

**IPS-SYSTEMS™**

**Hardware and Software**

**Requirements:**

**IPS-ENERGY™**

**IPS-LUNA™**

**IPS-Publisher™**

**IPS-SmartGridDI™**

**(Release May 2020)**

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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)
- > 8GB 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)
- > 8GB 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.

IPS-LUNA™ supports the following browsers:

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

**2.1.3 IPS-Publisher™**

- > Windows 10 Professional/Enterprise (64-bit)
- > 16GB 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
- > Safari
- > Opera

**2.1.4 IPS-SmartGridDI™ Studio**

- > 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)
- > Microsoft .NET Framework 4.7.2

IPS-SmartGridDI™ Studio 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
- > Microsoft SQL server standard:  
2016 SP1, SP2,  
2017;  
2019;
- > Redundant power supply (2 x 560 W recommended)
- > UPS systems (Uninterruptible Power Supply)
- > In case that 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 or assets, 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 has to be built within an installation project. In this case, IPS recommends 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, etc.

### 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)
- > Redundant power supply (2 x 560 W recommended)
- > UPS systems (Uninterruptible Power Supply)

Following applications can be installed on the applications server:

- > IdentityProvider
- > IPS-LUNA™
- > IPS-Publisher™
- > IPS Windows Services (oData, NIOM, MRI, OMS, NMM)
- > IPS-WebServices
- > IPS-SGDI Windows Services
- > IPS-SGDI WebServices

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 July 2019. 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

#### 3.1.2 Clients (only 64-bit)

- > Microsoft Windows 10 Pro
- > Microsoft Windows 10 Enterprise

Recommended RAM for any PC client configuration is a minimum of 8GB (16GB 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 2016 Standard Edition must be installed on the server computer (or Enterprise Edition for easier database administration, or in case of large numbers of users (>80-100) and large amounts of data (>50 GB).

### 3.4 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 an efficient future system administration and performance, IPS recommends installing SQL Server 2016 Standard Edition on the client computer.



For exceptional cases, a small data size, or a temporary project development period, the SQL Server 2016 SP2 Express Edition can be used. 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 has to 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 is 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 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 have to have Microsoft Access 2007 or higher installed.

## Appendix

### 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)
- > IpseEnergyServices\_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-WebServices
- > SGDI Windows Services
- > SGDI Web Service

### 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)

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- > 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-WebServices
- > SGDI Windows Services
- > SGDI Web Service

### **Server 3 – Application Server: UAT**

- > IPS-LUNA™
- > IPS-Publisher™
- > IPS Windows Services (oData, NIOM, MRI, OMS, NMM)
- > IPS-WebServices
- > SGDI Windows Services
- > SGDI 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-WebServices
- > SGDI Windows Services
- > SGDI Web Service