SIEMENS

SIMATIC

S7-1500 Virtual Controller CPU 1517V(F)

Function Manual

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V2.0.1, 01/2025
A5E53246560-AC

Legal information

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.

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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.

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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.

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A5E53246560-AC
Ⓟ 01/2025 Subject to change

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Introduction

1

1.1 General information

Purpose of the documentation

This user guide provides information about how to use the CPU 1517V.

Siemens offers technical expertise at the Siemens Automation Web site (https://www.siemens.com/automation/) and the Siemens Industry Online Support Web site (https://support.industry.siemens.com/cs/us/en/). Contact your Siemens distributor or sales office for assistance in answering technical questions, for training, or for ordering Siemens products. Your sales representatives are technically trained and have knowledge about your operations, process, industry, and Siemens products.

Definitions and naming conventions

STEP 7: In this documentation, "STEP 7" is used as a synonym for all versions of the configuration and programming software "STEP 7 (TIA Portal)".

CPU 1517V: “CPU 1517V” Includes “CPU 1517VF”. If information only relates to one of these CPU versions, the version is explicitly named.

Also observe notes marked as follows:

NOTE

A note contains important information on the product described in the documentation, on the handling of the product, or on the section of the documentation to which particular attention should be paid.

Siemens Digital Exchange

The Siemens Digital Exchange is the Siemens marketplace for purchasing digital products and services. You can access product catalogs and manage your accounts from the Web site (https://www.dex.siemens.com/). The Industrial Edge Marketplace (https://www.dex.siemens.com/?selected=edge) is accessible from the Siemens Digital Exchange.

1.2 Maintaining operational safety of your plant

NOTE

Operators of plants with safety-related features must meet operational safety requirements. Suppliers must also take measures when monitoring products.

To stay up-to-date on the latest operational safety requirements, visit the Siemens Industry Online Support (https://support.industry.siemens.com/cs/us/en/) site and subscribe to email notifications for your Siemens products.

NOTE

To reduce the risk of physical tampering with critical industrial equipment, implement the measures defined in the Operational guidelines (https://www.siemens.com/global/en/products/services/cert/news/operational-guidelines-for-industrial-security.html).

1.3 Tool support

Tools

The tools described below support you in all steps: from planning, over commissioning, all the way to analysis of your system.

TIA Selection Tool

The TIA Selection Tool tool supports you in the selection, configuration, and ordering of devices for Totally Integrated Automation (TIA).

As successor of the SIMATIC Selection Tools , the TIA Selection Tool assembles the already known configurators for automation technology into a single tool.

With the TIA Selection Tool , you can generate a complete order list from your product selection or product configuration.

You can find the TIA Selection Tool on the Internet. (https://support.industry.siemens.com/cs/us/en/view/109767888)

SINETPLAN

SINETPLAN, the Siemens Network Planner, supports you in planning automation systems and networks based on PROFINET. The tool facilitates professional and predictive dimensioning of your PROFINET installation as early as in the planning stage. In addition, SINETPLAN supports you during network optimization and helps you to exploit network resources optimally and to plan reserves. This helps to prevent problems in commissioning or failures during productive operation even in advance of a planned operation. This increases the availability of the production plant and helps improve operational safety.

The advantages at a glance

- Network optimization thanks to port-specific calculation of the network load
- Increased production availability thanks to online scan and verification of existing systems
- Transparency before commissioning through importing and simulation of existing STEP 7 projects
- Efficiency through securing existing investments in the long term and the optimal use of resources

You can find SINETPLAN on the Internet (https://new.siemens.com/global/en/products/automation/industrial-communication/profinet/sinetplan.html).

1.4 Fail-safe

The CPU 1517VF is the virtual F-CPU mainly designed for personal and machine protection. In addition to the safety program, you can also program standard applications.

You can operate the F-CPU in safety mode or in standard mode.

Information on using the F-CPU in safety mode is available in the programming and operating manual "SIMATIC Safety - Configuring and Programming" (https://support.industry.siemens.com/cs/ww/en/view/54110126).

1.5 Cybersecurity information

Siemens provides products and solutions with industrial cybersecurity 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 cybersecurity 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 cybersecurity measures that may be implemented, please visit
https://www.siemens.com/cybersecurity-industry.

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 Cybersecurity RSS Feed under
https://new.siemens.com/cert.

1.6 Security information for the Industrial Edge App

Security constraints for the Industrial Edge Apps are as follows:

- Restrict access to secure networks such as LANs with properly configured firewalls or VPNs.
- Restrict physical access to approved personnel.
- Ensure users are trained in secure practices including proper password handling, secure usage of removable USB storage, and prevention of malware infection.
- Securely configure, maintain, and update the hardware, firmware, and operating system.
- Configure user accounts with appropriate access rights during commissioning.
- Configure the app according to the system manual to ensure acceptable system performance.
- Secure centralized IT resources, such as Active Directory or logging servers.
- Configure PLCs with appropriate access protection and set secure passwords for app data collection.
- Ensure correct time synchronization between the Industrial Edge Management and the Industrial Edge Device.
- Ensure only valid PLC certificates are trusted when establishing S7+ connections.

1.7 Note on General Data Protection Regulation (GDPR)

Data protection

Siemens observes the principles of data protection, in particular the principle of data minimization (privacy by design). For the Data Service for Industrial Edge products, this means the product processes/stores the following personal data: The token from Industrial Edge Management to verify authentication.

No personal data is processed or stored.

Personal data is required for the login, the billing function and for the internal user administration (administrator can see the role and the status of other users). The storage of data is appropriate and limited to what is necessary, as it is essential to identify the authorized operators. The data is maintained manually by the user, and if necessary, can also be deleted. If you need support, please contact customer support.

Personal data will not be stored anonymously or pseudonymized, because the purpose (identification of the operating personnel) cannot be achieved otherwise.

Personal data is protected against loss of integrity and confidentiality by state-of-the-art security measures.

Installing and getting started 2

2.1 Compatibility information

This version of the CPU 1517V is compatible with the following systems:

- Engineering systems:
  - TIA Portal version 20

  NOTE

  When updating TIA Portal V19 to TIA Portal V20, the former TIA Portal version must be V19 Update 3 or later.

- Runtime systems:
  - Industrial Edge Virtual Device version 1.21.0
- HMI systems:
  - WinCC Unified for Industrial Edge
  - WinCC RT Professional version 19
  - WinCC Unified PC version 19
  - WinCC RT Advanced version 17
  - Basic Panel version 17
  - Comfort Panel version 17
  - WinCC Unified Comfort Panel version 19
- Industrial Edge Management:
  - Industrial Edge Management - Helm Charts version 1.10.10 or later

2.2 Deploying CPU 1517V

Requirements

The following requirements are necessary for the deployment of CPU 1517V:

- CPU 1517V Industrial Edge application is purchased / received and is available on your Industrial Edge Hub tenant.
- The Industrial Edge Management system is available.
- An Industrial Edge Device is registered and configured through the Industrial Edge Management system.

- An Industrial Edge Device has a network isolated with the label "vplc_x1" for the application.
- The Industrial Edge Management system must be connected both to the Internet and to the Industrial Edge Device. If either connection does not exist, the PLC will only run for two hours. See the "Licensing requirements for the Virtual Controller (Page 20)" topic for details about this requirement.

Configuring network isolation

During the deployment of the CPU 1517V, one device interface must be isolated to the application. This is necessary to remove additional traffic that could impede network communication. To complete this assignment successfully and ensure that the isolation works properly, follow these steps:

1. Open the Web interface of the Industrial Edge Device.
2. Navigate to "Settings" on the left pane.
3. Navigate to the Resource Manager tab.
4. Check to see that no network is visible under "Enabled Resources > siemens.com/isolation network".

Configuring network isolation

1. Click the "+" to the right of Isolatable Networks.
2. Under "Name", add the name of the device interface to be isolated to the application during deployment. This is under "Settings > Connectivity > LAN Network".
3. Under "Annotations > Label", add the text "vplc_x1".
4. Click Submit.
5. Check that a network is visible under "Enabled Resources > siemens.com/isolated_network".

NOTE

For optimal performance, Siemens recommends that you use "PCI device passthrough" for IEVD network interfaces. To pass through a physical network interface, follow these steps:

1. From VMWare ESXi, navigate to "Host > Manage > Hardware > PCI Devices".
2. Find and select the network interface as a PCI device.
3. If the "Passthrough" attribute is not active, click on "Toggle passthrough" to enable it.
4. Navigate to the VM properties for the IEVD.
5. Add this network interface as a PCI device for the VM via "Add other device > PCI device".
6. Choose this interface for network isolation.

Deploying CPU 1517V

To deploy CPU 1517V, follow these steps:

1. Find the application "CPU 1517V" in the "Library" page on the Industrial Edge Hub tenant.
2. Click the application and select at least one Industrial Edge Management (IEM) instance on which the application is to be installed.
3. Click "Copy latest version to IEM(s)".
4. Start the operation by clicking "Copy".
5. Log in to the Industrial Edge Management system on which the application is installed.
6. Browse the catalog, find the application, and click "Install".
7. Click "Next" because no special configuration file is needed in the "Configurations" step.
8. Select an available Edge device in the "Devices" step and install.
9. Log in to the Web interface of the Industrial Edge device on which the application is deployed.
10. Find the application in the "Apps" page on the device interface.
11. Click the application icon, which opens a separate Web page.
12. The Web page shows fundamental information about the CPU's address. Note its MAC address. You will use this address to search for the CPU in TIA Portal.

Checking the health of CPU core isolation and network isolation

During the deployment of the CPU 1517V, one CPU core is isolated to the application. This is necessary to achieve deterministic real-time PLC behavior. To check that this assignment was successful, and that the isolation works properly, follow these steps:

1. Open the Web interface of the Industrial Edge device.
2. Navigate to Settings on the left pane.
3. Navigate to the Resource Manager tab.
4. Check to see that a core is visible under "Enabled Resources > siemens.com/isolated_core". Confirm that it is occupied by the CPU 1517V and that it is healthy.
5. Check that a network is visible under "Enabled Resources > siemens.com/isolated_network". Confirm that it is occupied by the CPU 1517V and that it is healthy.

2.3 Ensuring system stability

To ensure system stability, pair the Edge device running the CPU 1517V application with infrastructure that includes a backup battery.

2.4 STOP mode scenarios

The CPU 1517V enters STOP mode after you perform any of the following actions:

- Update the Edge device
- Update the CPU 1517V application
- Restart the Edge device
- Change the network configuration of the Edge device

Required settings

3

3.1 Hypervisor settings for realtime computation and communication

3.1.1 Note about the hypervisor

The settings described in this chapter apply specifically to the VMWare ESXi hypervisor. Only the ESXi hypervisor can provide real-time and deterministic calculation and communication performance at industrial standards. Other hypervisors, such as the Hyper-V, do not have this capability.

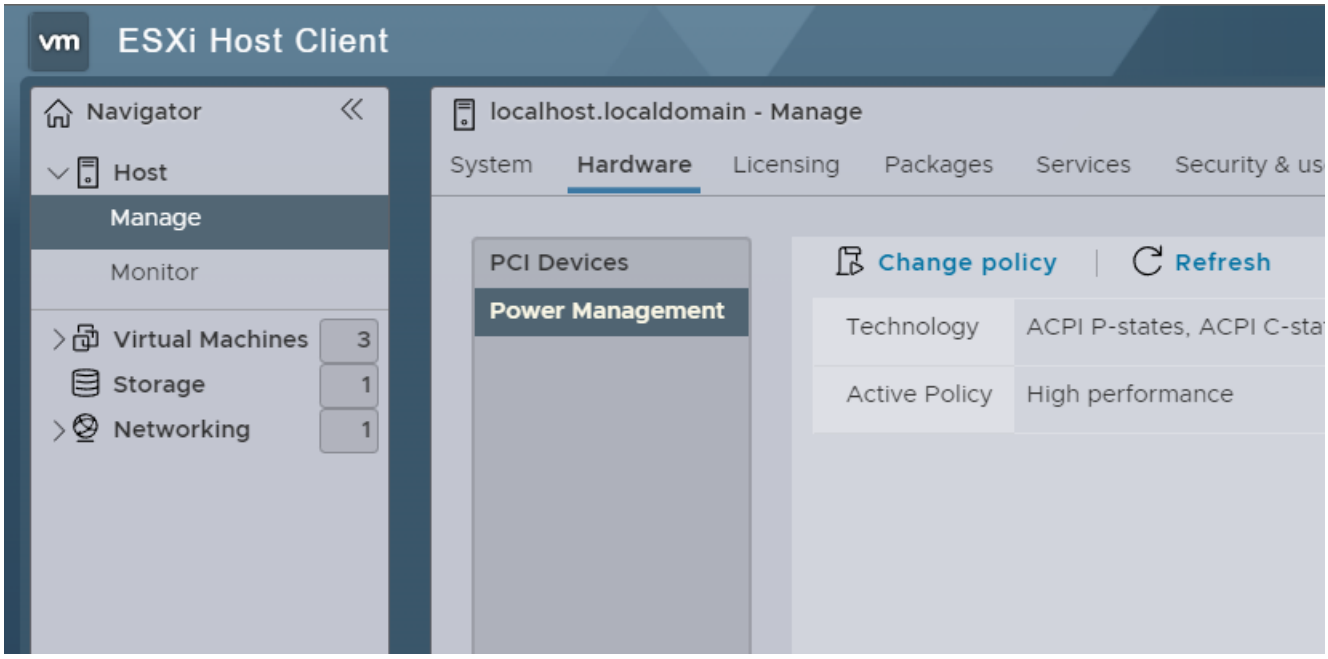
3.1.2 Introduction to VMWare ESXi settings

You can run the CPU 1517V on the Industrial Edge Virtual Device (IEVD) (https://support.industry.siemens.com/cs/ww/en/view/109809569) runtime platform. You can install IEVD as a virtual machine on VMWare ESXi. You must configure some settings on ESXi for the CPU 1517V application.

Refer to the VMWare Compatibility Guide search page (https://compatibilityguide.broadcom.com/search?program=server&persona=live&column=partnerName&order=asc) to find supported devices. Search to find your Siemens device and select the model to view details. Use a compatible device to ensure proper behavior.

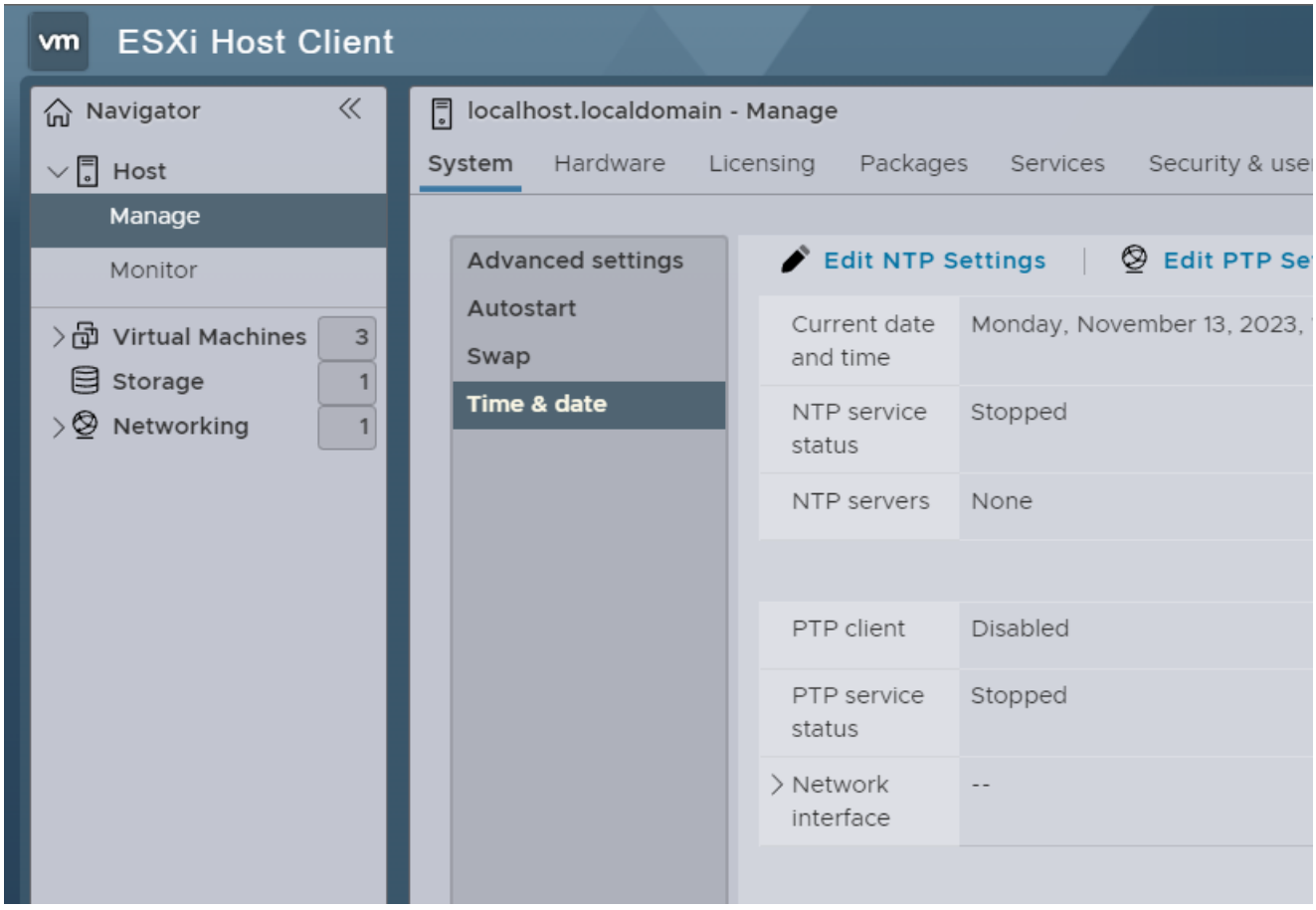
3.1.3 Configuring power management

To configure power management in VMWare ESXi, set Active Policy to High performance:



3.1.4 Setting the time and date

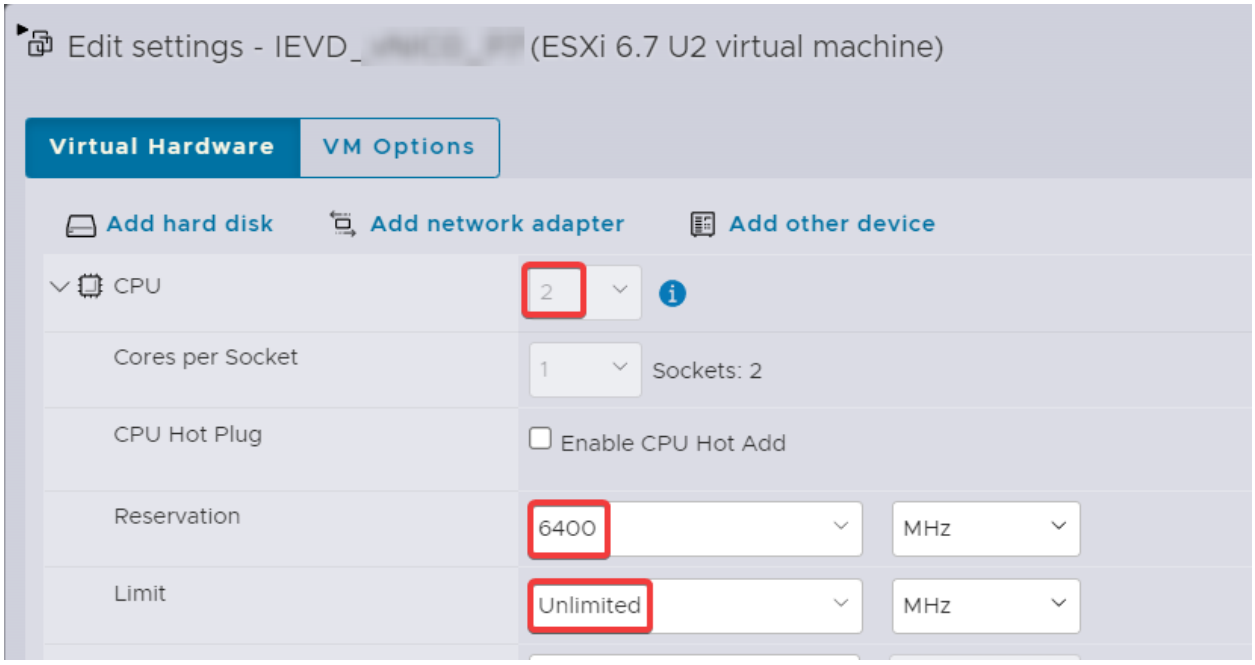
Set the accurate time and date to be able to onboard the IEVD to Industrial Edge Management successfully. You can set the time manually or use an NTP server reachable from your network.



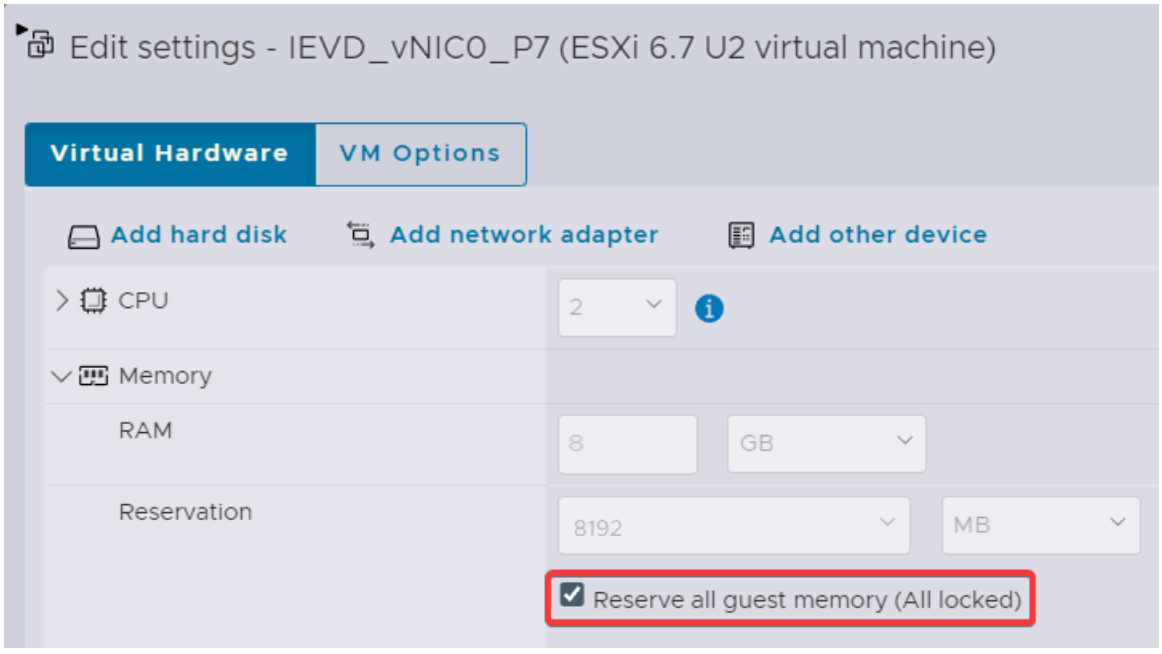
3.1.5 Setting the configuration required for deterministic real-time behavior

CPU 1517V requires an Industrial Edge device with Resource Manager functionality to isolate at least one CPU core to itself, which is essential to provide deterministic real-time behavior for its control operations as a PLC. This isolation occurs during a deployment of the application; however, Industrial Edge Virtual Device requires that you correctly configure the following specific ESXi settings for the virtual machine:

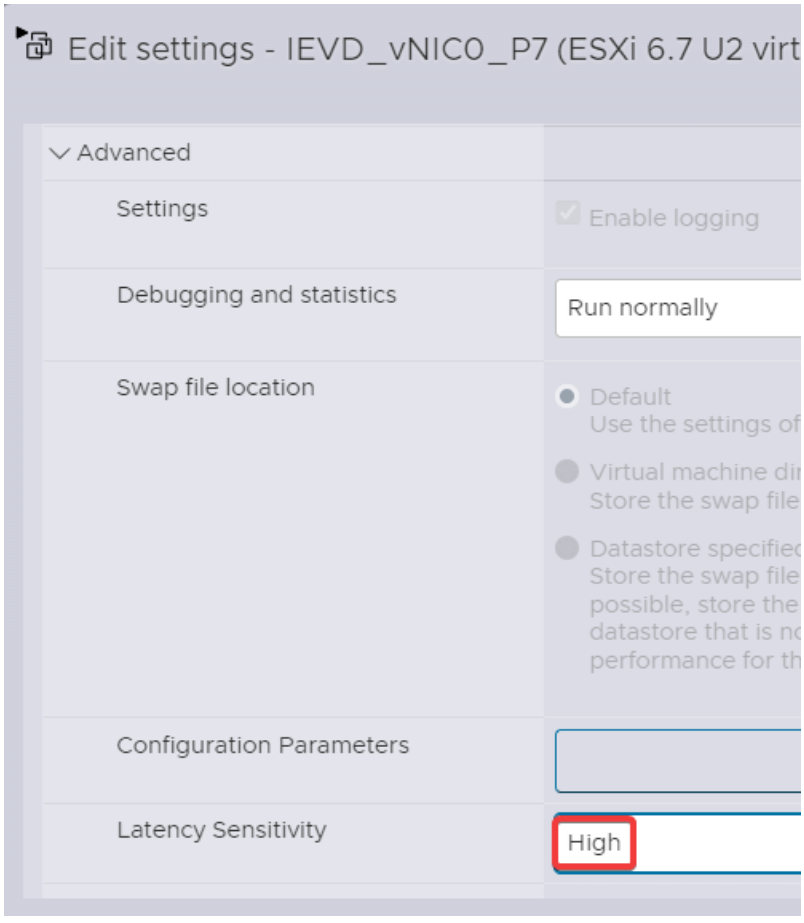
- "Edit Settings > Virtual Hardware > CPU":
  - Set the number of CPUs to at least two, as one will already be isolated to the CPU 1517V application.
  - Reservation: Set the corresponding computation power according to the following formula:
    number of vCPU cores assigned to the VM * frequency of the host CPU in MHz
    (Example: VM was assigned two cores, and the host CPU has 3.7 GHz --> Make a reservation of 7400 MHz)
  - Limit: Set this to 'Unlimited' for safe measure.



- "Edit Settings > Virtual Hardware > Memory > Reservation": Reserve all guest memory (All locked)



- "Edit Settings > VM Options > Advanced > Latency Sensitivity": High



NOTE

Above settings required for real-time control

The above settings are necessary. You must apply these settings to enable deterministic real-time behavior for control operations. If you do not apply these settings, your application will deploy, but it will not have real-time control.

3.2 STEP 7 settings

3.2.1 Rules for programming CPU 1517V

For details on reusing a STEP 7 program created for a standard hardware CPU in CPU 1517V, or vice versa, and to learn about know-how protection for such program blocks, refer to the following section in the TIA Portal information system:

"Information System > Editing devices and networks > Configuring devices and networks > Creating configurations > Configuring automation systems > Principle of operation of virtual CPUs > Rules for programming a virtual CPU"

3.3 Communication settings

3.3.1 Communication with other Edge applications running on the same device

If an app running on an IED needs to communicate with a CPU 1517V running on the same IED, special steps must be taken.

Step 1:
Decide which Edge device interface to use as the Edge App Gateway Interface.
Decide which Edge device interface to isolate to the CPU 1517V.
Connect both interfaces to the same network switch using two Ethernet cables.

Example:
You choose ens160 as the App Gateway Interface and ens192 as the CPU 1517V interface.

Step 2:
Decide what IP and subnet your CPU 1517V will use.
In a later step, you will use an engineering tool such as TIA Portal or SIMATIC Automation Tool to set the IP in the CPU 1517V.

Example:
You plan to assign the CPU 1517V an address of 192.168.0.20 and a subnet mask of 255.255.255.0.

Step 3:
Edit the Network Interface you chose as the Gateway Interface in Step 1.
Enable the "Gateway Interface" setting.
Configure a static IP address for this interface in the same subnet as the CPU 1517V IP that you chose in Step 2.

Example:
You chose ens160 for the Gateway Interface, so you will configure ens160. You enable the Gateway Interface setting and assign an IP of 192.168.0.10 and subnet mask 255.255.255.0. Notice that the IP address was carefully chosen not to conflict with the CPU 1517V's IP address.

Step 4:
Connect your engineering station to the same network as the CPU 1517V.
Set the IP address in the CPU 1517V using an engineering tool like TIA Portal.

Example:
You chose 192.168.0.20 in Step 2, so you configure your TIA Portal project PLC with that IP address and a matching subnet mask. You then download your program from TIA Portal.

Finish:
Edge Apps running on the same IED as the CPU 1517V should now be able to communicate with the CPU 1517V.

Licensing

4

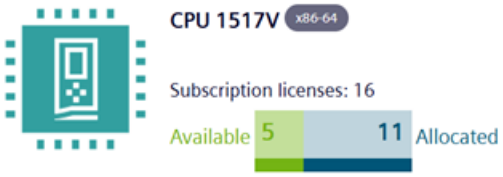
4.1 Licensing requirements for the Virtual Controller

Subscriptions to application licenses

You must purchase the following entitlement. After purchasing, the entitlement for the Virtual Controller application should be visible in the corresponding Industrial Edge Hub:



The quantity purchased is reflected as the number of 'available' subscription licenses for the application:



To use the licenses for the application, at least one license should be allocated to the Industrial Edge Management system that the target Industrial Edge Device belongs to. Manage the subscriptions using these steps:

1. Log into the Industrial Edge Hub.
2. Go to the Library.
3. Go to the application "CPU 1517V".
4. Select entitlement "run-plc".
5. Select the target IEM instance.
6. Click "Manage Subscriptions".
7. Click "+" in the "Actions" column to allocate subscriptions.

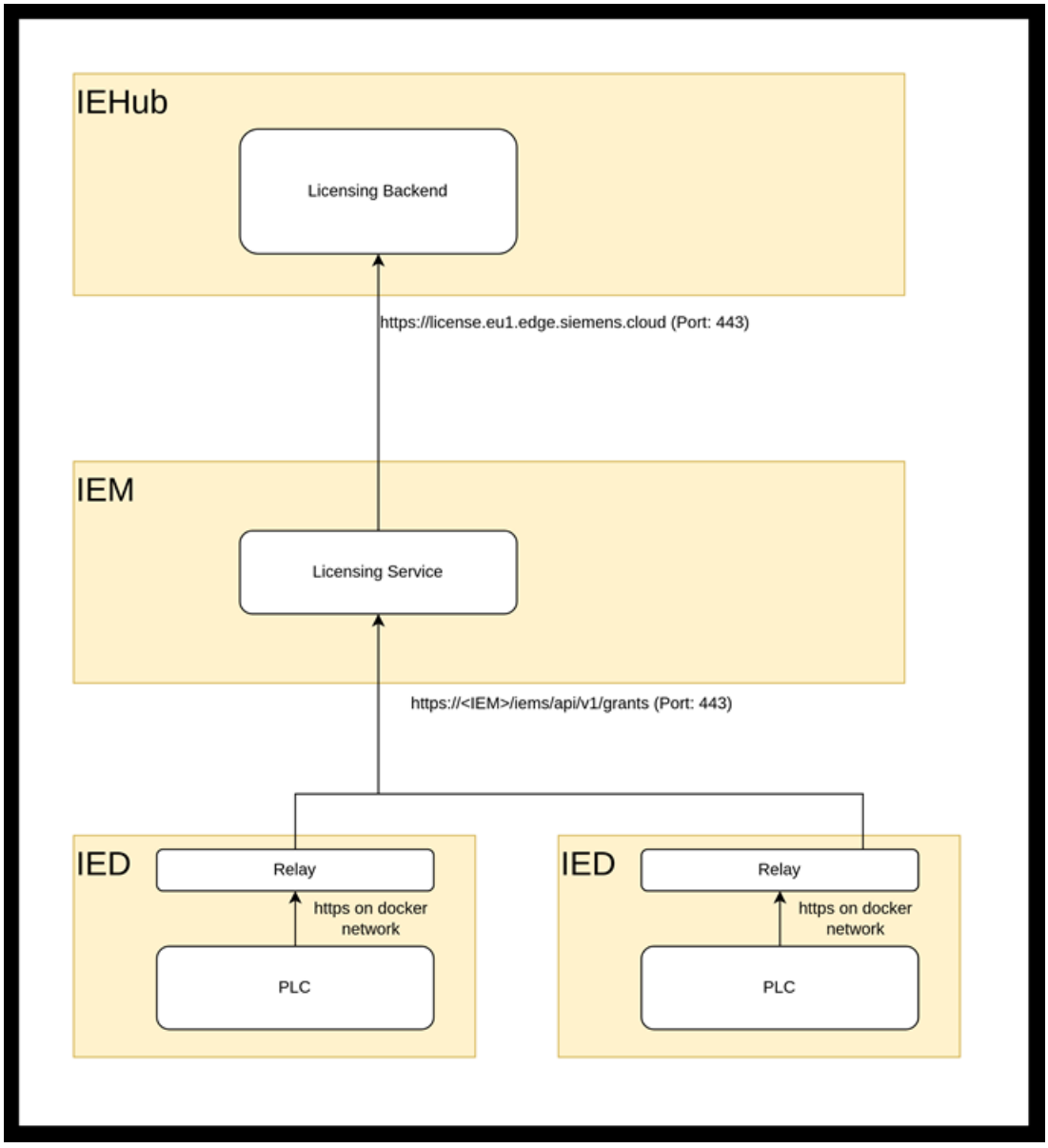
Infrastructural requirements

The Virtual Controller application requires a connection to the backend licensing service. This connection is established through the Industrial Edge Management system. Therefore, the Industrial Edge device that the application runs on should be connected to the management system and the management system should be connected to the Internet.

You must allow traffic to *license.eu1.edge.siemens.cloud*. You might also need to alert your IT admins to whitelist traffic to this address.

See the Industrial Edge documentation Web site (https://docs.industrial-operations-x.siemens.cloud/r/en-us/industrial-edge-platform-operation-get-started-operate/security/system-overview) for security information related to Industrial Edge. To ensure the infrastructure is set up to enable licensing, see the following sections:

- "Certificates"
- "Contacted domain names"
- "IP protocols and ports"



License handling at runtime

To run the Virtual Controller application with a license, the aforementioned requirements must be met:

- The application must be connected to the backend licensing service through the IEM system.
- You must allocate a sufficient number of subscriptions for the application to the corresponding management system.

When you start the CPU1517V Industrial Edge application for the first time, license grant monitoring does not begin immediately. License grant monitoring starts when you download an automation configuration to the CPU. This contains hardware and address configurations. If the CPU does not yet have such configurations, the licensing state is one of the first two states in the following table. You can also see this state information in the application's Web UI.

After you download a configuration, the following is true, depending on the availability of the connection and a license:

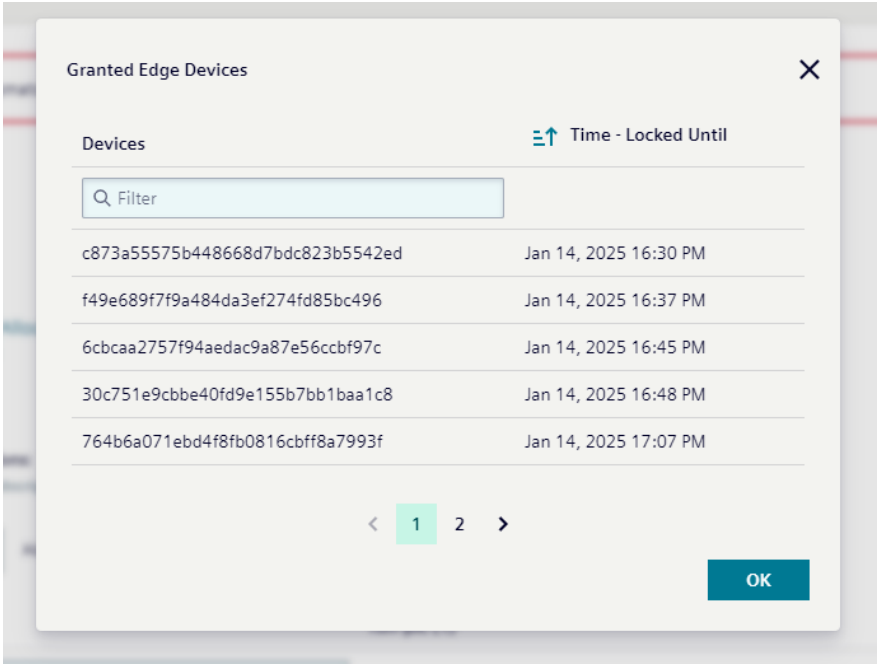
- If a license cannot be granted for the application, the PLC can go into RUN mode for two hours. If the requirements for getting a license are not met within two hours, the PLC goes into STOP mode, and it cannot return to RUN mode.
- If a license was previously granted, but later the connection fails, then the application has a seven-day grace period to establish the connection. If the issue that led to the grace period cannot be resolved within seven days, the PLC goes into STOP mode if it was previously in RUN mode; it cannot return to RUN mode until the conditions for a successful license grant are fulfilled.
  - In the first hour of the seven-day grace period, the PLC goes into "maintenance required" mode.
  - In the remaining grace period, the PLC goes into "maintenance demanded" mode.

The following table shows various licensing states and the corresponding Industrial Edge app logs and diagnostic entries in the TIA Portal:

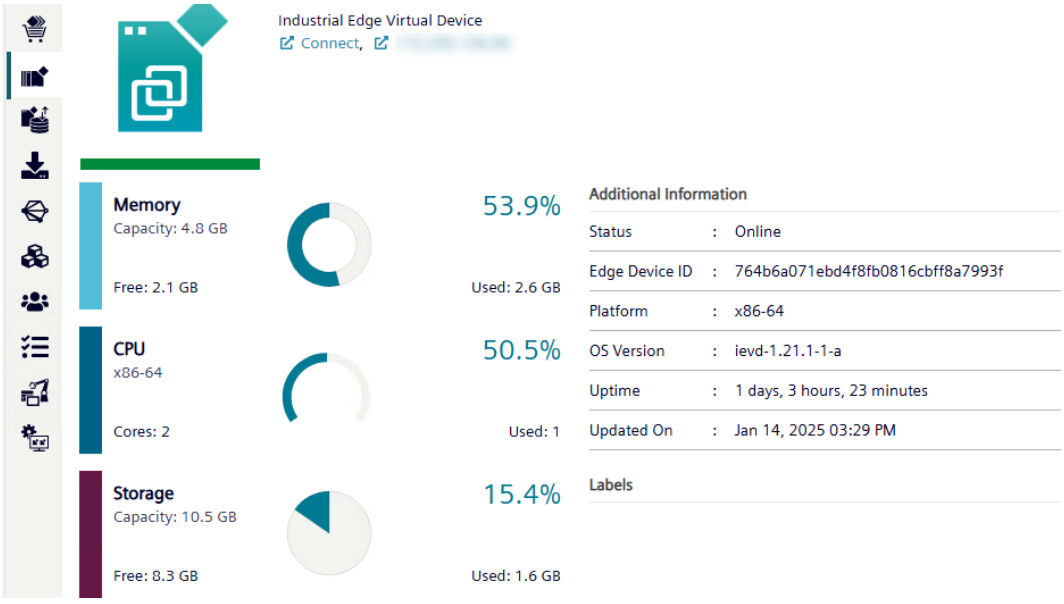
State number	Conditions	State (on the Web UI)	Edge application log message	Diagnostic message in TIA Portal	Frequency of the message
0	The application is started, but there is no hardware or address configuration on it. Also, there is no connection between the app and the backend licensing service.	Not connected to backend service	"Warning: Not connected to backend licensing service. The application will not be able to grant a license. Please check your connection."	None	-
1	The application is started but there is no hardware or address configuration on it. The app and the backend licensing service are connected.	Connected to backend service	"Info: Connected to backend licensing service but grant monitoring has not been started yet."	None	-
2	A license has been granted for the application.	License granted	None	None	-
3	There is a hardware or address configuration on the CPU so that the license grant monitoring has begun, but the app failed to get a license.	In default grace period: <xyz> minutes to expire	None	"License storage not available or not accessible"	Once in 10 mins (within 2 hours of default grace period)
4	The application was previously granted a license, but now there is an issue with the connection or the license itself.	In extended grace period: <xyz> hours to expire	None	"License storage not available or not accessible"	Once an hour (within seven days of extended grace period)
5	The default or extended grace period has expired and the conditions for a successful license grant are still not fulfilled.	Grace period has ended: Cannot enter RUN mode	None	"Insufficient licensing for functional package"	Only once

Identifying devices with licensing

When the entitlement 'run-plc' is granted to a vPLC instance, a subscription license for the entitlement is locked on the backend license server. The Industrial Edge device on which the application is running appears in the list of 'Granted Edge Devices' on the IE Hub. The device is represented by its Device ID in the list:



You can find a device's ID in the device properties on the corresponding IEM. When you log into Industrial Edge Management and click on a device in the 'Edge Devices' tab, the Edge Device ID appears under "Additional Information":



4.2 Getting the license state programmatically

Apart from the application's Web UI, logs, and the diagnostic messages on TIA Portal, the licensing state can also be retrieved programmatically within a STEP 7 program. The application provides a datarecord for the licensing state information, which you can read using the function "RDREC: Read data record".

The required inputs for the RDREC instruction are:

- ID: 50
- INDEX: 102
- RECORD: Array [0..370] of Byte

Information returned within the datarecord has the following structure:

Information	Data type	Start position
Whether the license is active or not	UDInt	0
Licensing state number	UDInt	4
Remaining time to expiration (in seconds) when in a grace period	ULInt	8
Licensing state text (as seen on the Web UI)	Array [0..254] of Byte	16

Licensing state examples

The following image shows an SCL code example:

```
#instReadRecord(REQ    := true,
                ID     := 50,
                INDEX  := 102,
                MLEN   := 0,
                RECORD := #statRecord);

#statPos := 0;
#tempRv := READ_LITTLE(src_array := #statRecord, dest_Variable => #statLicenseInfo.active, pos := #statPos);

#statPos := 4;
#tempRv := READ_LITTLE(src_array := #statRecord, dest_Variable => #statLicenseInfo.stateNum, pos := #statPos);

#statPos := 8;
#tempRv := READ_LITTLE(src_array := #statRecord, dest_Variable => #statLicenseInfo.remainingTime, pos := #statPos);

Chars_TO_Strg(Chars  := #statRecord,
              pChars := 16,
              Cnt    := 255,
              Strg   => #statLicenseInfo.stateText);
```

The following shows an example of the information returned when in the extended grace period:

▼	statLicenseInfo	Struct		
	active	UDInt	0	1
	stateNum	UDInt	0	4
	remainingTime	ULInt	0	600260
	stateText	String	''	'In extended grace period: 167 hours to expire'

Product limitations

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5.1 Comparison to SIMATIC S7-1500 Hardware CPUs

Performance and capability comparison

The Virtual Controller application is a fully virtual version of an S7-1500 hardware PLC. The data structures of the Virtual Controller are comparable to those of hardware PLCs. More specifically, the quantity structures of the CPU 1517V are almost identical to those of its hardware equivalent CPU 1517-3 PN/DP. Check the CPU 1517V technical data (https://support.industry.siemens.com/cs/us/en/pv/6ES7587-1AP00-0AB0/td?dl=en) for more details.

The throughput performance of data processing for the Virtual Controller depends on the performance of the underlying hardware.

Functional comparison

In comparison to the existing functional scope of S7-1500 hardware PLCs, the following functionalities are not supported by the CPU 1517V:

- Legacy CPU Web server
- I/O communication send clock below 1 ms
- Profibus communication
- IRT for PROFINET communication
- Non-secure PG/PC and HMI communication
- Central IO & pluggable interfaces
- Basic/Advanced motion control
- Topology
- Data retention in case of power loss
- User-defined Web pages using AWP technology
- HTTP communication for Web server
- Block binding

5.2 Retaining data

Data is not retained in case of a power failure. However, data is retained in graceful shutdown scenarios where, for example, the Industrial Edge Device is powered off/on or restarted, or the CPU 1517V application is restarted or stopped/started from the Industrial Edge interface.

When the CPU1517V application is installed from scratch with a proper TIA Portal project, the “Retentive data lost” diagnostic entry appears in the diagnostic buffer as a system behavior.

5.3 Web server functionality

CPU 1517V does not support user-defined pages or the legacy Web server functionality of the hardware-based S7-1500 controllers.

If you change devices from an S7-1500 controller to a CPU 1517V, and you currently use the user-defined pages or legacy functionality of the Web server, you will no longer have access either of these functionalities in the CPU 1517V. Your program will continue to compile with the WWW instruction, but the "User-defined pages" link and items like “Permit access only with HTTPS” will no longer be visible from the Web server configuration.

For Web server functionality, Siemens recommends taking advantage of the Web API "Web applications" functionality. See "Web applications that can be loaded by the user" in the S7-1500 Web server Function Manual (https://support.industry.siemens.com/cs/ww/en/view/59193560).

Known Issues

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6.1 Online connection failure

Under some circumstances, a communication lock-up might occur. TIA Portal and HMI devices might become unable to access the device. Currently, an application restart is the only method to regain online communication.

6.2 STEP 7 functions visible but unsupported

The following functions appear to be available in STEP 7, even though they are not supported by the CPU 1517V:

- "Technology > Counting, measurement, cams > High_Speed_Counter"
- "Technology > Counting, measurement, cams > SSI_Absolute_Encoder"
- "Technology > Counting, measurement, cams > DQ4_CAM"
- "Technology > SINAMICS Motion Control > BasicPosControl"

6.3 Application latency when restarting the IEVD

Restarting the IEVD might cause the CPU 1517V application to become unresponsive. To prevent this, stop the application before restarting the IEVD. If you encounter this issue, restart the CPU 1517V application.

6.4 Issues with SFC 45 (D_ACT_DP)

Using SFC 45 (D_ACT_DP) in your automation program might cause the PLC to throw a serious firmware exception issue. Siemens recommends that you do not use this system function.

6.5 CPU 1517V unreachable from the TIA Portal

The CPU 1517V might become unreachable in the TIA Portal after a period of time. If you encounter this issue, restart the CPU 1517V.

6.6 Application restart

Downloading a modified automation program might rarely result in an unnecessary restart of the CPU 1517V application. When this happens, a false alarm appears in the application logs.

Additional features

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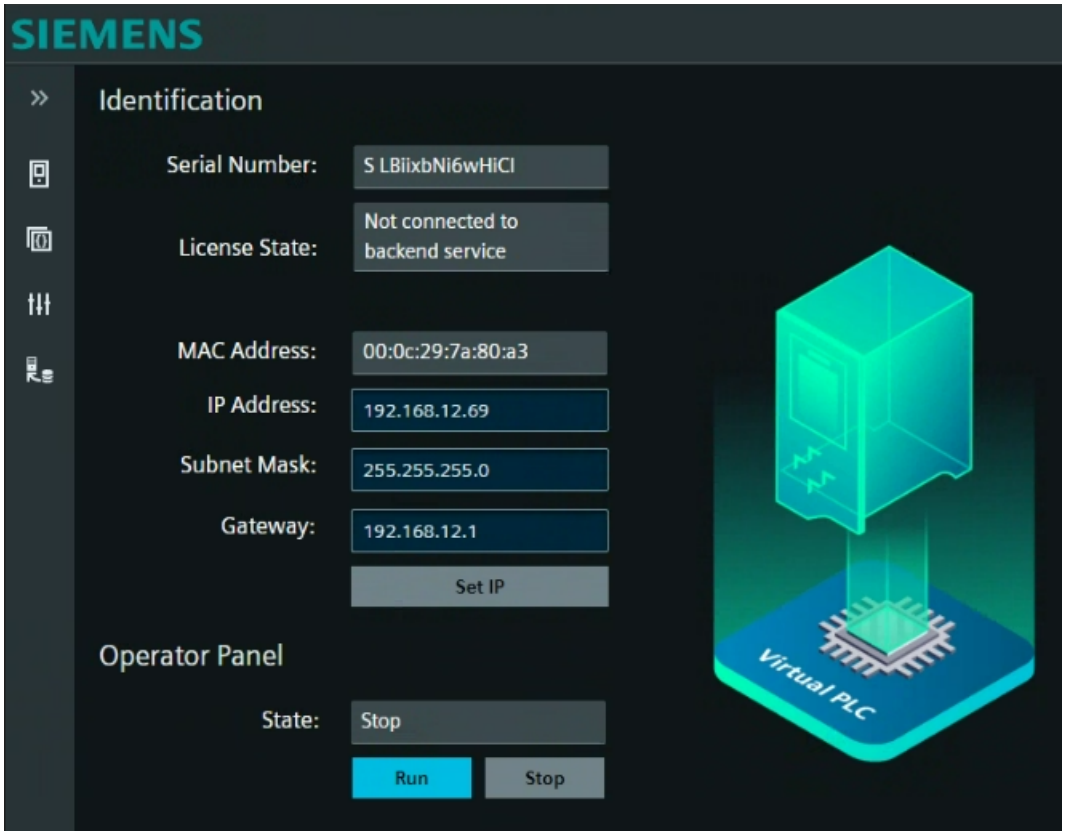
7.1 Application Web Interface

Use the Application Web Interface to view fundamental information about the vPLC, configure the IP address, check and change the operating mode, and access help for using the REST API.

To access the Application Web Interface, follow these steps:

1. Find the application in the "Apps" page on the device interface.
2. Click the application icon, which opens a separate Web page.

The Web page shows information about the CPU, including the IP address suite, MAC address, and operating mode.



Navigate to the API tab for details about the REST API, including a specification.



Glossary

IED

Industrial Edge Device

IEM

Industrial Edge Management

IEVD

Industrial Edge Virtual Device

VM

Virtual machine