



IPS®SYSTEMS

Hardware and Software Requirements

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1 General

This document deals with specific hardware and software requirements for using the IPS[®]SYSTEMS applications in client/server environments. This paper will be released every year. Please compare your infrastructure on a recurrence frequency with this document. IPS can just guarantee a stable software environment with up-to-date hardware equipment.

2 Hardware Requirements

2.1 Clients

2.1.1 IPS[®]ENERGY

- › Windows 10 Professional/Enterprise (64-bit)
- › Windows 11 Professional/Professional for Workstations/Enterprise (64-bit)
- › 8 GB RAM (Random Access Memory) is mandatory (16 GB RAM Recommended)
- › 1 GB network connection (Standard Cat 5e/6/7 Ethernet)
- › 256 GB flash memory (SSD) or 10k SAS/SATA Business drive with a minimum of 150 GB free disk space
- › Screen resolution of 1920 x 1080 (widescreen) with 16,7 Million colors

2.1.2 IPS[®]LUNA

- › Windows 10 Professional/Enterprise (64-bit)
- › Windows 11 Professional/Professional for Workstations/Enterprise (64-bit)
- › 8 GB RAM (Random Access Memory) is mandatory. (16 GB RAM Recommended)
- › 1 GB network connection (Standard Cat 5e/6/7 Ethernet)
- › 256 GB flash memory (SSD) or 10k SAS/SATA Business drive with a minimum of 150 GB free disk space
- › Screen resolution of 1920 x 1080 (widescreen) with 16,7 Million colors

Recommended browser for use with IPS[®]LUNA is MS EDGE Chromium or any browser with Chromium engine.

We recommend a minimum resolution of 1920 x 1080. Please be aware that the hardware configuration can also influence the browser performance.

2 Hardware Requirements

IPS[®]LUNA supports the following browsers:

- › Google Chrome
- › Mozilla Firefox
- › Microsoft EDGE Chromium

2.1.3 IPS[®]Publisher

- › Windows 10 Professional/Enterprise (64-bit)
- › Windows 11 Professional/Professional for Workstations/Enterprise (64-bit)
- › 16 GB RAM (Random Access Memory)
- › 1 GB network connection (Standard Cat 5e/6/7 Ethernet)
- › 256 GB flash memory (SSD) or 10k SAS/SATA Business drive with a minimum of 150 GB free disk space
- › Screen resolution of 1920 x 1080 (widescreen) with 16,7 Million colors

IPS[®]Publisher can be used with default browser installations. We recommend a minimum resolution of 1920 x 1080. Please be aware that the hardware configuration can also influence the browser performance.

IPS[®]Publisher supports the following browsers: including browser support for iPhone, iPad, and different kinds of tablets:

- › Google Chrome
- › Mozilla Firefox
- › Microsoft EDGE Chromium

2.1.4 IPS[®]SmartGridDI

- › Notebook or PC with Intel Core i5/i7 processor, 2.8 GHz
- › 16 GB RAM (Random Access Memory)
- › 1 GB network connection (Standard Cat 5e/6/7 Ethernet)
- › 256 GB flash memory (SSD) or 10k SATA Business drive with a minimum of 150 GB free disk space
- › Screen resolution of 1920 x 1080 (widescreen) with 16.7 million colors
- › Windows 10 Professional/Enterprise (64-bit)
- › Windows 11 Professional/Professional for Workstations/Enterprise (64-bit)
- › Microsoft .NET Framework 4.7.2

IPS[®]SmartGridDI can also be installed directly on the server.

2.1.5 IPS[®]MobApp

- › Tablet with iOS 10 or Android
- › IPS recommends larger screens for optimized app usage (9.7 inches and larger)

2.2 Database Server Configuration

- › IPS[®]ENERGY and IPS[®]SmartGridDI
- › General recommendations for server configuration (valid for all types of installations and number of users)
- › 64-bit system Microsoft Windows Server 2016, 2017, 2019, 2022
- › Officially supported and recommended SQL Database Versions and Compatibility Level for IPS applications and components:
 - The latest version recommended is SQL Server 2019 (Compatibility Level 150)
 - The minimum supported (or the oldest version supported) is SQL Server 2016 Service Pack 1 (Compatibility Level 130)
- › Redundant power supply (2 x 560 W recommended)
- › UPS systems (Uninterruptible Power Supply)
- › **In case that IPS[®]SmartGridDI is installed on the same server where IPS[®]ENERGY is already installed, 16 GB of RAM should be added to the below configuration, and the storage capacity increased by 50%.**

Based on the number of users IPS recommends the following server configurations:

From 1 to 50 users or below 100 000 assets:

- › Intel[®] Xeon[®] Silver 4216
- › 32 GB DDR4-2400MHz Qualified Server Memory with address error detection
- › 10k SATA Business RAID1/ RAID5/ RAID10 Hot Swap Disks with 4 x 300 GB with a minimum of 300 GB free disk space
- › Recommended Disk Read/Write sequential performance should be at least 1600MB/s.
- › 1 GB network connection (Standard Cat 5e/6/7 Ethernet)

From 51 to 200 users or between 100 000 and 500 000 assets:

- › Intel® Xeon® Gold 6240
- › 64 GB DDR4-2933MHz Qualified Server Memory with address error detection
- › 10k SATA Business RAID1/ RAID5/ RAID10 Hot Swap Disks with 4 x 300 GB with a minimum of 300 GB free disk space
- › Recommended Disk Read/Write sequential performance should be at least 1600MB/s.
- › Redundant power supply (2 x 560 W recommended)
- › 1 GB network connection (Standard Cat 5e/6/7 Ethernet)

From 201 to 500 users or up to million assets:

- › Intel® Xeon® Platinum 8268
- › 128 GB DDR4-2933MHz Qualified Server Memory with address error detection
- › 15k SAS RAID1/ RAID5/ RAID10 Hot Swap Disks with 8 x 300 GB with a minimum of 1.5 TB free disk space
- › Recommended Disk Read/Write sequential performance should be at least 1600MB/s.
- › Redundant power supply (2 x 560 W recommended)
- › 2 x 1 GB network connection (Standard Cat 6/7 Ethernet) on 2 separated Ethernet cards or one Fiber Channel connector with up to 10 GB

Over million assets:

For more than million assets special configuration fitting your needs must be built within an installation project. In this case, IPS recommend at least multiple SQL Servers and a Fiber Channel Network with a speed up to 10 GB.

NOTE: The given numbers of users and assets present a high-level estimation. Many other factors should be taken into consideration, e.g., historical records, module groups used, and data type stored, use of analytics, settings, and parameters, CIM data models, storing of real-time data.

2.3 Applications Server Configuration

General recommendations for server configuration (valid for all types of installations and number of users)

- › 64-bit system (Microsoft Windows Server 2016, 2019, 2022)
- › Redundant power supply (2 x 560 W recommended)
- › UPS systems (Uninterruptible Power Supply)

Following applications can be installed on the applications server:

- › IPS[®] Identity Provider
- › IPS[®]LUNA
- › IPS[®]Publisher
- › IPS Windows Services (oData, NIOM, MRI, OMS, NMM)
- › IPS[®] WEB Services
- › IPS[®]SmartGridDI Windows Services
- › IPS[®]SmartGridDI WEB Services

Minimum hardware requirements for server machine (based on 1-20 users):

- › Intel[®] Xeon[®] Silver 4216
- › 32 GB DDR4-2400MHz Qualified Server Memory with address error detection
- › 10k SATA Business RAID1/ RAID5/ RAID10 Hot Swap Disks with 4 x 300 GB with a minimum of 150 GB free disk space
- › Recommended Disk Read/Write sequential performance should be at least 1600MB/s.
- › 1 GB network connection (Standard Cat 5e/6/7 Ethernet)
- › Windows Server 2016 or 2019 Server Standard / Datacenter Edition

Depending on the number of users, follow the scale of the number of users/server hardware configuration of chapter 2.2.

2.4 LAN Infrastructure

In the case of simultaneous synchronization (replication) of large amounts of data, or large numbers of mobile clients a high-speed, non-overloaded LAN is recommended. IPS recommends a network speed of at least 1 GB or higher. For several configurations with high data volume, a network speed up to 10 GB can be useful.

2.5 Virtualization

All IPS®SYSTEMS products support virtualized infrastructure based on VMWare ESX Hypervisor Technology, Microsoft Hypervisor Technology and Citrix.

Hardware requirements in virtualized infrastructure remain the same. The customer is responsible for respecting the license agreements for virtualized machines.

2.6 General Note

The hardware specifications in this document are based on the available hardware in September 2020. This document will be renewed and adapted to the needs of the IPS®SYSTEMS if necessary. Nevertheless, please check this document regularly.

3 Software Requirements

3.1 Operation System

The IPS®SYSTEMS applications – IPS®ENERGY, IPS®LUNA, IPS®Publisher and IPS®SmartGridDI – can run on one of the following platforms (Windows operating systems on hardware platform x64 are supported only):

3.1.1 Server (only 64-bit)

- › Microsoft Windows Server 2016
- › Microsoft Windows Server 2019
- › Microsoft Windows Server 2022

3.1.2 Clients (only 64-bit)

- › Microsoft Windows 10 Pro
- › Microsoft Windows 10 Enterprise
- › Windows 11 Professional
- › Windows 11 Professional for Workstations
- › Windows 11 Enterprise

3.1.3 Mobile Clients (supported OS versions for mobile application)

- › iOS supported versions

| Version | Release Date |
|---------|--------------|
| 10.3.3 | 19-Jul-2017 |
| 10.3.4 | 22-Jul-2019 |

3 Software Requirements

| | |
|--------|-------------|
| 12.4.8 | 15-Jul-2020 |
| 13.7 | 1-Sep-2020 |
| 16.1 | 9-Nov-2022 |

- › Android supported versions

| Version | Release Date |
|-----------|--------------|
| 8.0 - 8.1 | 21-Aug-2017 |
| 9 | 6-Aug-2018 |
| 10 | 3-Sep-2019 |
| 12 | 4-Oct-2021 |

- › Windows 10 support versions

| Version | Release Date |
|---------|--------------|
| 1709 | 18-Jan-2018 |
| 1803 | 30-Apr-2018 |
| 1809 | 13-Nov-2018 |
| 1903 | 21-May-2019 |
| 1909 | 12-Nov-2019 |
| 2004 | 27-May-2020 |
| 20H2 | 20-Oct-2020 |
| 21H1 | 18-May-2021 |
| 21H2 | 16-Nov-2021 |

- › Windows 11 support versions

| Version | Release Date |
|---------|--------------|
| 21H2 | 04-Oct-2021 |
| 21H2 | 20-Sep-2022 |

Recommended RAM for any PC client configuration is a minimum of 8 GB (16 GB recommended), therefore x64 version of Windows Operating system must be used.

([https://msdn.microsoft.com/en-us/library/windows/desktop/aa366778\(v=vs.85\).aspx](https://msdn.microsoft.com/en-us/library/windows/desktop/aa366778(v=vs.85).aspx))

NOTE: It is recommended to use the latest available Service Pack for your system.

3.2 Cloud

If the application is hosted on an IPS[®]ENERGY cloud server, each application server must have installed:

- › IPS[®]ENERGY application with all prerequisites

- › Microsoft Office 2013/2016/2019 or Libre/Open Office software package
- › PDF reader (Adobe reader preferred)

If the application is hosted on an IPS[®]ENERGY cloud server, the client computer must run an application that can be used to connect to Microsoft RemoteApp service.

3.3 Database

The IPS[®]ENERGY application is based on the relational database management system (RDBMS). The SQL Server must be installed on the server computer (according to 2.2, the latest recommended version is SQL Server 2019; the minimum supported is SQL Server 2016 Service Pack 1), Standard or Enterprise Edition, depending on the project-specific or IPS usage requirements. SQL Server Standard Edition provides basic data management and business intelligence for small departments and organizations to run applications. SQL Server Enterprise Edition is generally the best solution for large organizations, offering fast, high-performance data center availability, unlimited virtualization, and end-to-end enterprise analytics. To see a comparison of key features between Editions, check the [official Microsoft website](#).

3.4 IPS[®]ENERGY Mobile Clients

In a mobile client/server scenario the IPS[®]ENERGY database, located on the SQL Server, will be replicated to the client for application offline usage. To do so a local database must be installed on the client. For efficient future system administration and performance, IPS recommends installing SQL Server 2019 on the client computer (minimum supported is SQL Server 2016 Service Pack 1).

For exceptional cases, a small data size, or a temporary project development period, the SQL Server Express Edition can be used (the latest recommended version is 2019, the minimum supported is 2016 SP 1). The Express Edition is limited by Microsoft License Policy to 10 GB of data volume. In case of running a system with SQL Server Express Edition, the local IPS[®]ENERGY installation will stop working when exceeding 10 GB data. In this case, it may come to data loss on the client computer (impossible synchronization). The SQL installation on the server must be the same as on the local machine. (For merge publication the subscriber version must not exceed the publisher version.)

3.5 Network (Desktop Clients)

The IPS[®]ENERGY client software without a local database installation requires an SQL Server Native Client installation.

3.6 Client Access Rights

The IPS[®]ENERGY user management is based on the pre-existing management capabilities of Active Directory and/or Windows Server domain. Additionally, MS SQL Server access roles are used. A specific domain user account is required with a permanent password used by the SQL Server Agent on the server.

For the functionality of the initial replication snapshot distribution in client/server environments a public shared directory with read-only access rights for the IPS[®]ENERGY users are needed on the computer where the central SQL Server is installed.

3.7 Windows Firewall

For all computers which participate in the database replication (all client computers with a local database and the server computer) the TCP/IP communication using the default TCP/IP port 1433 defined for SQL Server default instance must be ensured.

This means that either the SQL Server service or the TCP/IP port 1433 must be added to the Windows Firewall exception list if the Windows Firewall is enabled. In case another software or hardware-based firewall is installed the appropriate settings must be set as defined above.

3.8 .NET Framework

The IPS[®]ENERGY software uses and requires the .NET Framework 2.0.

The .NET Framework 3.0 installed with Microsoft Windows Vista and the .NET Framework 3.5 are fully compatible with .NET Framework 2.0.

For the IPS[®]Publisher and IPS[®]SmartGridDI, .NET Framework 4.7.2 is required on the server and client side.

Starting from the IPS[®]ENERGY application version v1.93.81 - "Release 2019-06-14", and up to version v1.93.99, for the server and for the client is required to install version .NET Framework 4.7.2.

Starting from the IPS[®]ENERGY application version v1.93.100 - "Release 2020-03-17", for the server and for the client is required to install version .NET Framework 4.8.

3.9 Internet Browser

The internet browser must support PNG transparency in order to view the help files correctly. Microsoft EDGE Chromium browser installation is recommended.

NOTE: Microsoft EDGE Chromium and Non-Microsoft browsers like Firefox, Opera, and Chrome are supporting PNG transparency as well.

3.10 OMICRON SW & CAPE NI Application

This only applies to client machines: OMICRON TU 2.21 software version is required for all IPS[®]RELEX users with OMICRON test technology (please ask for the current version). The compatibility with newer versions could be set upon request. Computers which use the CAPE NI application must have Microsoft Access 2007 or higher installed.

Appendix

Appendix A) Example of the IPS[®]SYSTEMS Development Environment

Server 1 – Database Server:

SQL Server for following databases (single instance):

DEV instance

- › IpsEnergy (DB_DEV)
- › SGDI_configuration (DB_DEV)
- › SGDI_DI (DB_DEV)
- › IpsEnergyCache (DB_DEV)
- › IperseEnergyServices_REST (DB_DEV)
- › IpsIdentityProvider (DB_DEV)

Server 2 – Application Server:

- › Application Server with the following IPS components installed:
- › IPS[®]LUNA
- › IPS[®]Publisher
- › IPS Windows Services (oData, NIOM, MRI, OMS, NMM)
- › IPS[®] WEB Services
- › IPS[®]SmartGridDI Windows Services
- › IPS[®]SmartGridDI WEB Service

Appendix B) Example of the Development, User Acceptance Test and Production Environment

To install the complete DEV/UAT/PROD environment, the recommendations are:

Server 1 – Database Server: DEVELOPMENT and UAT

DEV instance

- › IpsEnergy (DB_DEV)
- › SGDI_configuration (DB_DEV)
- › SGDI_DI (DB_DEV)
- › IpsEnergyCache (DB_DEV)
- › IpseEnergyServices_REST (DB_DEV)
- › IpsIdentityProvider (DB_DEV)

UAT instance

- › IpsEnergy (DB_UAT)
- › SGDI_configuration (DB_UAT)
- › SGDI_DI (DB_UAT)
- › IpsEnergyCache (DB_UAT)
- › IpseEnergyServices_REST (DB_UAT)
- › IpsIdentityProvider (DB_UAT)

Server 2 – Application Server: DEVELOPMENT

- › IPS[®]LUNA
- › IPS[®]Publisher
- › IPS Windows Services (oData, NIOM, MRI, OMS, NMM)
- › IPS[®] WEB Services
- › IPS[®]SmartGridDI Windows Services
- › IPS[®]SmartGridDI WEB Service

Server 3 – Application Server: UAT

- › IPS[®]LUNA
- › IPS[®]Publisher
- › IPS Windows Services (oData, NIOM, MRI, OMS, NMM)
- › IPS[®] WEB Services
- › IPS[®]SmartGridDI Windows Services
- › IPS[®]SmartGridDI WEB Service

Server 4 – Database Server: PRODUCTION**PROD instance**

- › IpsEnergy (DB_PROD)
- › SGDI_configuration (DB_PROD)
- › SGDI_DI (DB_PROD)
- › IpsEnergyCache (DB_PROD)
- › IpseEnergyServices_REST (DB_PROD)
- › IpsIdentityProvider (DB_PROD)

Server 5 – Application Server: PRODUCTION

- › IPS[®]LUNA
- › IPS[®]Publisher
- › IPS Windows Services (oData, NIOM, MRI, OMS, NMM)
- › IPS[®] WEB Services
- › IPS[®]SmartGridDI Windows Services
- › IPS[®]SmartGridDI WEB Service