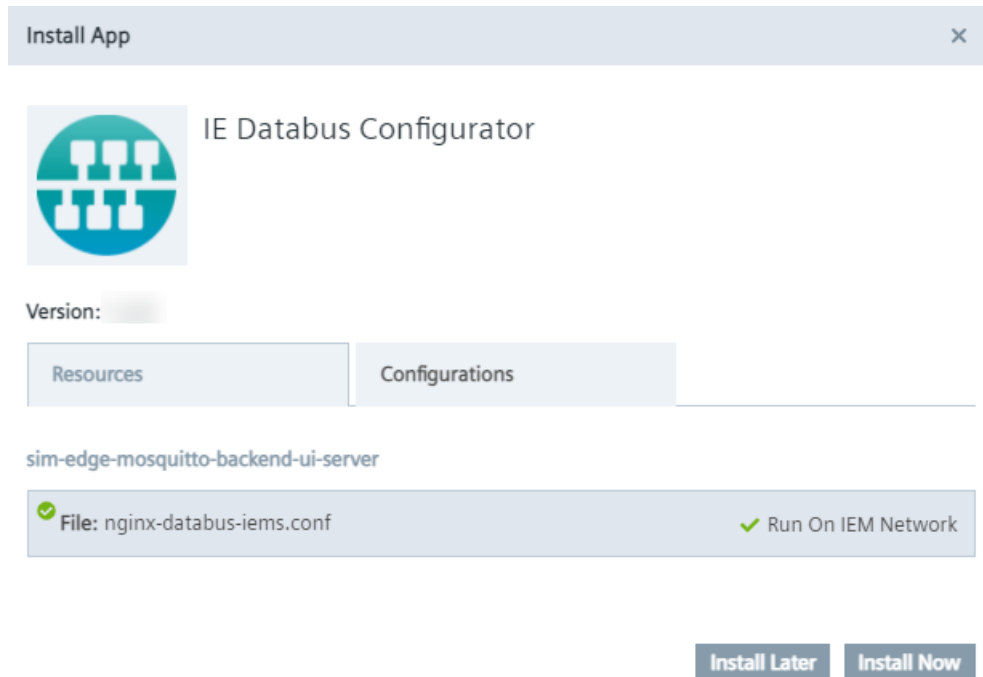
Note

Configurators documentation

You find more information on the functionalities and the operation of the configurators in the manual of each configurator in SIOS (<https://support.industry.siemens.com/cs/products?mfn=ps&pnid=26128&lc=en-WW>).

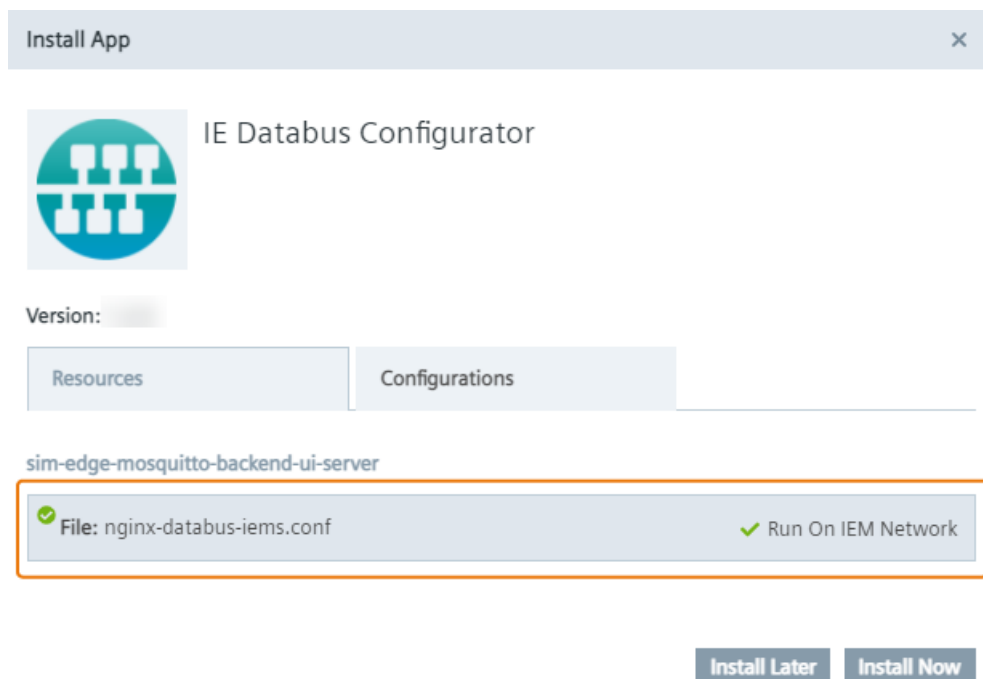
Procedure

1. In the navigation menu of the Maintenance UI, click "Catalog".
2. Click the "IE Databus Configurator" app.
The "Install App" screen is displayed.



The app version you install is displayed below the app icon.

3. Ensure that the available resource file is activated.



4.10 Adding a relay server

4. Click either "Install Later" or "Install Now".
"Install Now" installs the app immediately. When you click "Install Later", select an installation time.

Note**Installation date and time**

When you select "Install Later", a calendar and the local system time is displayed for selecting the installation date and time.

5. To check the installation status, click the tasks icon in the top right corner.



6. Wait for the app to be installed.
7. Before you continue, install the other available configurators in the same manner and wait until all configurators are installed and available in the Maintenance UI.

Note**Using the configurators**

By clicking the tile of a configurator after it is installed, the configurator will be launched with an error. To use the configurator, the respective runtime app must be installed on your Edge Devices. Afterwards, you can use the configurator and launch the respective app under "Data Connections" in the Management UI.

You find the procedure on installing apps in the "Installing an app (Page 175)" subsection.

4.10 Adding a relay server

When your Edge Devices are placed in your plant network that is separated for example by NAT Gateway from the control plane network in which the IEM is running, the direct access from the control network is not possible. Normal operation is still possible, as the Edge Devices always initiate the communication from their side. For direct access through "remote access", for example for debugging on Edge Devices, a relay server is needed. The Edge Devices in the plant network establish the connection to the relay server. The IEM can act as a relay server for your Edge Devices. For that, you must add the IP address of the IEM server. Afterwards, you can use the "remote access" through the IEM after activation. Only 1 relay server per IEM is allowed.

Procedure

1. When the Industrial Edge Management App and the configurators are installed, open the Management UI by clicking the "Edge Management" app.
Alternatively, you open the Management UI by entering the URL of the IEM that you entered during the setup of the IEM-OS into an Internet browser, for example "iem.my.domain.name.com".
The login screen of the Management UI is displayed.



2. Click "Sign in".
The "Sign in" screen is displayed.

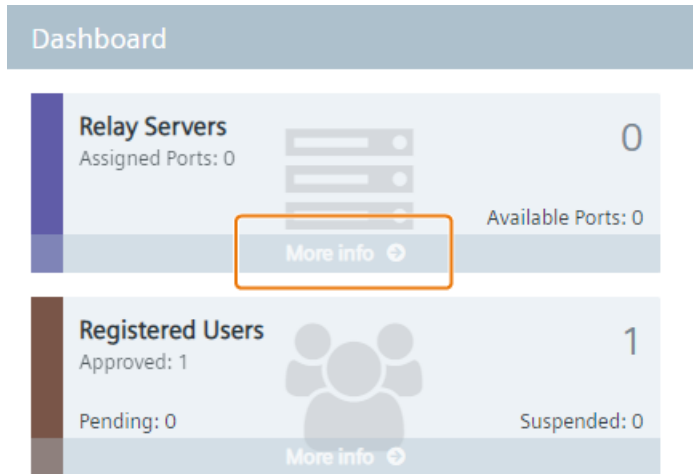
The screenshot shows the "Sign in" screen. It features a "Sign in" button at the top. Below it are two input fields: "Email" and "Password". The "Password" field has a toggle icon (an eye) to the right of it. At the bottom right, there is another "Sign in" button. At the bottom left, there are three links: "Sign up", "Forgot Password?", and "Reset Password".

4.10 Adding a relay server

- 3. Log in with the admin credentials that you configured during the setup of the IEM-OS. The home page of the Management UI is displayed.



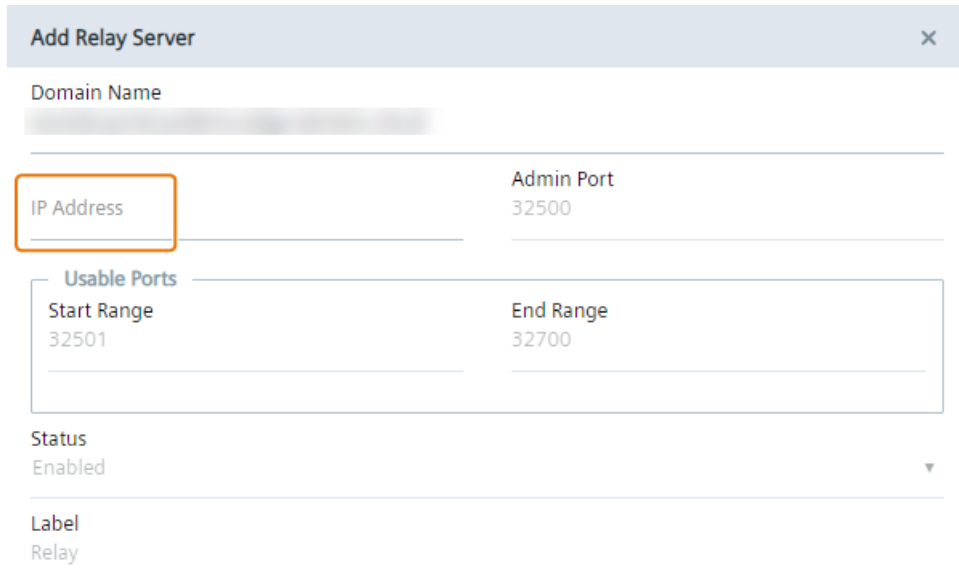
- 4. In the navigation menu, click "Admin Management". The "Dashboard" screen of the Admin UI is displayed.
- 5. In the "Relay Servers" section, click "More Info".



The "Relay Servers" screen is displayed.

- 6. Click "Add". The "Add Relay Server" screen is displayed.

7. In the "Domain Name" input field, enter either the IP address or the DNS name of your IEM. If you are using an IP-based IEM, enter the IP address of the IEM or a DNS name which is resolved to this IP address. If you are using a DNS-based IEM, enter the DNS name of the Industrial Edge Management App.
8. In the "IP Address" input field, enter the IP address of your IEM.



Add Relay Server [X]

Domain Name
[Redacted]

IP Address [Orange box] Admin Port 32500

Usable Ports

| Start Range | End Range |
|-------------|-----------|
| 32501 | 32700 |

Status
Enabled [Dropdown arrow]

Label
Relay

Note

Usable Ports

These ports are being used only internally in the IEM.

Note

VM IP address

You get the IP address of your VM from the login screen in the VM.

9. Click "Add".
The relay server is added to the relay servers list. The setup of the IEM is completed. In the next sections, you find the procedure on how to connect Edge Devices to the IEM and on how to install apps onto them.

Connecting an Edge Device

When you add an Edge Device in the Management UI, an Edge Device configuration file is created. You need this configuration file to successfully onboard your Edge Device in the IEM.

Requirements for adding an Edge Device

- The Edge Device is switched on.
- The Edge Device is connected to the local network.

5.1 Creating the Edge Device configuration file

Procedure

1. Open and log into the Management UI.
2. Navigate to the "Edge Devices" menu item.
3. In the "Edge Devices" screen, click "New Edge Device".
The "New Edge Device" screen is displayed.

The screenshot shows a web form titled "New Edge Device" with a close button (X) in the top right corner. The form has a progress indicator at the top with three steps: "1 Device" (highlighted in dark blue), "2 Network Interface", and "3 Proxy". A "Next" button is located to the right of the progress indicator. Below the progress indicator, the form contains the following fields:

- Edge Device Type:** A dropdown menu with "Industrial Edge - SIMATIC IPC847E" selected and a downward arrow.
- Edge Device Name:** A text input field.
- Edge Device Username (Email):** A text input field with a greyed-out area below it.
- Edge Device Password:** A text input field with an eye icon to its right, indicating it is a password field.
- Edge Device Confirm Password:** A text input field with an eye icon to its right, indicating it is a password field.

5.1 Creating the Edge Device configuration file

4. In the "Device" tab, enter all the required information according to the "New Edge Device - Parameters" subsection.

Note

Synchronizing Edge Device Types

Only Edge Device Types that are synchronized with the IEM are available. The admin of the IEM can synchronize Edge Device Types with the IEM under "Admin Management > Device Catalog". You find further information on synchronizing Edge Device Types in the "Admin UI > Device Catalog" subsection in the "Industrial Edge Management - Operation" manual.

5. After entering all required information, click "Next".

New Edge Device [Close]

1 **Device** 2 Network Interface 3 Proxy **Next**

Edge Device Type
Industrial Edge - SIMATIC IPC227E

Edge Device Name
fuertth

Edge Device Username (Email)
[Redacted]

Edge Device Password
[Redacted] [Eye Icon]

Strong

Edge Device Confirm Password
[Redacted] [Eye Icon]

The "Network Interface" tab is displayed.

New Edge Device [Close]

1 Device 2 **Network Interface** 3 Proxy [Back] [Next]

Network Interface (Optional) [Add]

No network interfaces.

NTP Server (Optional)

Server Name [Add]


| Prefer | Server Name | Action |
|-------------------------------------|----------------|----------|
| <input checked="" type="checkbox"/> | 0.pool.ntp.org | [Delete] |

Docker Internal Network (Optional)

IP Address: 172 16 0 0

Netmask: 255 255 0 0

5.1 Creating the Edge Device configuration file

6. To configure the network interface settings for the Edge Device, click the  icon under the "Network Interface" section.

Configuring the network interface settings for the Edge Device is optional. It depends on the Edge Device Type whether you must configure the network interface settings or not. If you do not need to configure the network interface settings, the Edge Device is using the default network interface settings provided by the Device Builder. In this case, you can proceed configuring an NTP server and a Docker network as described from step 11 ongoing.

Note

You can find the available type of the network interface connection of the respective Edge Device Types in the Edge Device Type details under "Admin Management > Device Catalog". Contact the Device Builder or check the documentation of that Edge Device Type to know, if you must configure the network interface settings for the Edge Device or not.

The "Add Network Interface" screen is displayed.

Add Network Interface
✕

Gateway Interface

MAC Address

DHCP

Static

IPv4

Netmask

Gateway

DNS (Optional)

Primary DNS

Secondary DNS

Layer 2 (L2) for Apps (Optional)

Start IP Address

Netmask

IP Address Range

Advanced Settings

Add



Depending on the Edge Device Type, the Edge Device Type and its network interfaces are displayed at the top of the screen.

7. Enter the network interface settings of the Edge Device according to the "New Edge Device - Parameters" subsection.
8. If required, set up a Layer 2 network access on this Edge Device under the "Layer 2 (L2) for Apps" section.
 Setting up a Layer 2 network access for apps is optional. You find more information on the Layer 2 network access for apps in the "Layer 2 network access" subsection. When setting up a Layer 2 network access, enter the required information according to the "New Edge Device - Parameters" subsection.

5.1 Creating the Edge Device configuration file



- 9. When finished, click "Add".
The configured network interface is added.
If you have entered a MAC address, the MAC address is displayed in the table.

Network Interface (Optional) +

| Gateway Interface | MAC Address | Ethernet Label | DHCP | IPv4 | Netmask | Gateway | Primary DNS | Secondary DNS | L2 | Actions |
|-------------------------------------|----------------------|----------------|-------------------------------------|------|---------|---------|-------------|---------------|-------------------------------------|---|
| <input checked="" type="checkbox"/> | <input type="text"/> | — | <input checked="" type="checkbox"/> | — | — | — | — | — | <input checked="" type="checkbox"/> |   |

If you have selected an Ethernet label, instead of the MAC address, the Ethernet label is displayed in the table.



Network Interface (Optional) +

| Gateway Interface | MAC Address | Ethernet Label | DHCP | IPv4 | Netmask | Gateway | Primary DNS | Secondary DNS | L2 | Actions |
|-------------------------------------|-------------|----------------|-------------------------------------|------|---------|---------|-------------|---------------|-------------------------------------|---|
| <input checked="" type="checkbox"/> | — | X1 | <input checked="" type="checkbox"/> | — | — | — | — | — | <input checked="" type="checkbox"/> |   |

You can add more than 1 network interface by clicking the + icon again and adding another network interface. If the maximum number of network interfaces is reached, the + icon is disabled.

If you have configured a Layer 2 network access, the L2 check mark is activated which means that the L2 network access is enabled.

Network Interface (Optional) +

| Gateway Interface | MAC Address | Ethernet Label | DHCP | IPv4 | Netmask | Gateway | Primary DNS | Secondary DNS | L2 | Actions |
|-------------------------------------|----------------------|----------------|-------------------------------------|------|---------|---------|-------------|---------------|-------------------------------------|---|
| <input checked="" type="checkbox"/> | <input type="text"/> | — | <input checked="" type="checkbox"/> | — | — | — | — | — | <input checked="" type="checkbox"/> |   |

If you click again the + button to add another network interface, the "Layer 2 for Apps (L2)" section displays "Already configured". You can just configure 1 Layer 2 network access per Edge Device.

10. Select 1 Network Time Protocol (NTP) server you want to use for this Edge Device under the "NTP Server" section.

When you already have configured an NTP server during the setup of the Industrial Edge Management or when you added an NTP server in the Maintenance UI settings and selected the "Use Same NTP On IED" check box, the NTP servers are displayed under the "NTP Server" section .

NTP Server (Optional)

Server Name

| Prefer | Server Name | Action |
|-------------------------------------|----------------|-----------------------------------|
| <input checked="" type="checkbox"/> | 0.pool.ntp.org | <input type="button" value="🗑️"/> |

If you want to use an other NTP server, enter the NTP server in the "Server Name" input field, click the plus icon and select the newly added NTP server.

NTP Server (Optional)

Server Name

| Prefer | Server Name | Action |
|-------------------------------------|----------------|-----------------------------------|
| <input type="checkbox"/> | 0.pool.ntp.org | <input type="button" value="🗑️"/> |
| <input checked="" type="checkbox"/> | 1.pool.ntp.org | <input type="button" value="🗑️"/> |

Note

Time synchronization of the Industrial Edge Management and Edge Devices

A flawless operation of the Industrial Edge Management and Edge Devices require time synchronization of the Industrial Edge Management and Edge Devices. To properly synchronize the time on the Industrial Edge Management and Edge Devices, an NTP server is required. Either use the default configured Debian NTP servers which will be used once you connect the PC, on which the Industrial Edge Management is running, with the Internet. Or, when you operate the Industrial Edge Management and Edge Devices disconnected from the Internet in your local network, provide an own NTP server to which the Industrial Edge Management and Edge Devices must be able to connect to.

5.1 Creating the Edge Device configuration file

11. If you want to change the default Docker network, click the "Docker Internal Network" check box.

Docker Internal Network (Optional)

| | | | | |
|------------|-------|------|---|---|
| IP Address | 172 ▾ | 16 ▾ | 0 | 0 |
| Netmask | 255 | 255 | 0 | 0 |

By default, the Edge Device contains 2 Docker networks, 1 for the proxy-redirect and 1 for the docker0 interface (that you create via the "IP Address" input field). When you install an app which creates a new Docker network on the Edge Device, the Docker network of the installed app must not overlap the Docker networks of the Edge Device and need free Docker network IP ranges on the Edge Device.

By default, the docker0 interface starts with 172.17.0.0. Using a different docker0 interface is optional.

12. In the "IP Address" input field, select the IP address of the docker0 interface you want to use for the Edge Device.
The IP address of the docker0 interface is the start of the docker0 interface. The subnet mask is not configurable.
13. Click "Next".

14. In the "Proxy" tab, enter, if needed, all required proxy information according to the "New Edge Device - Parameters" subsection.

New Edge Device ×

1 Device 2 Network Interface 3 Proxy Back Create

Host (Optional)

Protocol

https ▼

User (Optional)

Password (Optional) 👁

No Proxy (Optional)

Add more IP address / domain ',' separated.

Custom Ports (Optional)

Port +

No custom ports.

15. Click "Create".

A configuration file named "device-<deviceID>" is downloaded to the standard download folder of your Internet browser.

5.2 Onboarding the Edge Device

Procedure

1. Open the Edge Device UI by entering the IP address of the Edge Device in HTTPS protocol into your Internet browser, for example "https://192.168.80.123". A certificate warning is displayed.



Your connection is not private

Attackers might be trying to steal your information from [redacted] (for example, passwords, messages, or credit cards). [Learn more](#)

NET::ERR_CERT_AUTHORITY_INVALID

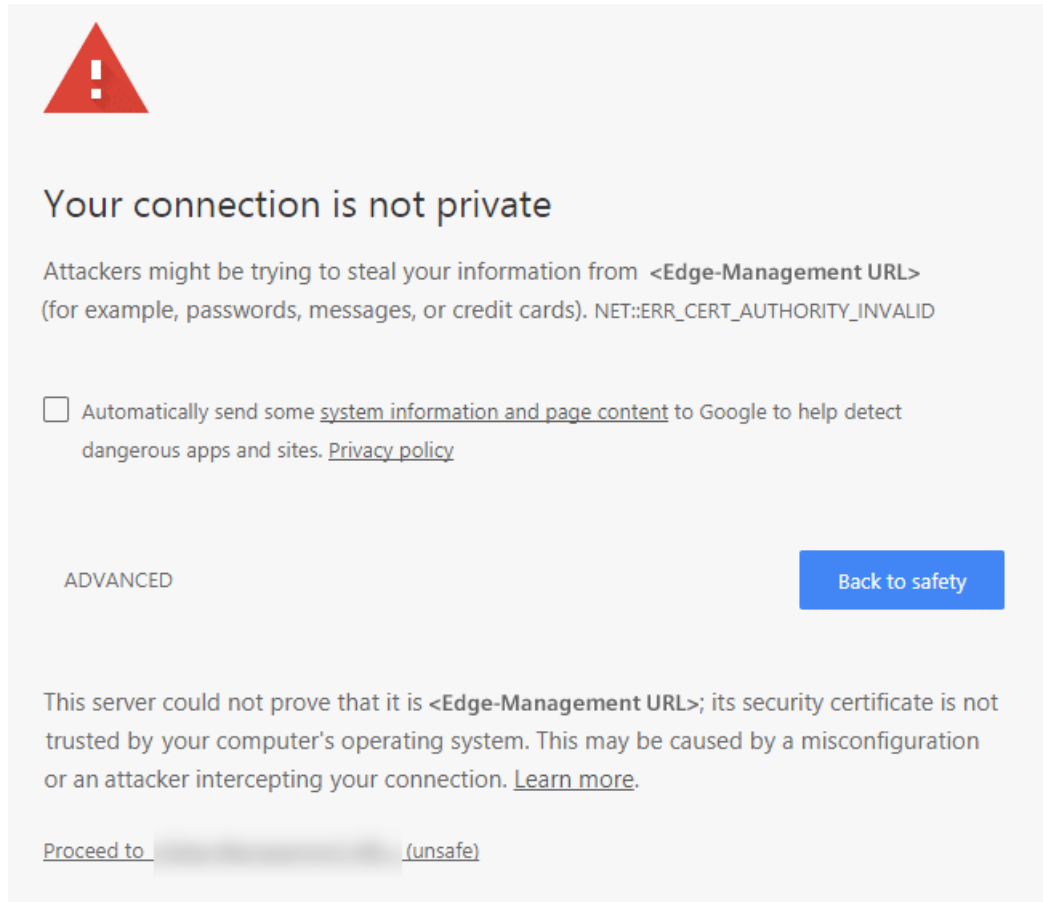
- Automatically send some [system information and page content](#) to Google to help detect dangerous apps and sites. [Privacy policy](#)

ADVANCED

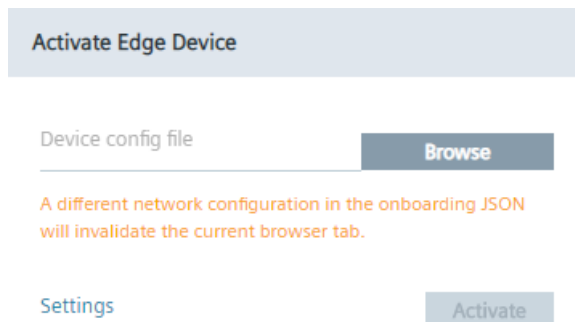
Back to safety

2. Click "Advanced".

3. Click "Proceed to <IP address>".



The "Activate Edge Device" screen is displayed.

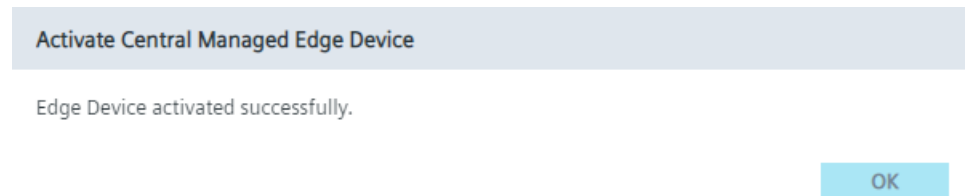


4. Click "Browse" and select the created Edge Device configuration file.

5. Click "Settings" to configure the following settings:
 - Network settings
 - Proxy settings
 - Docker network settings
 - System settings

You find the procedure on how to configure each setting in the "Settings" subsection.

6. After configuring the settings, click "Activate".
The Edge Device is being connected to the IEM. When the connecting process was successful, an according message is displayed.



7. Click "Ok".
You will be redirected to the Edge Device UI.

Note

Connection successful

When the Edge Device is connected successfully to the IEM, the status indicator at the top of the Edge Device tile in the IEM switches to green and the IP address of the Edge Device is displayed under the name of the Edge Device.

8. Sign in with your email address and password that you have entered in the "New Edge Device" screen.
The home page of the Edge Device UI is displayed.

Note

When you onboard a SIMATIC IPC Edge Device, you also have the possibility to onboard it via a USB flash drive. You find the procedure and additional information on this procedure in the "SIMATIC IPC Industrial Edge Device - Operation (<https://support.industry.siemens.com/cs/us/en/view/109803878>)" manual.

5.3 New Edge Device - Parameters

Device

| Parameter | Description |
|------------------------------|--|
| Edge Device Type | Device type of the Edge Device you want to onboard, for example SIMATIC IPC227E |
| Edge Device Name | <ul style="list-style-type: none"> • Unique domain wide name of the Edge Device • Must contain 3 - 64 characters |
| Edge Device Username | Valid email address of the user for signing into the Edge Device |
| Edge Device Password | <ul style="list-style-type: none"> • Password for signing into the Edge Device • Minimum 8 characters • Minimum 1 upper case letter • Minimum 1 special character • Minimum 1 number • The following characters are recognized as special characters: ! @ # \$ % ^ & * . () _ + |
| Edge Device Confirm Password | Confirm Edge Device password |

Network Interface

| Parameter | Description |
|-------------------|---|
| Gateway Interface | <ul style="list-style-type: none"> • In a typical setup, the IEM and cloud access are reachable via default route and default gateway. In this case, enable the "Gateway Interface" check box for the network interface, for example either X1 or X2, to which the default router and the default gateway is connected to • If this default network interface is not reachable or the connection to the interface fails, a connection to another network interface is attempted to be established |
| MAC Address | <ul style="list-style-type: none"> • Depending on the Edge Device Type, either "MAC Address", "Ethernet Label" or both is available • If the Edge Device Type requires a MAC address, this field is enabled • In case both "MAC Address" and "Ethernet Label" are available, select 1 of them you want to use • Enter the MAC address of the network interface which is currently configured • Use colons as separations • Example MAC address: 00:0c:29:82:3f:81 |

| Parameter | Description |
|------------------|--|
| Ethernet Label | <ul style="list-style-type: none"> Depending on the Edge Device Type, either "MAC Address", "Ethernet Label" or both is available If the Edge Device Type requires an Ethernet label, this field is enabled In case both "MAC Address" and "Ethernet Label" are available, select 1 of them you want to use Select the network interface you want to use to connect the Edge Device to the IEM |
| DHCP | <ul style="list-style-type: none"> Enable or disable IP address assignment through DHCP If this check box is selected, the IP address is assigned through DHCP When the check box is disabled, static IP address assignment is used |
| IPv4 | <ul style="list-style-type: none"> Only enabled when DHCP is disabled IP address of the Edge Device in the network Input of the IP address is mandatory when DHCP is disabled |
| Netmask | <ul style="list-style-type: none"> Only enabled when DHCP is disabled Subnet mask in the "255 255 0 0" format, for example Input of the subnet mask is mandatory when DHCP is disabled |
| Gateway | <ul style="list-style-type: none"> Only enabled when DHCP is disabled IP address of the gateway Input of the IP address is mandatory when DHCP is disabled |
| Primary DNS | <ul style="list-style-type: none"> Primary DNS server address Input of the DNS server address is optional |
| Secondary DNS | <ul style="list-style-type: none"> Secondary DNS server address Input of the DNS server address is optional |
| Start IP Address | <ul style="list-style-type: none"> L2 network access is optional Start of the L2 network access IP address range Number in the last octet must be even Input of Start IP Address is mandatory for L2 network access usage |
| Netmask | <ul style="list-style-type: none"> Netmask defines the section in which the IP addresses are located Input of netmask is mandatory for L2 network access usage |
| IP Address Range | <ul style="list-style-type: none"> Length of the IP address range for usage of Edge Apps with direct L2 network access Minimum IP address range is 2, maximum range is 256 Valid displayed IP address range depends on last number in Start IP address, for example: <ul style="list-style-type: none"> If last number of Start IP address is 16: 1, 2, 4, 8 and 16 is available If last number Start IP address is 172: 1, 2 and 4 is available If last number Start IP address is 0: 1, 2, 4, 8, 16, 32, 64, 128 and 256 is available Input of IP address range is mandatory for L2 network access usage |

Note**MAC address and Ethernet label**

It depends on the Edge Device Type which input type is required for the network interface settings, whether MAC address or Ethernet label. The Edge Device builder by himself forces which type is required and must be provided to onboard the Edge Device to the IEM.

The parameters in the "Layer 2 for Apps (L2)" section and thus the configured Layer 2 network access is independent of the "DHCP" and "Gateway Interface" configuration.

Ensure that the Edge Device IP addresses and the configured L2 network access configurations do not collide with addresses of other devices in the network.

Note**IP address and broadcast IP address of subnet**

Do not use the IP address and the broadcast IP address of the subnet defined by the netmask for the configured IP address range.

For more information regarding the configuration of Docker IP address ranges, check the official Docker documentation (<https://docs.docker.com/network/macvlan/>).

Proxy

| Parameter | Description |
|---------------------|--|
| Host | <ul style="list-style-type: none">IP address and port of the proxyInput in the format <IP>:<PORT>Proxy host address is optional |
| Protocol | Transport protocol of the proxy server |
| User | Username for authentication on the proxy server, if necessary |
| Password | Password for authentication on the proxy server, if necessary |
| No Proxy (optional) | <ul style="list-style-type: none">Enable and enter IP addresses which shall be accessed directly (without use of proxy)Separate multiple no proxy addresses by a commaInput of no proxy address is optional but mandatory if you select this check box |
| Custom Ports | <ul style="list-style-type: none">Ports that are needed for using apps on the Edge DeviceAdd further ports by clicking the plus buttonInput of ports is optional |

5.4 Layer 2 network access

Some Edge Apps need to communicate with automation devices via automation protocols, such as Profinet, DCP and LLDP. That means, these Edge Apps require to be directly connected to the physical network at the data link layer (Layer 2 network access). This Layer 2 network access is used only for communication with automation devices on the physical network, it is not designed to provide communication between app containers. For communication between app containers, standard app container communication means must be used.

When you onboard an Edge Device to the IEM, you define the IP address range of the Layer 2 network access which is then reserved for communication between Edge Apps and automation devices. To install and use Edge Apps on Edge Devices that need to communicate with automation devices, you must enable the Layer 2 network access on the respective Edge Devices during the onboarding procedure. Edge Apps that require a Layer 2 network access can only be installed on Edge Devices with an appropriate configured Layer 2 network access. The Layer 2 network access activation and configuration is saved to the Edge Device configuration file.

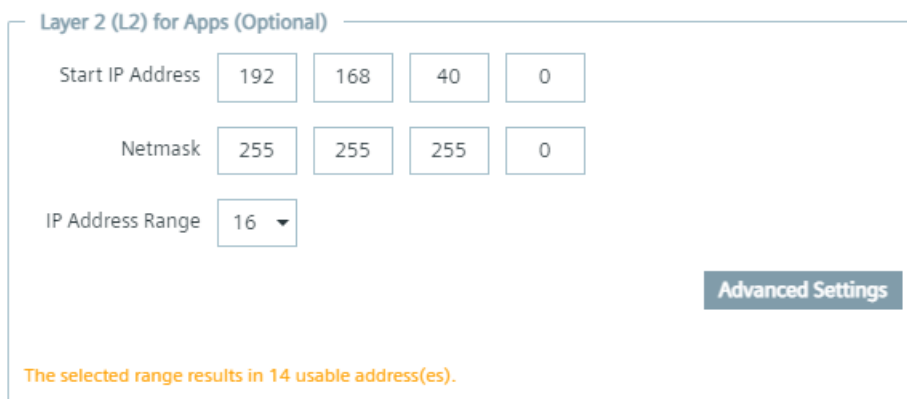
If you edit a configured Layer 2 network access on the Edge Device while apps running on this Edge Device are using the Layer 2 network access, the apps will first stop running. After you have finished editing the Layer 2 network access, the apps will restart and run again with the new settings. If you remove a configured Layer 2 network access on this Edge Device while apps running on this Edge Device are using the Layer 2 network access, the apps will not work anymore.

You find information on how to enable the Layer 2 network access for an Edge Device and how to configure the IP address range in the following subsections.

You find information on how to create Edge Apps that require a Layer 2 network access in the "Industrial Edge App Publisher - Operation (<https://support.industry.siemens.com/cs/us/en/view/109780392>)" manual in the "Creating a Layer 2 network access" subsection.

5.4.1 Configuring a Layer 2 network access

Set up a Layer 2 network access on the Edge Device under the "Layer 2 (L2) for Apps" section, as shown below for example:



Layer 2 (L2) for Apps (Optional)

| | | | | |
|------------------|------|-----|-----|---|
| Start IP Address | 192 | 168 | 40 | 0 |
| Netmask | 255 | 255 | 255 | 0 |
| IP Address Range | 16 ▾ | | | |

[Advanced Settings](#)

The selected range results in 14 usable address(es).

Depending on the starting IP address and the IP range of the Layer 2 network access, defined by the subnet that you provide, a certain amount of IP addresses are available for the Layer 2

network access. In this example, the IP address range shows 16 reserved IP addresses. Since 1 IP address is reserved for the gateway and 1 is reserved for the network itself, 14 IP addresses are usable. Setting up a Layer 2 network access configuration with just 2 reserved IP addresses is not valid since 2 IP addresses are reserved by default, 1 for the gateway and 1 for the network itself.

Layer 2 (L2) for Apps (Optional)

| | | | | |
|------------------|-----|-----|-----|---|
| Start IP Address | 192 | 168 | 40 | 0 |
| Netmask | 255 | 255 | 255 | 0 |
| IP Address Range | 2 ▾ | | | |

[Advanced Settings](#)

The selected range results in 0 usable addresses, please choose a different range.

To use the Layer 2 network access, the selected IP address range must be minimum 3.

Note

The amount of usable IP addresses is always displayed in the dialog.

When you click "Advanced Settings", you can specify which IP addresses can be used for the Layer 2 network access in the defined IP range. After clicking "Advanced Settings", a list with several IP addresses, depending on the starting IP address and the IP range, are displayed, as shown below for example:

L2 Network Advanced Settings ✕

Gateway

IP Addresses for Layer 2

| |
|--|
| <input checked="" type="checkbox"/> 192.168.40.0 (Network) |
| <input checked="" type="checkbox"/> 192.168.40.1 (Gateway) |
| <input checked="" type="checkbox"/> 192.168.40.2 |
| <input checked="" type="checkbox"/> 192.168.40.3 |
| <input checked="" type="checkbox"/> 192.168.40.4 |
| <input checked="" type="checkbox"/> 192.168.40.5 |
| <input checked="" type="checkbox"/> 192.168.40.6 |
| <input checked="" type="checkbox"/> 192.168.40.7 |
| <input checked="" type="checkbox"/> 192.168.40.8 |
| <input checked="" type="checkbox"/> 192.168.40.9 |

Apply

By selecting an IP address, the IP address can be used for the Layer 2 network access for apps. By not selecting an IP address, the IP address is blocked and will not be used.

Again, since 1 IP address is reserved for the gateway and 1 is reserved for the network itself, minimum 1 IP address other than these 2 must be selected. Otherwise, an error will be displayed.

L2 Network Advanced Settings ×

Gateway

IP Addresses for Layer 2

| |
|--|
| <input checked="" type="checkbox"/> 192.168.40.0 (Network) |
| <input checked="" type="checkbox"/> 192.168.40.1 (Gateway) |
| <input type="checkbox"/> 192.168.40.2 |
| <input type="checkbox"/> 192.168.40.3 |
| <input type="checkbox"/> 192.168.40.4 |
| <input type="checkbox"/> 192.168.40.5 |
| <input type="checkbox"/> 192.168.40.6 |
| <input type="checkbox"/> 192.168.40.7 |
| <input type="checkbox"/> 192.168.40.8 |
| <input type="checkbox"/> 192.168.40.9 |

The selected range results in 0 usable addresses, please choose a different range.

[Apply](#)

By default, the gateway is within the entered IP range. Under "Gateway", you can define an IP address for the gateway to obtain 1 more available IP address in the given IP range, but the IP address of the gateway must be within the entered subnet.

L2 Network Advanced Settings

Gateway

IP Addresses for Layer 2

| |
|--|
| <input checked="" type="checkbox"/> 192.168.40.0 (Network) |
| <input checked="" type="checkbox"/> 192.168.40.1 |
| <input checked="" type="checkbox"/> 192.168.40.2 |
| <input checked="" type="checkbox"/> 192.168.40.3 |
| <input checked="" type="checkbox"/> 192.168.40.4 |
| <input checked="" type="checkbox"/> 192.168.40.5 |
| <input checked="" type="checkbox"/> 192.168.40.6 |
| <input checked="" type="checkbox"/> 192.168.40.7 |
| <input checked="" type="checkbox"/> 192.168.40.8 |
| <input checked="" type="checkbox"/> 192.168.40.9 |

Apply

If you select the maximum available IP address range back in the "Layer 2 (L2) for Apps" section, 1 IP address will be also reserved for broadcast, as shown below for example.

Layer 2 (L2) for Apps (Optional)

Start IP Address

Netmask

IP Address Range

Advanced Settings

The selected range results in 128 usable address(es).

L2 Network Advanced Settings ✕

Gateway

IP Addresses for Layer 2

| |
|---|
| <input checked="" type="checkbox"/> 192.168.40.246 |
| <input checked="" type="checkbox"/> 192.168.40.247 |
| <input checked="" type="checkbox"/> 192.168.40.248 |
| <input checked="" type="checkbox"/> 192.168.40.249 |
| <input checked="" type="checkbox"/> 192.168.40.250 |
| <input checked="" type="checkbox"/> 192.168.40.251 |
| <input checked="" type="checkbox"/> 192.168.40.252 |
| <input checked="" type="checkbox"/> 192.168.40.253 |
| <input checked="" type="checkbox"/> 192.168.40.254 |
| <input type="checkbox"/> 192.168.40.255 (Broadcast) |

Apply

To save the Layer 2 network access changes, click "Apply".

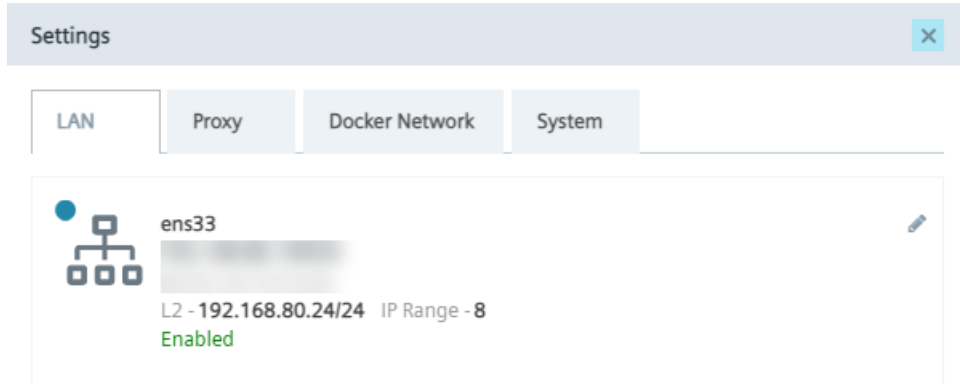
5.5 Settings

5.5.1 Editing network and Layer 2 network access settings

If you want to, you can again edit the configured network settings or set up a Layer 2 network access on this Edge Device before you onboard the Edge Device to the IEM.

Procedure


1. In the "Activate Edge Device" screen, click "Settings".
The "Settings" screen is displayed.



Note

Connected network interface

When you select a network interface, for example X1 or X2, during the creation of the Edge Device configuration file that should be used to connect the Edge Device to the IEM, the respective network interface will be also displayed in this screen.

2. To edit the network settings, click the  icon.
The "Edit Network Interface" screen is displayed.

Edit Network Interface
✕

DHCP

Static

IPv4

Netmask

Gateway

DNS (Optional)

Primary DNS

Secondary DNS

Layer 2 (L2) for Apps (Optional)

Start IP Address

Netmask

IP Address Range ▼

Advanced Settings

Removing the L2 network will stop the functioning of apps that use it.

Changing the network configuration will invalidate the current browser tab.

Update

3. Configure the IP address, either automatically through DHCP server or through static information, and the DNS server as required.

4. Edit the configured Layer 2 network access or set up a Layer 2 network access on this Edge Device under the "Layer 2 (L2) for Apps" section, as shown below for example.

Layer 2 (L2) for Apps (Optional)

| | | | | |
|------------------|-----|-----|-----|---|
| Start IP Address | 192 | 168 | 40 | 0 |
| Netmask | 255 | 255 | 255 | 0 |
| IP Address Range | 16 | | | |

Advanced Settings

Removing the L2 network will stop the functioning of apps that use it.

The selected range results in 14 usable address(es).

Note

Removing Layer 2 network access

If you remove a configured Layer 2 network access on this Edge Device and if apps, that are running on this Edge Device, are using the Layer 2 network access, the apps will not work anymore.

You find more information on the Layer 2 network access in the "Layer 2 network access (Page 156)" and the "New Edge Device - Parameters (Page 153)" subsections.

5. When you click "Advanced Settings", you can specify which IP addresses can be used for the Layer 2 network access for apps in the defined IP range. After clicking "Advanced Settings", a list with several IP addresses, depending on the starting IP address and the IP range of the Layer 2 network access, are displayed, as shown below for example:

L2 Network Advanced Settings

Gateway

IP Addresses for Layer 2

- 192.168.40.0 (Network)
- 192.168.40.1 (Gateway)
- 192.168.40.2
- 192.168.40.3
- 192.168.40.4
- 192.168.40.5
- 192.168.40.6
- 192.168.40.7
- 192.168.40.8
- 192.168.40.9

Apply

By selecting an IP address, the IP address can be used for the Layer 2 network access for apps. By not selecting an IP address, the IP address is blocked and will not be used. By default, the gateway is within the entered IP range. Under "Gateway", you can define an IP address for the gateway to obtain 1 more available IP address in the given IP range, but the IP address of the gateway must be within the entered subnet.

L2 Network Advanced Settings

Gateway 192 168 40 20

IP Addresses for Layer 2

- 192.168.40.0 (Network)
- 192.168.40.1
- 192.168.40.2
- 192.168.40.3
- 192.168.40.4
- 192.168.40.5
- 192.168.40.6
- 192.168.40.7
- 192.168.40.8
- 192.168.40.9

Apply

6. To save the Layer 2 network access changes, click "Apply".

7. To save all changes, click "Update".

5.5.2 Setting up a proxy server

With the use of a proxy server, the admin of the IEM (and of Edge Devices) can add, edit and remove proxy rules to redirect specific data traffic. The admin can also disable redirection of specific data traffic through the proxy.

App developers do not need to implement their own proxy settings. The proxy settings described in this procedure apply for all IEM components.

Procedure

1. Click the "Proxy" tab.

The screenshot shows a 'Settings' window with a close button (X) in the top right corner. Below the title bar are four tabs: 'LAN', 'Proxy', 'Docker Network', and 'System'. The 'Proxy' tab is selected. Underneath the tabs, there is a checkbox labeled 'Use a proxy server'. Below the checkbox are three radio button options: '1 Proxy', '2 No Proxy', and '3 Custom Port'. The '1 Proxy' option is selected. There are four input fields: 'IP' and 'Port' on the top row, and 'UserName' and 'Password' on the bottom row. The 'Password' field has an eye icon to its right. A 'Configure' button is located at the bottom right of the form area.

2. To use a proxy server, click the "Use a proxy server" check box.
The input fields for the proxy server settings are enabled.
3. Enter the IP address and the corresponding port of the proxy server in the according input fields.
4. If needed, enter username and the corresponding password in the according input fields in case of an additional authentication for the proxy server.
When authentication is required, the password must match the following criteria:
 - The password must start with an alphabetic character
 - The password must not contain complex characters, such as \ . * "
 - The password must not be longer than 21 charactersThe settings apply for HTTP and HTTPS proxy servers.


- Click "Next".
The "No Proxy" tab is displayed.

The screenshot shows a 'Settings' window with tabs for LAN, Proxy, Docker Network, and System. The 'Proxy' tab is active, and the 'No Proxy' sub-tab is selected. A checkbox 'Use a proxy server' is checked. Below it are three sub-tabs: '1 Proxy', '2 No Proxy', and '3 Custom Port'. An 'IP' input field with a '+' icon is present. A table lists IP addresses and their actions.

| IP address | Action |
|----------------|--------|
| 0.0.0.0/8 | — |
| 10.0.0.0/8 | — |
| 127.0.0.0/8 | — |
| 169.254.0.0/16 | — |
| 172.16.0.0/12 | — |
| 192.168.0.0/16 | — |
| 224.0.0.0/4 | — |
| 240.0.0.0/4 | — |

Buttons for 'Back' and 'Next' are located at the bottom right of the settings panel.

In the "No Proxy" tab, add all the IP addresses which shall be accessed directly (without use of proxy).
By default, several no proxy addresses are listed which are required by the IEM.

- If you want to add a further IP address which shall be accessed directly, enter the IP address or domain of the no proxy address in the "IP" input field and click the  icon. The address is added to the no proxy list.

7. Click "Next".
The "Custom Port" tab is displayed.

The screenshot shows the 'Settings' window with the 'Proxy' tab selected. Under 'Use a proxy server', the 'Custom Port' tab is active. The 'Protocol' dropdown is set to 'http' and the 'Port' dropdown is set to '80'. A table below lists the following ports:

| Protocol | Port | Action |
|----------|------|--------|
| http | 80 | — |
| https | 443 | — |
| https | 2020 | — |

Buttons for 'Back' and 'Configure' are located at the bottom right of the configuration area.

In the "Custom Port" tab, you configure ports for apps which use the configured ports for outgoing communication through the proxy on HTTPS or HTTP protocols. For your apps, use ports between the port range 32768-60999. By default, several ports are listed which are required by the IEM.

Note

Default no proxy addresses and ports

The default no proxy addresses and ports are essential for running the IEM and cannot be deleted.

8. If you want to add a further port, select the required protocol from the "Protocol" drop-down list and enter the required port.
9. To add the port, click the icon.
The port is added to the port list.
10. To add the proxy settings, click "Configure".
11. Confirm the proxy settings by clicking "Ok".
The proxy settings are saved.

Note

Setting up a proxy server after onboarding the Edge Device

You can also configure and update the proxy settings after you have onboarded the Edge Device to the IEM. In the Edge Device UI, navigate to the "Settings > Connectivity > Proxy Network" section and set the proxy settings.

5.5.3 Configuring the Docker network

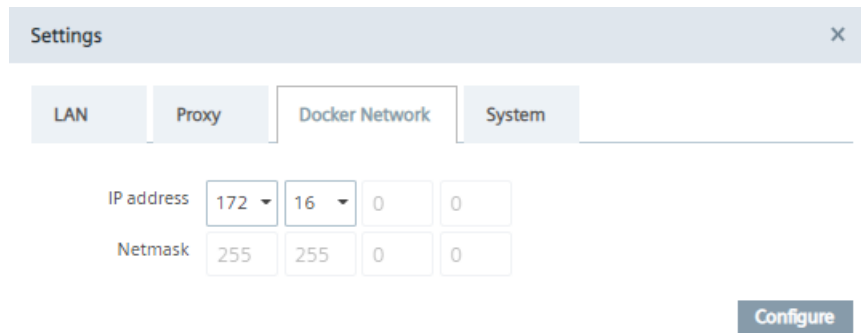
In the "Docker Network" tab, you can edit the IP range of the docker0 interface of the Edge Device, if necessary.

The IP address of the docker0 interface is the start of the docker0 interface. By default, the docker0 interface starts with 172.17.0.0. By default, the Edge Device contains 2 Docker networks, 1 for the proxy-redirect and 1 for the docker0 interface (that you create in the "IP Address" input field). When you install an app which creates a new Docker network on the Edge Device, the Docker network of the installed app must not overlap the Docker networks of the Edge Device and need free Docker network IP ranges on the Edge Device. Otherwise, if you want to install an app that tries to create a new Docker network on the Edge Device but the Edge Device has no free Docker network IP ranges, the app installation fails.

You can just edit the IP range in a given range with a specific netmask to prevent errors in the system.

Procedure

1. In the "Settings" screen, click the "Docker Network" tab.
2. In the "IP address" input field, enter the IP address that you want to use for the docker0 network.

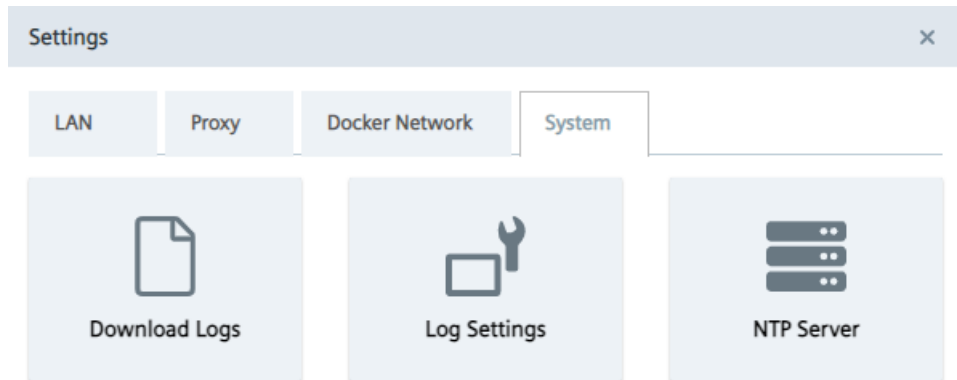


3. To save the settings, click "Configure".

5.5.4 Downloading logs

Procedure

1. Click the "System" tab.



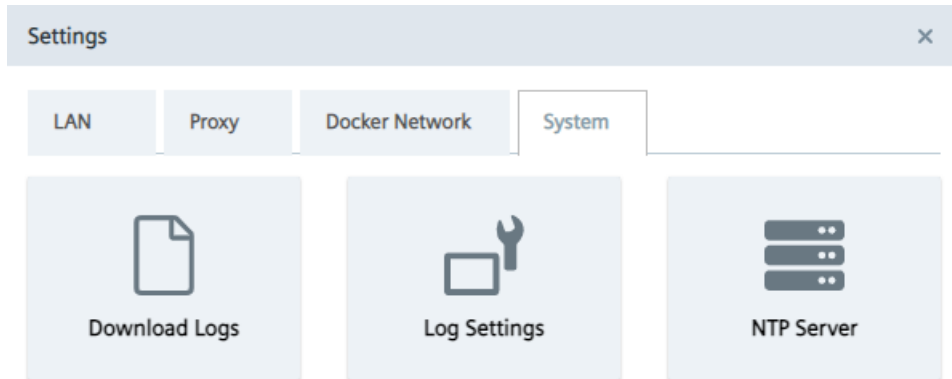
2. Click the "Download Logs" tile.
The log file is being downloaded to the standard download folder of your Internet browser.

5.5.5 Editing log settings

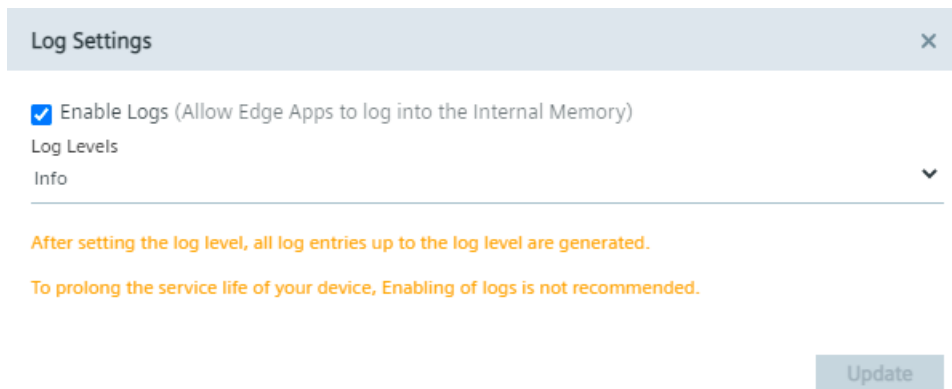
By default, Edge Apps are enabled to log into the internal memory of the Edge Device. Under "Log Settings", you select the log levels that are being logged into the internal memory.

Procedure

1. Click the "System" tab.



2. Click the "Log Settings" tile.
The "Log Settings" screen is displayed.



By default, Edge Apps are enabled to log into the internal memory of the Edge Device. The "Info" log level is selected by default which means that all log levels up to this level are generated.

3. If you want to disable logging into the internal memory of the Edge Device, deselect the "Enable Logs" check box.
4. If you want to keep logging enabled, select the log level you want to log into the internal memory from the drop-down list.
All log levels up to this selected log level are generated and logged into the internal memory.
5. To save your changes, click "Update".

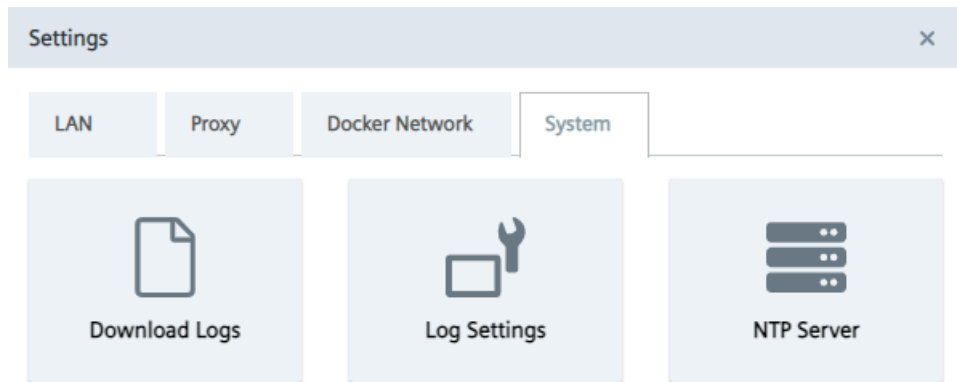
5.5.6 Adding an NTP server

A flawless operation of the Industrial Edge Management and Edge Devices require time synchronization of the Industrial Edge Management and Edge Devices. To properly synchronize the time on the Industrial Edge Management and Edge Devices, an NTP server is recommended.

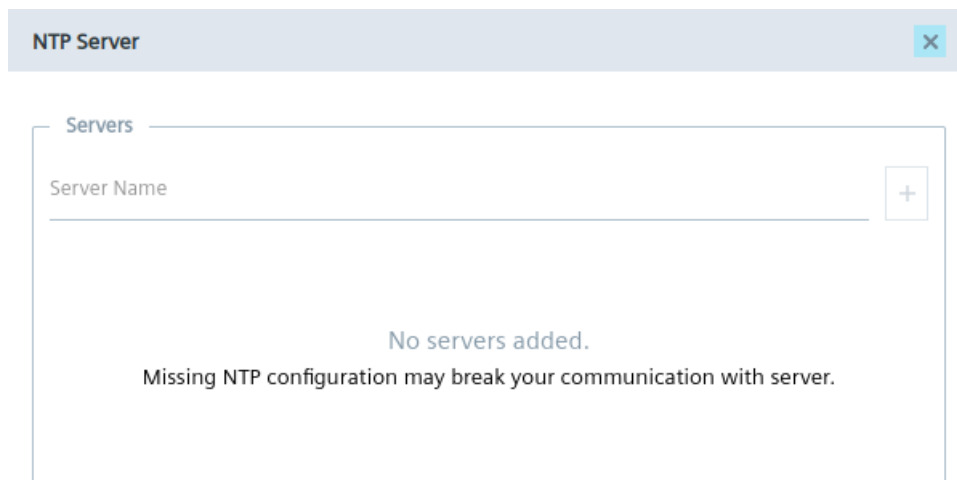
If you already have added an NTP server during the configuration of the Industrial Edge Management OS and use the same NTP server for your Edge Devices, you can skip this procedure.

Procedure

1. Click the "System" tab.



2. Click the "NTP Server" tile.
The "NTP Server" screen is displayed.



In case you configure invalid NTP servers, it may stop NTP services.

3. If you have not added minimum 1 NTP server or you want to add more NTP servers, enter the NTP server in the "Server Name" input field.
4. To add the NTP server, click the plus icon.
The NTP server is added to the server list. You can add several NTP servers. In case that 1 of them is unavailable, the next NTP server from the list will get active.
5. Click "Submit".

5.6 Secure connection

Connected Edge Device with self-signed certificates or certificates from the IEM

When you create a new Edge Device in the Management UI with self-signed certificates or certificates from the IEM itself and enter the IP address of the Edge Device into the Internet browser, you notice that the connection is not secure. After you browse the created configuration file of the Edge Device and connect the Edge Device to the IEM, the connection to the Edge Device is still not secure. Import the self-signed certificates or the certificates from the IEM itself to the settings of the Internet browser according to the "Importing certificates to the Internet browser" subsection and to the Edge Device according to the "Importing certificates" subsection, both described in the "Industrial Edge Management - Operation (<https://support.industry.siemens.com/cs/us/en/view/109780393>)" manual. After you have imported the certificates, refresh the Internet browser of the Edge Device UI. The connection is secure now.

Connected Edge Device with wildcard or SAN certificates

When you create a new Edge Device in the Management UI with wildcard or SAN certificates and enter the IP address of the Edge Device into the Internet browser, you notice that the connection is not secure. After you browse the created configuration file of the Edge Device and connect the Edge Device to the IEM, the connection to the Edge Device is secure. This secure connection requires that the CA-chain is imported to the settings of the Internet browser.

Installing an app

To get apps in general into the IEM, you have the following possibilities:

- Copying apps directly from the IE Hub to the IEM instance
- Uploading apps through the IE App Publisher to the IEM
- Importing apps through the "Import Application" button in the "Catalog" screen in the Management UI

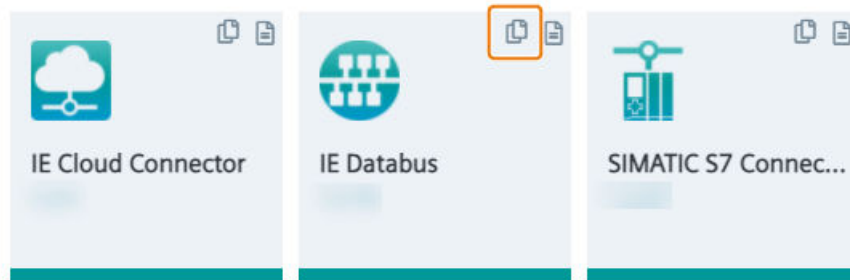
The following subsections describe the procedure on how to copy an app from the IE Hub to the IEM instance and on how to install them.

6.1 Copying apps to the IEM

The following procedure describes the transfer of the "IE Databus" System App from the IE Hub to the IEM. Proceed in the same manner for every other app.

Procedure

1. Log into the IE Hub.
2. In the navigation menu, click "Library".
3. Click the copy icon of the "IE Databus" app.

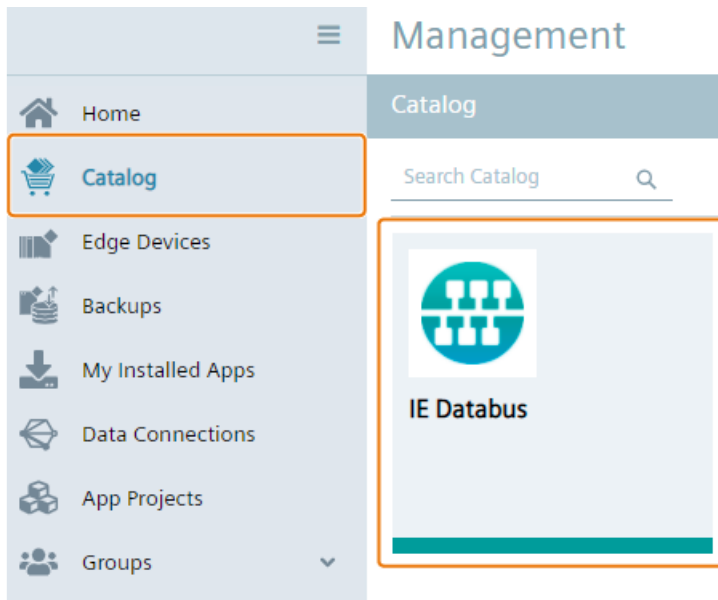


The "Copy Application to IEM catalog" screen is displayed.

4. From the drop-down list, select the IEM instance to which you want to copy the app to.
5. Click "Copy".
The app is being transferred to the catalog in the Management UI of the selected IEM instance. You can check the status of the transfer by clicking the jobs icon in the respective Management UI.



When the transfer is completed, the app is available in the catalog.



To install the System App, you must add Edge Devices to the IEM.

6.2 Installing apps on Edge Devices

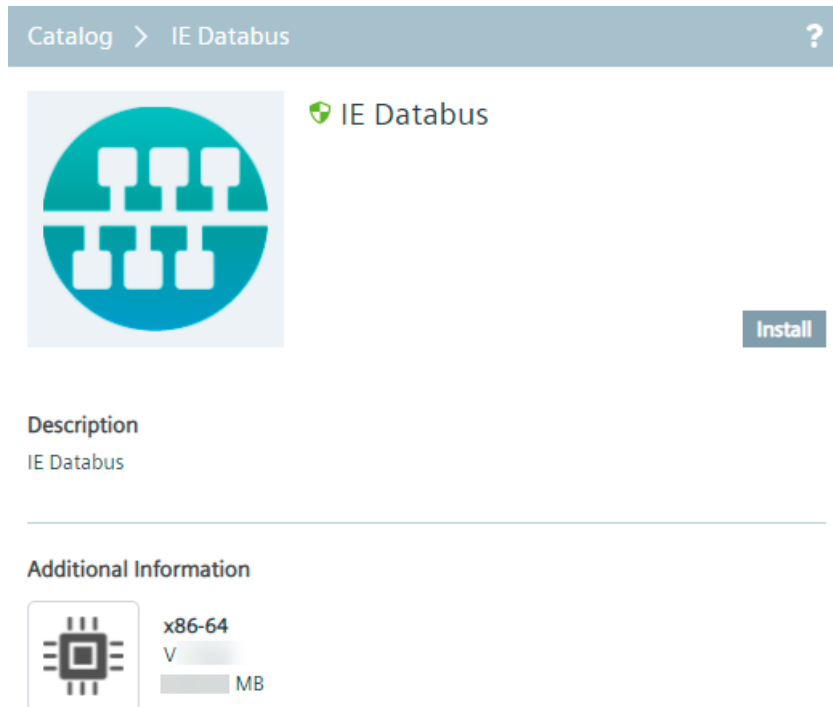
The following procedure describes the installation of the "IE Databus" System App. Proceed in the same manner for every other app.

Requirement

- Minimum 1 Edge Device is connected and running in the IEM.
- The app is available in the catalog of the Management UI.

Procedure

1. In the navigation menu in the Management UI, click "Catalog".
2. Click the app tile, in this example the "IE Databus" System App. The app details are displayed.



Note



Verified Edge Apps

Verified and trusted Edge Apps by Siemens are marked with the  icon.

3. Click "Install".
The "Install App" screen is displayed.
4. Without selecting a configuration, click "Next".

5. Select the Edge Devices on which you want to install the app.

The screenshot shows the 'Install App' interface for 'IE Databus'. At the top, there are tabs for '1 Configurations' and '2 Devices', with '2 Devices' being the active tab. Below the tabs, there is a search bar for 'Edge Devices', a 'Labels' dropdown, a '2 Selected' indicator, a filter icon, an 'Online First' sort option, a 'Refresh' button, and a '2 of 2' indicator. Below this is a 'Filters' section with 'My Edge Devices', 'Authorized Edge Devices', and 'Clear All' buttons. The main area is titled 'Edge Devices List' and contains two entries, both with checkboxes selected:

| Edge Devices List | |
|-------------------------------------|--|
| <input checked="" type="checkbox"/> |  fuerth Industrial Edge - SIMATIC IPC227E Install |
| <input checked="" type="checkbox"/> |  munich Industrial Edge - SIMATIC IPC427E Install |

At the bottom of the interface, it says '2 Edge Devices selected for installation' and there are four buttons: 'Back', 'Install Delayed', 'Install Later', and 'Install Now'.

You can select several Edge Devices to install the app to.

6. Click either "Install Later", "Install Now" or "Install Delayed".
"Install Now" installs the app immediately. When you click "Install Later", select an installation time. When you select "Install Delayed", you can delay the installation within the next 60 minutes. You can select a delay time according to your network configuration and app size. In this case, the installation job will be created indeed (in "Pending" status) but will not be executed until the selected delayed time has passed.

Note

Installation time

When you select "Install Later", a calendar and the local system time is displayed for selecting the installation date and time.

You can check the installation status in the "Job Status" menu item. After the app is installed successfully, the app is listed under "My Installed Apps" in the Management UI of the IEM.

6.3 Launching apps configured by a configurator

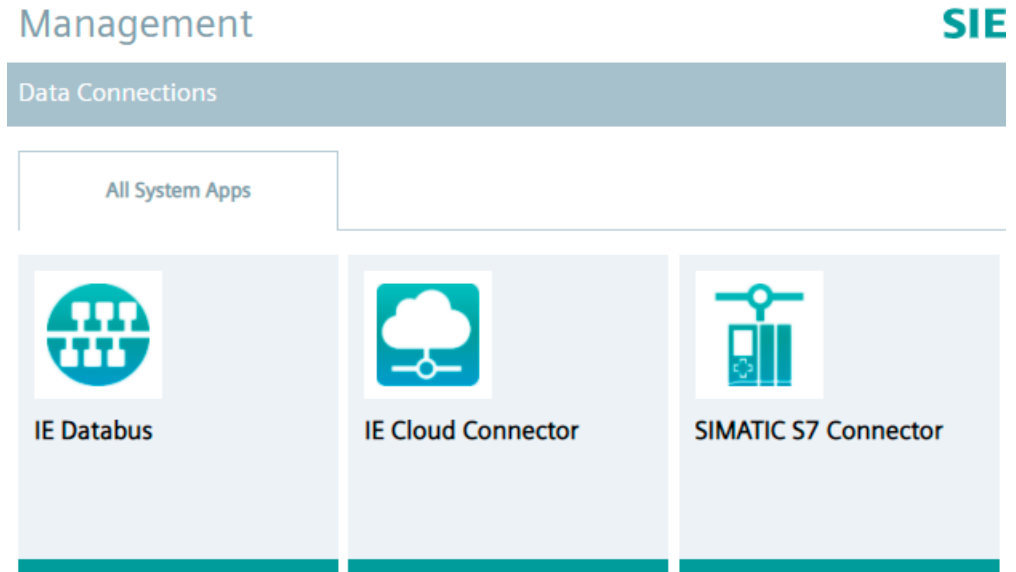
To use the "IE Databus" System App and some other special apps, the according configurator must be installed in the Maintenance UI of the IEM, as described in the "Installing configurators (Page 134)" subsection. These configurators can only launch (and configure) the respective app when the app is installed on your Edge Devices. Apps that are being configured by a configurator and that are installed on Edge Devices are also considered as runtime apps.

Requirement

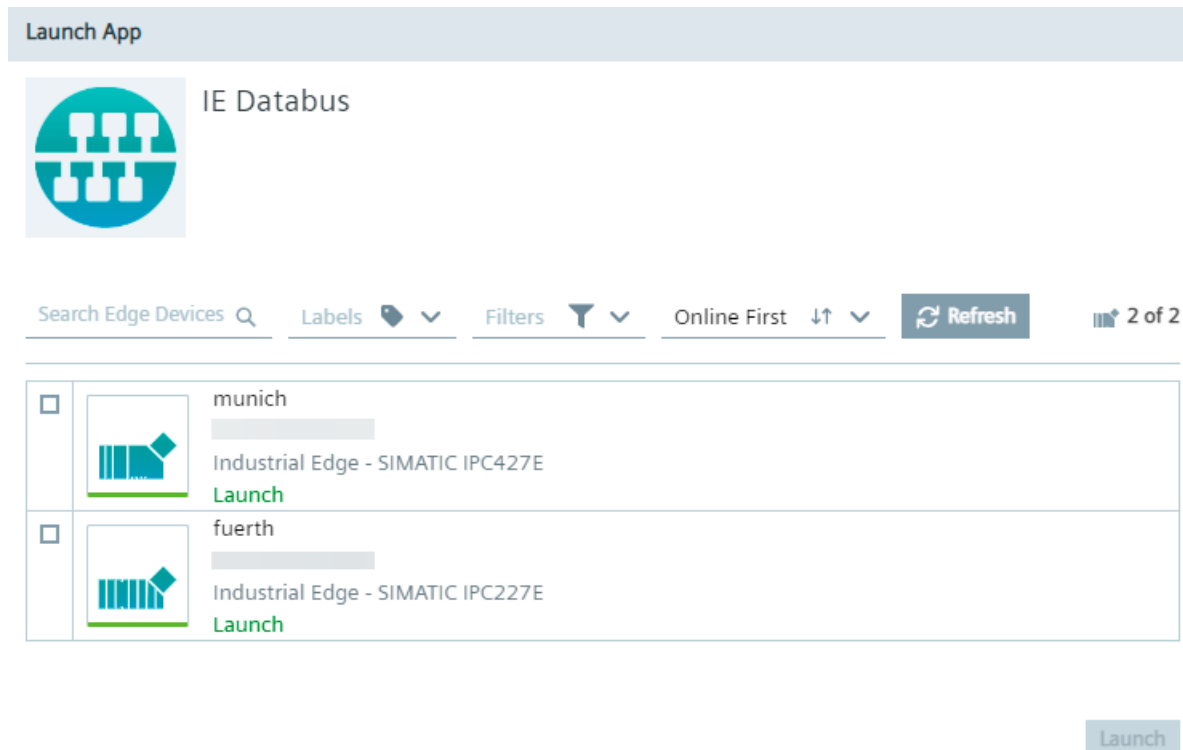
- The configurator is installed in the Maintenance UI of the IEM.
- The respective runtime app is installed on an Edge Device.

Procedure

1. In the Management UI, navigate to "Data Connections". Apps configured by a configurator are displayed in the "All System Apps" tab.




2. Click the tile of the respective app, in this example the "IE Databus" System App. The "Launch App" screen is displayed.









3. Select the Edge Device on which the app is installed and which you want to launch.

Launch App



IE Databus





Search Edge Devices Labels  Filters  Online First  Refresh  2 of 2

| | | |
|-------------------------------------|---|---|
| <input type="checkbox"/> |  | munich Industrial Edge - SIMATIC IPC427E Launch |
| <input checked="" type="checkbox"/> |  | fuerth Industrial Edge - SIMATIC IPC227E Launch |

1 Edge Device selected to launch app [Launch](#)

Only Edge Devices on which the app is installed are available. You can only select 1 Edge Device.

4. Click "Launch".
The app is launched and will be opened in a new tab inside the "Data Connections" screen. In that way, you can launch several apps on different Edge Devices and switch between the apps through the tabs.

All System Apps  IE Databus on fuerth   IE Databus on munich 

Configuration for fuerth

User View Topic View

The tab displays the app name and the respective Edge Device.

Example of use - Monitoring bottle filling process

7.1 Description

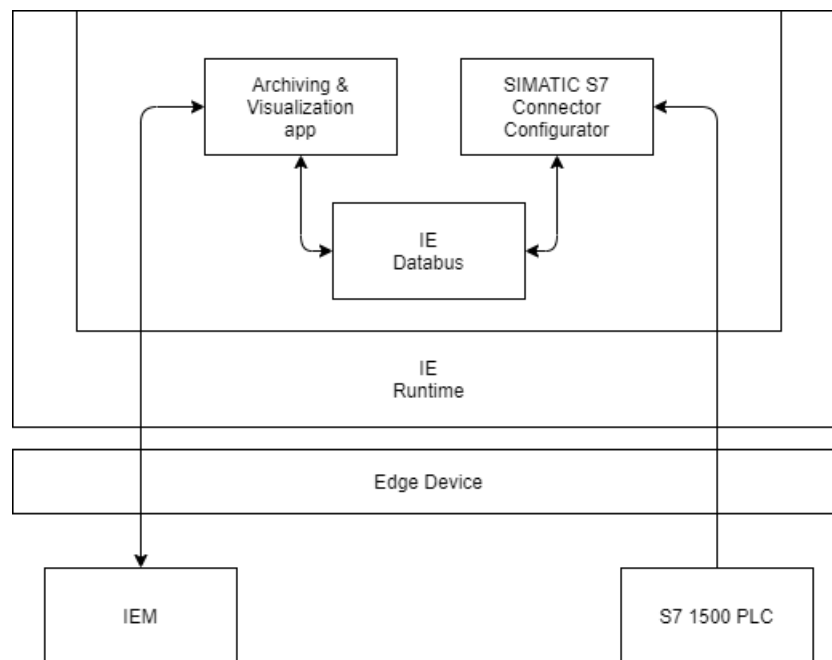
This example uses the self-created "Archiving & Visualization" app which is based on a bottle filling process application from which data values are collected, stored in an Influx-Database (InfluxDB) and visualized via a Grafana dashboard.

General task

The "Archiving & Visualization" app collects data from an S7-1500 PLC by using the SIMATIC S7 Connector Configurator. The collected data is automatically published to the IE Databus which is an internal MQTT broker of Industrial Edge. The "Archiving & Visualization" app uses a MQTT client (data collector) to subscribe to the IE Databus and write these values into an Influx-Database. The time series of the collected data can then be plotted within the Grafana dashboard.

Structural overview

The following figure shows a simplified structural overview of this example:



7.2 System setup and requirements

System setup

This example is applied with the following system setup:

- Industrial Edge App Publisher UI: V1.3.7
- Industrial Edge Management: V1.3.8
- SIMATIC S7 Connector Configurator: V1.3.40
- SIMATIC S7 System App: V1.3.21
- IE Databus Configurator: V1.3.5
- IE Databus System App: V1.3.2
- Industrial Edge Device: V1.3.0

Additional tools and requirements

- OS: Linux
- Docker version 18.09
- Docker-compose version 2.4
- Development environment Visual Studio Code
- TIA Portal V16
- PLC: CPU 1511 FW 2.8.3

SIMATIC S7 Connector Configurator

In this example, the SIMATIC S7 Connector Configurator is used in the "Bulk Publish" mode to collect tags from the TIA Portal project "Tank Application". The used PLC name is "PLC_1" and the following tags are being collected:

- GDB_signals_tankSignals_actLevel (Read/100ms)
- GDB_signals_tankSignals_actTemperature (Read/100ms)
- GDB_process_numberProduced (Read/100ms)
- GDB_process_numberFaulty (Read/100ms)
- GDB_hmiSignals_HMI_Nextbottle (Read&Write/100ms)

IE Databus Configurator

In this example, the IE Databus Configurator is configured with following parameters:

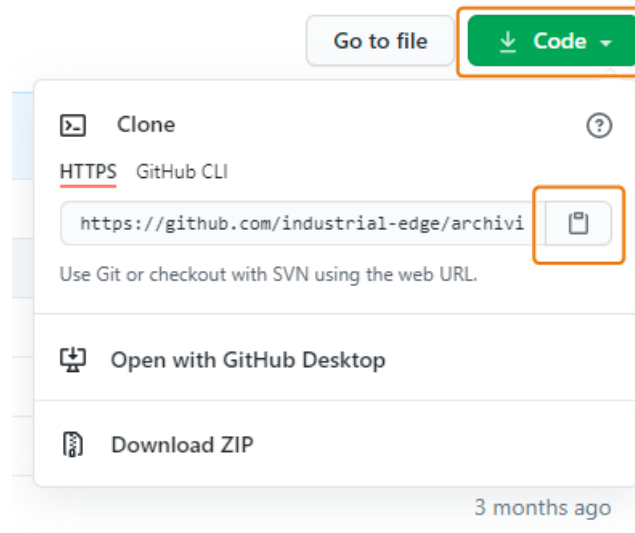
- Topic: ie/#
- Username: edge
- Password: edge

7.3 Building the app

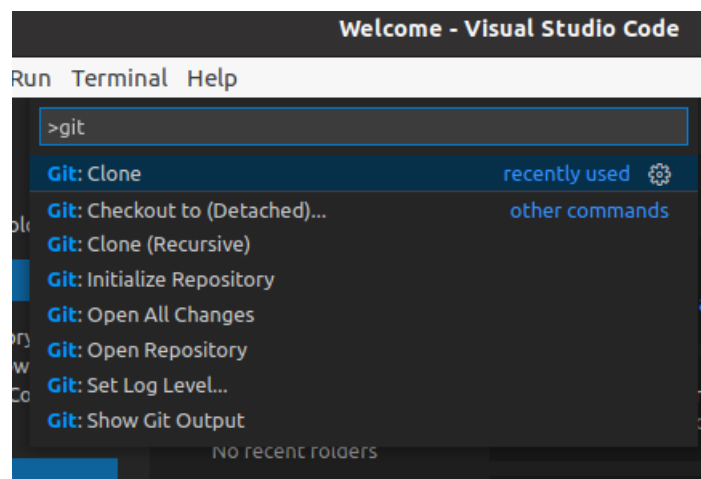
To build respectively create the app, you must download the needed resources from a public Github repository and afterwards build the app in your IDE, in this case Visual Studio Code.

Procedure

1. Open the Github repository under the following link (<https://github.com/industrial-edge/archiving-and-visualization>).
2. Clone the repository by clicking "Code" and the download icon under the "HTTPS" section.

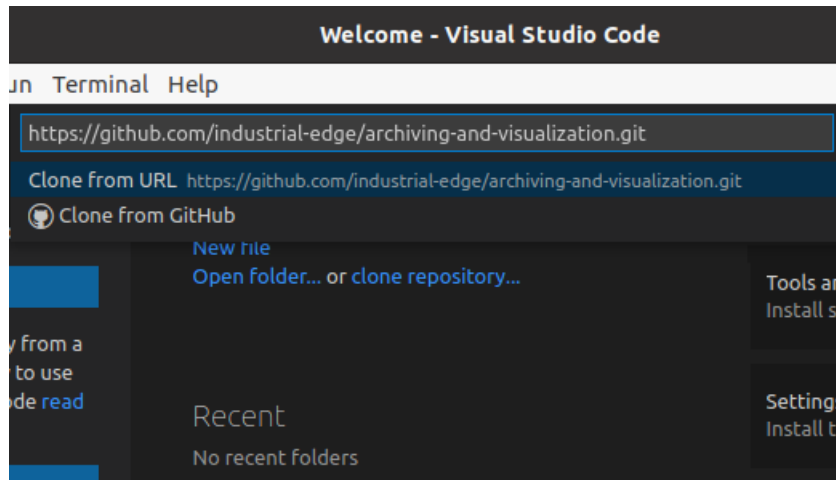


3. Open Visual Studio Code.
4. Display the command palette by entering <CTRL>+<SHIFT>+<P>.
5. In the command palette, search for "Git: Clone" and select it.



7.4 Creating the project and app in the Industrial Edge Management

6. Paste the cloned GitHub repository and perform the "Clone from URL" command.



7. Select or create the folder you want to clone the repository to. The repository is cloned to the selected folder.
8. In the command shell, navigate to the ".../archiving-and-visualization/" folder of the cloned repository. The docker-compose.yml file should be located in this folder.
9. Build the app by entering the `docker-compose build` command into the command shell. The InfluxDB and Grafana container are being created.

7.4 Creating the project and app in the Industrial Edge Management

Procedure

1. Open and log into the Management UI.
2. Navigate to "App Projects".

7.4 Creating the project and app in the Industrial Edge Management

3. Create an own project for the app by clicking "Create Project".
The "Create Project" screen is displayed.

The screenshot shows the 'Create Project' interface. At the top, there is a header 'Create Project' with a help icon and a close icon. Below the header, there are two tabs: '1 Project' (selected) and '2 Application'. To the right of the tabs are 'Next' and 'Create' buttons. The form contains three main sections: 'Project Name' with an empty text input field; 'Description' with an empty text area; and 'Company Information' with a search box containing the text 'No company found.' and a plus icon for adding new entries.

4. Enter all required information:
 - Project Name
 - Description
 - Company Information

This screenshot shows the 'Create Project' interface after data entry. The 'Project Name' field is filled with 'Archiving and Visualization'. The 'Description' field contains the text 'Saves PLC tags into Influxdb and plots them via Grafana'. The 'Company Information' section now displays a list with one entry: 'Siemens', which is marked with a green checkmark and has an edit icon to its right.

5. Click "Next".
In the following screen you create the app on the IEM side.

7.4 Creating the project and app in the Industrial Edge Management

6. Enter all required information:

- Application Name
- Repository Name
- Website
- Description
- Category
- Icon

Create Project ? x

1 Project 2 Application Back Create

Application Name
Archiving and Visualization

Repository Name
archivingandvisualization

Website
www.siemens.com

Use Edge Device Auth Service (optional) _____
Do not use Edge Device Auth Service.


Labels _____
Assign application labels

External Configurator _____
No external configurator.

Description
Saves PLC tags into InfluxDB and plots them via Grafana

Category
Retail ▼

Icon



Note

"Use Edge Device Auth Service", "Labels" and "External configurator"

Do not select these options since it is not required for this app.

7. Click "Create".
The project and app has been created in the IEM.
Now you must create the app version including its configuration in the IE App Publisher and upload it to the created project respectively app.

7.5 Creating the app version in the IE App Publisher

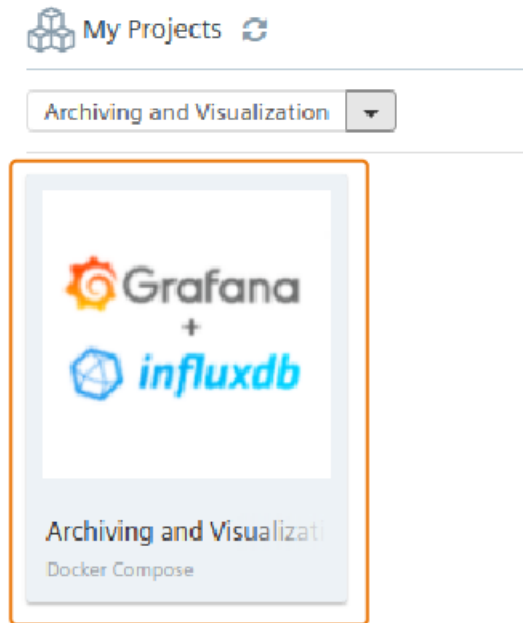
Requirement

- Connected to the IEM.
- Connected to a Docker engine.

You find information on how to connect to the IEM and to a Docker engine in the "Connecting the IE App Publisher" section in the "Industrial Edge App Publisher - Operation (<https://support.industry.siemens.com/cs/us/en/view/109780392>)" manual.

Procedure

1. Open and log into the IE App Publisher.
2. In the "My Projects" section, select the created project and click the newly created app tile.



The version table is displayed.

3. Click "Configurations".
4. Add a new configuration by clicking "Add Configuration".
The app configuration screen is displayed.
5. Enter all required information:
 - Display Name
 - Description
 - Host Path
 - Template Name
 - Template Description
 - Template File

- For the template file, click "Browse" and select the "env-config.json" file which is contained in the ".../cfg-data/" folder in the cloned repository.

Archiving and Visualization Configurations ✕

Display Name
myconfig

Description
configures data source and database name

Host Path
./cfg-data/

Sub Path

Full Path: ./cfg-data/

Secure
 Versioned

Add Template

Name
mytemplate

Description
default config

Json Schema

Select Template File
env-config.json Browse

Add

- Click "Add".
The app configuration has been created.
- In the version table, click "Add New Version".

Docker Engine: 0.0.0.0 + Create Image Pull Image Log | Workspace: Templates

Archiving and Visualization > Versions + Configurations ?

| Version | Status | Actions |
|----------------------------|-------------|--------------------------------|
| x86-64 - (Repo: archiving) | No Versions | + Add New Version |

The "Create Version" screen is displayed.


9. From the drop-down list, select the 2.4 docker-compose version and click "Ok".

10. Click "Import YAML" and select the "docker-compose.yml" file from the cloned repository.



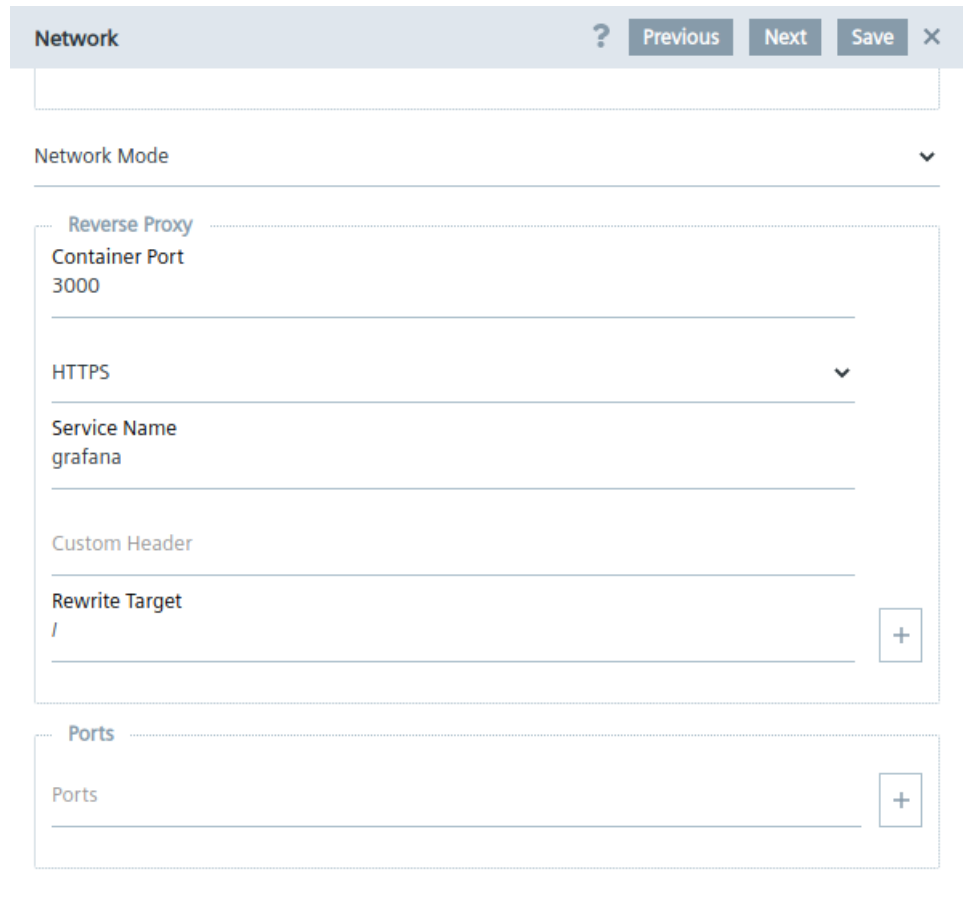
11. Click "Ok".

The contained services and network parameters are displayed.

- If needed, configure a reverse proxy by clicking the  icon in the "grafana" service section and clicking the "Network" tile.


A reverse proxy is a proxy server that is preconnected to a webserver to protect the webserver from direct access from the public network/Internet. Public clients will not get direct access to the destination server. Requests are taken from clients and can be checked by security rules. After the checks, the request can be sent to a server instance. In Industrial Edge, the reverse proxy is handling the incoming requests, such as opening the IE Flow Creator or a Grafana dashboard for data visualization.

In the "Network" screen, add the reverse proxy information.



Note

Port exposure

Port exposure must be removed in this case. For that, click the  icon at the bottom of the "Network" screen.

After you have configured, the reverse proxy, save the changes.

- Click "Review".

7.5 Creating the app version in the IE App Publisher

- 14. Click "Validate & Create".
The "Add Version" screen is displayed.

Add Version [Close]

Redirect URL

Default Custom

http://[core name].192.168.80.153:9443:33000:3000 (grafana) [Dropdown]

Path (optional)

E.g. http://[core name].192.168.80.153:9443:33000:3000 (grafana)

Version

| Major | Minor | Maintenance |
|-------|-------|-------------|
| 0 | 0 | 1 |

Release Notes (optional)

Allow application access without login

Create

- 15. Click "Create".
This process may take some time. After the app version has been created, the version is listed in the version table and ready to upload.

- 16. Click "Start Upload".


Archiving and Visualization > Versions [Configurations] [?]

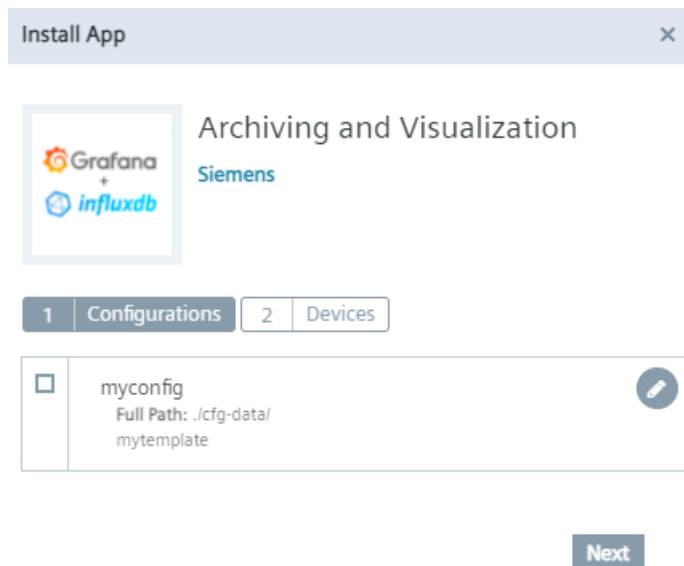
| Version | Status | Actions |
|----------------------------|---------------------|---|
| x86-64 - (Repo: archiving) | 1 Version | + Add New Version |
| Ready To Upload - (0.0.1) | Start Upload | [Edit] [Download] [Delete] [Refresh] [Folder] |

The app version is getting uploaded to the IEM. Once the app version is successfully uploaded to the IEM, you must install the app version onto your Edge Device.


7.6 Installing the app

Procedure

1. In the Management UI, navigate to "App Projects".
2. Open the project in which the app has been created.
3. Click the tile of the created app.
All available versions of the app are displayed.
4. Install the app version by clicking the  icon under "Actions".
The "Install App" screen is displayed.



7.6 Installing the app


- 5. In the "Configurations" tab, click the  icon to review your configuration file. Based on this configuration, you can configure the app to use a different database name, different credentials for the IE Databus or a different datasource name. In this example, "PLC_1/default" is entered under "DATA_SOURCE_NAME" because the used PLC name in the SIMATIC S7 Connector is "PLC_1" and the "Bulk Publish" publish option is enabled, so the "default" keyword is needed.

```
Edit Configuration Template ✕  
  
{  
  "env": {  
    "MQTT_BROKER_SERVER": "ie-databus",  
    "MQTT_TOPIC": "ie/d/j/simatic/v1/s7c1/dp/r/",  
    "DATA_SOURCE_NAME": "PLC_1/default",  
    "MQTT_USER": "edge",  
    "MQTT_PASSWORD": "edge",  
    "INFLUXDB_IP": "influxdb",  
    "INFLUXDB_DATABASE": "databus_values"  
  }  
}
```


Update

- 6. Select the configuration file.

Install App ✕

 Archiving and Visualization
Siemens

1 Configurations 2 Devices

myconfig
Full Path: ./cfg-data/
mytemplate 

- 7. Click "Next".
- 8. Select the Edge Device on which you want to install the app.
- 9. Click "Install Now".
- 10. To install the app, click "Allow".
The app is being installed. You can check the installation status in the "Job Status" menu item. When the app has been installed successfully, you can start the app from the Edge Device UI of the respective Edge Device.

7.7 Starting the app

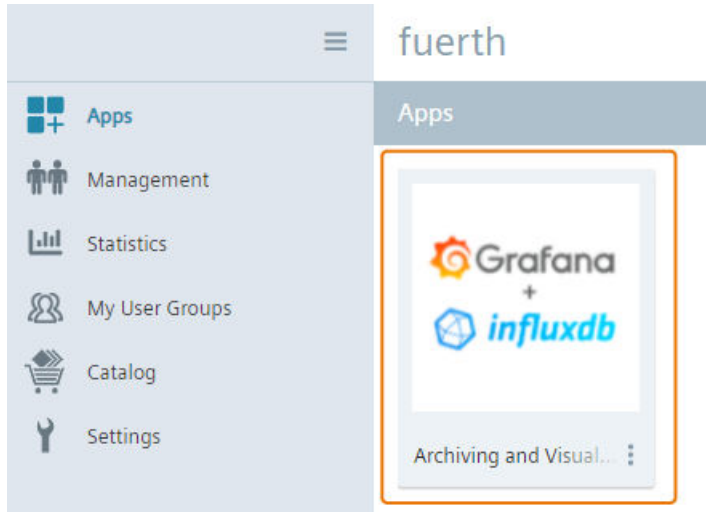
Requirement

- The SIMATIC S7 Connector project is started.
- Your PLC is in "Start" mode.
- "GDB".hmiSignals.HMI_Start is set to TRUE on your PLC.

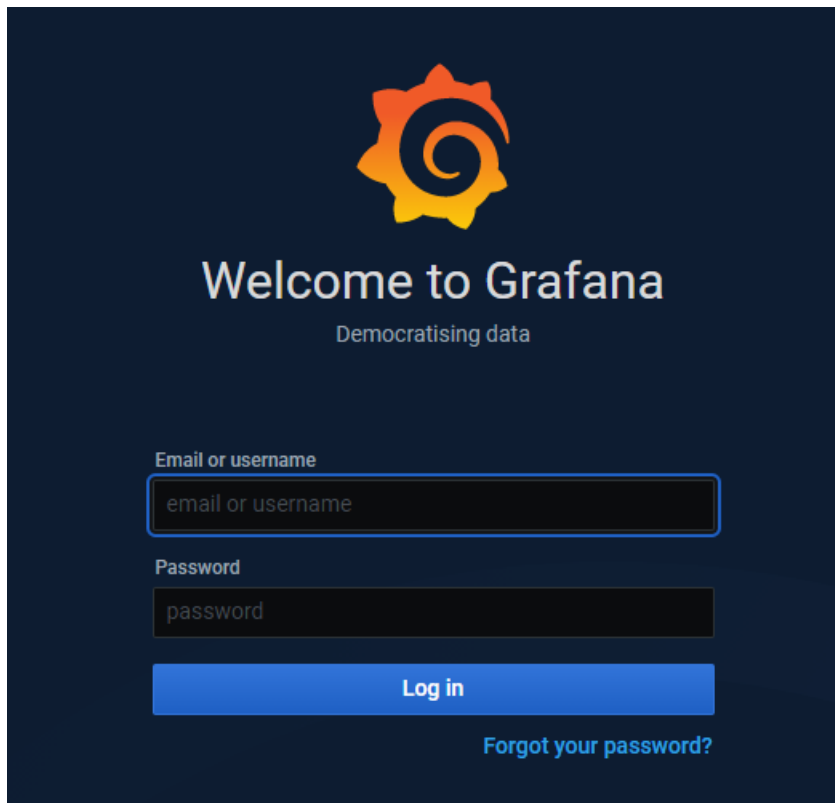
7.7 Starting the app

Procedure

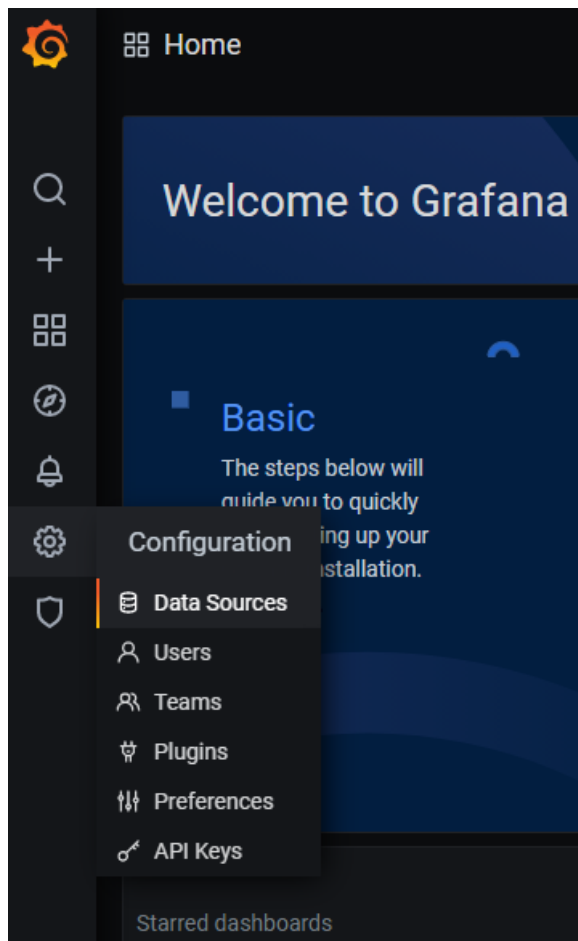
1. Open and log into the Edge Device UI on which you installed the app.
2. In the "Apps" screen, click the tile of the app to start it.



The app will be opened in a new tab and the Grafana login screen is displayed.



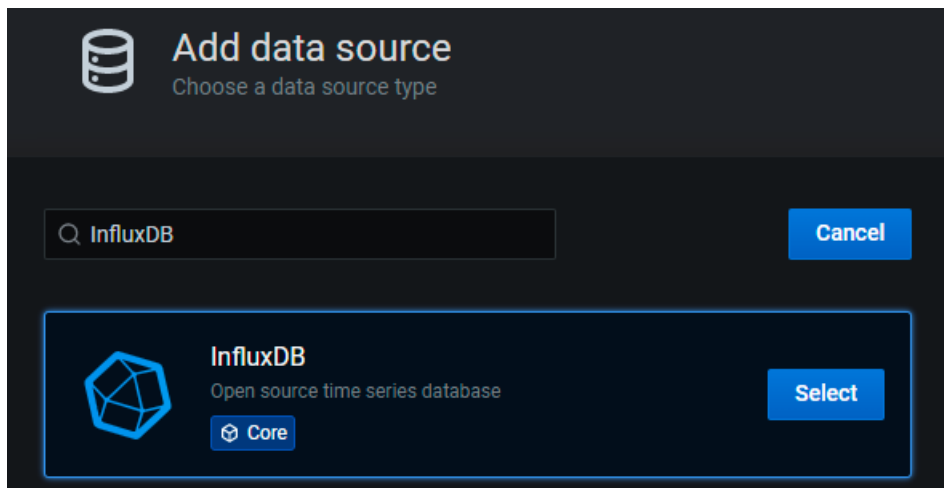
3. Log in with the following credentials:
 - Username: admin
 - Password: admin
4. Change the password.
The Grafana home screen is displayed.
5. On the left side, navigate to "Configuration > Data Sources".



6. Click "Add data source".

7.7 Starting the app

7. Add the new "InfluxDB" data source by entering "InfluxDB" in the search bar and selecting it.



The data source is added.

8. In the "URL" input field under the "HTTP" section, enter the "http://influxdb:8086" address.

9. In the "Database" input field under the "InfluxDB Details" section, enter the "databus_values" database name.

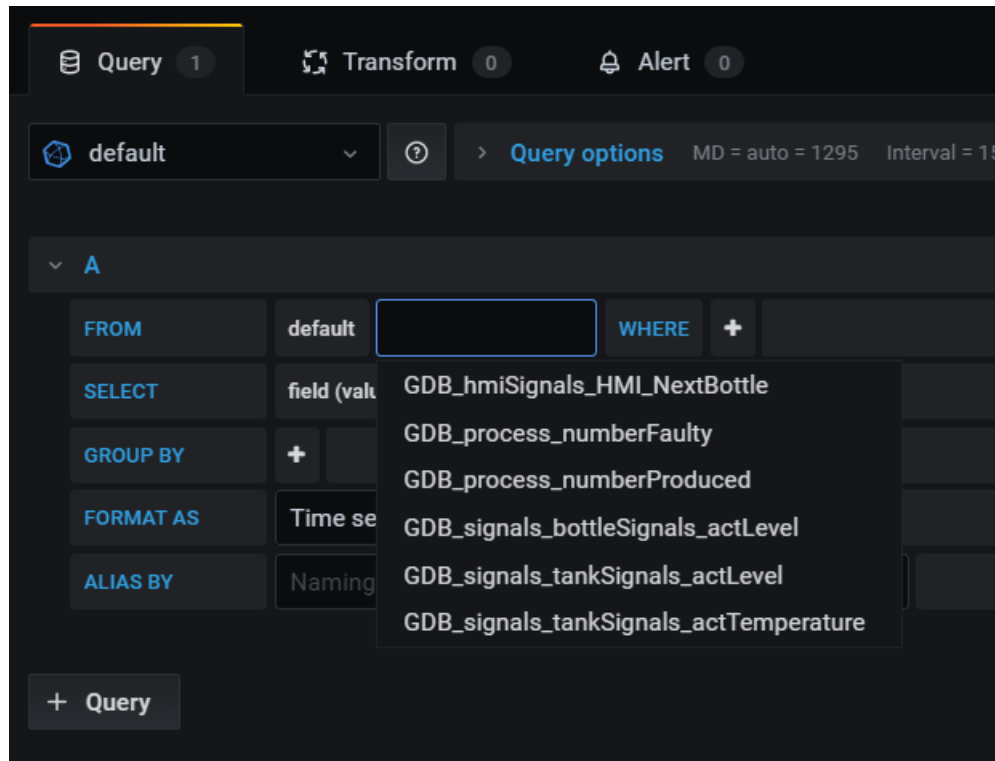
The screenshot displays the configuration interface for InfluxDB. It is divided into several sections:

- HTTP**: Contains fields for URL (http://influxdb:8086), Access (Server (default)), and Whitelisted Cookies (Add Name, Add).
- Auth**: Contains toggle switches for Basic auth, TLS Client Auth, Skip TLS Verify, and Forward OAuth Identity, along with options for With Credentials and With CA Cert.
- Custom HTTP Headers**: Contains a button to Add header.
- InfluxDB Details**: Contains fields for Database (databus_values), User, Password, and HTTP Method (Choose).

10. Click "Save & Test".
You should receive a notification "Data source is working". If not, you might have selected a different name in the configuration file. In that case, check again the configuration file.

7.7 Starting the app

- 11. In the "Dashboard" section, add a new panel.
You are able to select and configure your tags.



- 12. Select the values you want to plot.
- 13. Remove the "Group By" options and the "SELECT mean(value)" option.
The tag values, and by that the bottle filling process, are displayed and monitored via the dashboard.



List of abbreviations/acronyms

| Abbrevia- tion | Description |
|-------------------|---|
| IE | Industrial Edge |
| IED | Industrial Edge Device |
| IEH | Industrial Edge Hub |
| IEM | Industrial Edge Management |
| IEMA | Industrial Edge Management App |
| IERT | Industrial Edge Runtime |
| IEAP | Industrial Edge App Publisher |
| IED-OS | Industrial Edge Device Operating System |
| IEM-OS | Industrial Edge Management Operating System |
| VM | Virtual Machine |
| UI | User Interface |
| CLI | Command Line Interface |
| IEFC | Industrial Edge Flow Creator |
| SAS | Shared Access Signature |
| SSH | Secure Shell |
| IoT | Internet of Things |
| DHCP | Dynamic Host Configuration Protocol |
| API | Application Programming Interface |
| TPM | Trusted Platform Module |
| LAN | Local Area Network |
| FQDN | Fully Qualified Domain Name |
| NTP | Network Time Protocol |
| L2 | Layer 2 |
| LLDP | Link Layer Discovery Protocol |
| CIDR | Classless Inter-Domain Routing |
| IEACS | Industrial Edge Application Configuration Service |
| IEDK | Industrial Edge Device Kit |
| IECTL | Industrial Edge Control |
| IESS | Industrial Edge State Service |
| DEX | Digital Exchange |

Glossary

.app file

File extension for IE Edge Apps.

3rd Party Industrial Edge App

3rd Party IE Apps are not provided by Siemens, but by 3rd party providers.

Admin UI

Included in the Industrial Edge Management App. UI enabled for admins and users with admin permissions to manage IED-OS versions and registered users for example.

Application Programming Interface (API)

In computing, an Application Programming Interface (API) is an interface that defines interactions between multiple software applications or mixed hardware-software intermediaries. It defines the kinds of calls or requests that can be made, how to make them, the data formats that should be used, the conventions to follow and so.

Centrally-managed Edge

Edge Device and Edge App management is done centrally in the Industrial Edge Management.

Classless Inter-Domain Routing (CIDR)

Classless Inter-Domain Routing (CIDR) is the successor to class-oriented domains for Internet routing and enables better allocations of Internet addresses. It combines a number of class C Internet Protocol (IP) addresses to reduce the burden on routing tables in the Internet.

Container

Containers are isolated environments on a shared operating system. Unlike VMs, containers do not bundle a full operating system, but only required libraries and settings for running the intended software. Containers are isolated on the kernel layer. This makes for efficient, lightweight, self-contained systems and guarantees that software will always run the same regardless of where it is deployed.

Data source

A data source is a physical element of a device, e.g. OPC-UA Server or S7, which collects data in the automation level.

Device-OS

Operating system used by Device Builders to integrate into the IED-OS.

Disaster Recovery (DR)

Disaster Recovery (DR) is an area of security planning that aims to protect an organization from the effects of significant negative events. Having a disaster recovery strategy in place enables an organization to maintain or quickly resume mission-critical functions following a disruption.

Docker

Docker is a container platform that eases configuring, creating and sharing specific development environments and packaging software to be deployed everywhere. Docker provides a runtime and image format and a command line interface.

Industrial Edge

Industrial Edge represents an open, ready-to-use Edge computing platform consisting of Edge Devices, Edge Apps, Edge connectivity and an app and device management infrastructure. It enables collecting and analyzing data from industrial resources, enables a faster and more reliable rollout of apps on the shop floor, and provides central management for devices and apps with maximum scalability – with no need to intervene in the existing automation system (for example, to adapt controller software). Depending on your requirements, you can determine data that stays locally and data that can be used with a cloud solution on an optional basis.

Industrial Edge App Configuration Service (IEACS)

The Industrial Edge App Configuration Service enables to display templated app configuration files. App developers, that used templated app configurations in their applications, benefit from displayed forms in the Management UI and gain advantage of input validation, error messages and highly improved usability for the customer.

Industrial Edge App Publisher (IEAP)

Software application that enables packaging and publishing of Industrial Edge Apps. The IEAP is available as Linux and Windows application.

Industrial Edge App Publisher CLI

Command Line Interface of the Industrial Edge App Publisher to use the IEAP in a build pipeline for example.

Industrial Edge Cloud Connector

App for data distribution to data services of cloud providers.

Industrial Edge Cloud Connector Configurator

Configurator for the IE Cloud Connector. In contrast to the IE Cloud Connector, the IE Cloud Connector Configurator is executed in the IEM and not on the Edge Device.

Industrial Edge Connectors

Connecting to external systems to exchange data (without preprocessing). The name is derived from the protocol that is being used to connect to the system, for example the SIMATIC S7 Connector is derived from SIMATIC S7 protocol.

Industrial Edge Control (IECTL)

The Industrial Edge Control (IECTL) is a Command Line Interface to interact with Industrial Edge and its components.

Industrial Edge Databus

System App for data distribution in Industrial Edge.

Industrial Edge Databus Configurator

Configurator for the IE Databus. In contrast to the IE Databus, the IE Databus Configurator is executed in the IEM and not on the Edge Device.

Industrial Edge Device Kit (IEDK)

Abstraction layer that separates hardware specifics from the operating system with the software functionality of the IERT.

Industrial Edge Device License

License (subscription) which customers purchase from Siemens. The Edge Device license includes the annual fee for each Industrial Edge Device that is centrally managed through an IEM.

Industrial Edge Device OS (IED-OS)

Software (Operating System) that is running on a SIMATIC IPC Edge Device. The IED-OS enables SIMATIC IPCs to be managed as Edge Device.

Industrial Edge Ecosystem

The Industrial Edge Ecosystem builds on top of the IE Platform and serves for value creation by partners, such as App Providers, Device Builders, Solution Partners and others.

Industrial Edge Hub Access

Offer that is available in the Siemens Industry Mall. The offer includes access to the Industrial Edge Hub.

Industrial Edge Management License

License (subscription) which customers need to buy in the Industry Mall or marketplace. The management license for IE Devices includes the annual fee to manage an Industrial Edge Device.

Industrial Edge Management On-Premises

IEM On-Premises describes the installation and use of IEM on computers at the premises of the organization using the software, not at a remote facility. IEM is operated by the customer.

Industrial Edge Management OS (IEM-OS)

The IEM-OS is the core orchestration engine of the Industrial Edge Management. Hosts IEM Services and provides service capabilities.

Industrial Edge Management Services

Applications that are provided with the IE Hub Access and that are free of charge. An IEM Service extends the IEM basic functionality. The IEM App, Device Catalog, IE State Service or the IE App Configuration Service belong to IEM Services.

Industrial Edge Marketplace

Marketplace beside the Industry Mall to purchase IE Apps.

Industrial Edge Platform

Consists of the Industrial Edge Hub, the Industrial Edge Management and Industrial Edge Devices.

Industrial Edge Runtime (IERT)

Software component that is running within the IEM-OS and IED-OS.

Industrial Edge Service Medium

Software artifact (*.iso) provided to flash onto USB flash drives. It is used to get log files of bricked Edge Devices and to reset Edge Devices.

Industrial Edge State Service (IESS)

The Industrial Edge State Service is an IEM service that provides the possibility to implement Disaster Recovery (DR) strategies based on your DR plan respectively requirements. With the IE

State Service, you can store the IED state of an Edge Device on the IEM and restore a required stored IED state on the Edge Device in case of any occurring errors respectively failures in the Edge Device.

Industrial Edge System App

The IE Databus is considered as the only System App. The System App is an application that is provided free of charge with the IE Hub Access. It provides the data distribution in Industrial Edge. In comparison to Edge Apps, the System App is shipped with the IEM by default and is given special rights because it provides essential functionality for the IEM.

Industrial Edge App

Overall name for software applications which are distributed on the Industrial Edge Device. Apps always have a direct benefit for the user (backbone of value delivery) but are limited in their functionality. It can consist of one or more Docker containers. Siemens is not possible in the product name.

Industrial Edge Device (IED)

A hardware device which includes the Edge Device OS, provided by a Device Builder, with the purpose of providing Industrial Edge functionality. Industrial Edge Apps can be deployed on Edge Devices. Contains the Industrial Edge Runtime (IERT).

Industrial Edge Hub (IEH)

The Industrial Edge Hub (IEH) is the entry point for Siemens customers into Industrial Edge and the central starting point for downloading and configuring the Industrial Edge Management (IEM). In the IEH, you download all necessary software for running the IEM and manage licenses of purchased Edge Apps and Edge Devices. Also, the IEH provides a global catalog from which you download Edge Apps and distribute to the Industrial Edge Management.

Industrial Edge Management (IEM)

Central user interface of Industrial Edge. The IEM provides Edge App and Edge Device management, as well as system-internal configurations, such as the settings for connections to controllers. The IEM runs locally in a VM based cluster.

Layer 2

The data link layer, or layer 2, is the second layer of the seven-layer OSI model of computer networking. This layer is the protocol layer that transfers data between nodes on a network segment across the physical layer.

Maintenance UI

UI to install and update IEM Services, configurators and the Industrial Edge Management App, as well as UI to configure IEM settings.

Management UI

Included in the Industrial Edge Management App and central user interface of Industrial Edge. The Management UI provides, amongst others, Edge App and Edge Device management.

Network Time Protocol (NTP)

The Network Time Protocol (NTP) is a networking protocol for clock synchronization between computer systems over packet-switched, variable-latency data networks.

Organization

Organization is an instance of the Industrial Edge Hub in which you manage resources such as licenses, IEM instances, users and other entities such as Edge Device types and apps. You can own or be a member of more than one organization to distinguish between different user groups.

Secrets

Secrets are sensitive data that generally must be protected.

Shared Access Signature (SAS)

A shared access signature (SAS) provides secure delegated access to resources in your storage account without compromising the security of your data. With a SAS, you have granular control over how a client can access your data. You can control what resources the client may access, what permissions they have on those resources and how long the SAS is valid, among other parameters.

Side loading

Describes the process of bringing IE Apps into the IE Platform without need of the IE Hub. Side loaded apps can harm the system as Siemens has neither verified nor signed these applications. The operator owns the responsibility for any impact to the IE Platform due to side loaded apps.

Siemens Digital Exchange (DEX)

The Siemens Digital Exchange (DEX) is the (Industrial Edge) marketplace for purchasing digital products as well as services. This eCommerce marketplace seamlessly connects customers to catalogs of Siemens and third-party software products and services. The DEX is reachable under [this link](#).

SIMATIC S7 Connector

App that provides connectivity to the plant network.

SIMATIC S7 Connector Configurator

Configurator for the SIMATIC S7 Connector. In contrast to the SIMATIC S7 Connector, the SIMATIC S7 Connector Configurator is executed in the IEM and not on the Edge Device.

Tags

Tags refer to elements (variables), which allow values to be obtained from data sources (OPC-UA or S7 etc.). They are combined into a relevant aspect. For example, "temperature" and "torque" are data points of the aspect "Energy_consumption". Tags are configured in SIMATIC S7 Connector Configurator.

Topic

A topic is a permanently defined access area. Measured data can be sent to a specific topic or access area. Only users who have access to the area are allowed to use the data. The access area is defined by the name of the topic.

Trusted Platform Module (TPM)

Trusted Platform Module (TPM) is an international standard for a secure crypto processor, a dedicated microcontroller designed to secure hardware through integrated cryptographic keys.

Virtual Machine (VM)

A Virtual Machine (VM) imitates dedicated hardware and runs an operating system. Software running inside the VM and end users have the same experience as on a dedicated system. IaaS providers use a so called hypervisor which provides the VM with the configured hardware which is provided by the host. In the IaaS environment the type of hardware can be almost anything that is available in a data center.

