

# Requirements for a database server

Comarch ERP Standard system runs in Client/Server architecture. In case of the simplest installation on a single workstation, both the layer of the database server and the application may be running on one workstation. In practice, the functions of the database server are available on a separate hardware platform.

Below, additional facets, which must be taken into account when creating an infrastructure for the system.

## Note

The most recent updates and Service Packs for Microsoft SQL Server are necessary for proper operation of Comarch ERP Standard and Comarch Retail system.

When installing a database server, it is important to pay attention to MS SQL server collation as well as its default language. The required collation is Latin1\_General\_CI\_AS or Polish\_CI\_AS, and the required language is English. In case of using a different collation or a case-sensitive feature or a different language, errors may occur when creating a database or during work with the system.

## Note

The collation settings of the created databases should be the same as MS SQL server collation settings.

While working with several Comarch ERP systems (Optima, Standard, XL), it is recommended that each created database for those systems be on different MS SQL Server instance.

- In a situation when Comarch ERP Standard and Comarch ERP Optima are installed on the same server and due to collation required for Comarch ERP Optima (Polish), two cases must be distinguished:
  - Comarch ERP Standard database has a collation

Polish – both databases can be installed on the same server

- Comarch ERP Standard database has a collation Latin – databases must be installed on different SQL instances, compatible with their collation
- In case of BI server, it is recommended that server collation is the same as collation of Comarch ERP Standard collation and collation of SQL server on which the production environment is located

## Recommended server requirements

The supported server processors should be of Xeon class or comparable. It is also recommended that the processors support Hyper-Threading Technology, which is used for increasing performance of calculations made simultaneously by microprocessors. That means that for each physical core of a processor, the operating system assigns two virtual processors (vCPU).

### Example

A processor with 8 cores with Hyper-Threading Technology will have 16 virtual processors (vCPU).

Hardware requirements for database server presented below are specified for Comarch ERP Standard system.

The set of minimum requirements for database server per user/users is presented in the below table

Resources/Number of Users	5	10	20	30	40	50	80	100
<b>Physical Processor*</b>	2-core	2-core	4-core	4-core	6-core	6-core	8-core	8-core
<b>Virtual Processor**</b>	3-vCPU	4-vCPU	5-vCPU	6-vCPU	8-vCPU	10-vCPU	14-vCPU	16-vCPU
<b>RAM</b>	6 GB	12 GB	16 GB	24 GB	32 GB	36 GB	48 GB	64 GB
<b>HDD</b>	SDD or SAS 15000 rpm.disks							

Resources/Number of Users	5	10	20	30	40	50	80	100
<b>RAID</b>	RAID 10							
<b>NIC</b>	100 Mb/s							
<b>Operating System</b>	Microsoft Windows Server 2012 R2 Standard Edition							
	Microsoft Windows Server 2016 Standard Edition							
	Microsoft Windows Server 2017 Standard Edition							
<b>SQL</b>	Microsoft SQL Server 2012 Standard Edition or higher							
	Microsoft SQL Server 2014 Standard Edition or higher							
	Microsoft SQL Server 2016 Standard Edition or higher							
	Microsoft SQL Server 2017 Standard Edition							

\* Due to the fact that physical cores are paired, potential power of a processor on physical hardware may be higher than it is required for given number of users

\*\* Refers to virtualized environments based on Hyper-V

#### Note

In order to ensure proper and seamless functioning of the operating system and other applications, additional memory must be provided, as well as additional server roles (e.g. printer, file, backup server, etc.)

In case of synchronization services, which ensure exchange of data between applications, number of subsidiaries in which the application is installed is recalculated into number of Comarch ERP Standard users imposing load on a database:

- Service of data exchange between Comarch ERP Standard and POS – 4 POS workstations = 1 Comarch ERP Standard user

#### Note

In case of large amount of:

- integrations (e.g., e-shops, Comarch WMS, Comarch DMS)
- data (e.g., customers and vendors, items, documents)
- additional processes (e.g., BPM processes, own extensions, triggers)

it is required to respectively increase the environment's parameters or estimate the hardware configuration individually.

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## Requirements for a terminal server

The suggested configuration does not assume that the terminal server operates also as file server for users working on it. In a case when such solution is necessary, number of required hard disks must be increased in proportion to that suggested below.

The set of minimum requirements for database server per user/users is presented in the below table.

<b>Physical Processor</b>	Up to 40 users: 4-Core Up to 60 users: 6-Core Up to 80 users: 8-Core Up to 100 users: 10-Core
<b>Virtual Processor*</b>	Up to 20 users: 1-vCPU + 1-vCPU / 5 users Over 20 users: 1-vCPU + 2-vCPU / 10 users
<b>RAM</b>	0.7 GB / user
<b>HDD</b>	0.5 GB / user + 40 GB for operating system / 2 x SAS 15000 rpm
<b>RAID</b>	RAID 1
<b>NIC</b>	100 Mb/s

<b>Operating System</b>	Microsoft Windows Server 2012 R2 Standard Microsoft Windows Server 2016 Standard Microsoft Windows Server 2017 Standard
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\* Refers to virtualized environments based on Hyper-V

If more than one server supports terminal connections, the infrastructure must be properly configured, taking into account the resource load balancing

Comarch ERP Standard system can be installed in 32- or 64-bit infrastructure.

### Example

Minimum requirements for terminal server on which 50 Comarch ERP Standard users will be working:

- CPU: 1 x 6-Core / 11-vCPU
- RAM: 40 GB (includes 5 GB for the operation of Windows system)
- HDD: 120 GB (includes virtual memory on the level of 1,5 x amount of RAM memory)

### Note

Each additional integration and application increases the demand for the terminal server's resources.

### Note

Due to the fact that sessions of operators using BI reports require significantly increased RAM, this requirement must be respectively taken into account while designing or changing the infrastructure for the needs of Comarch ERP Standard system. BI operator session may occupy even three times more of RAM than session of an operator not using BI.

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# Comarch Retail POS requirements

Minimal technical parameters necessary for a workstation are described in <<Hardware requirements for a workstation>>.

Additionally, to install and ensure proper operation of Comarch Retail POS application, the following components must be installed:

- Microsoft .Net Framework 4.6.2
  - Express version of Microsoft SQL Server 2014 or higher in a version compliant with that of the operating system (x86/64)
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## Comarch e-Shop requirements

Cooperation between Comarch ERP Standard and Comarch e-Shop requires:

- .NET Framework 4 environment
- Microsoft Web Services Enhancements (WSE) 3.0 Runtime add-on
- SQLXML 3.0 component
- TLS 1.2 Protocol

## Cooperation between Comarch ERP Standard and Comarch e-Shop

Depending on version, Comarch ERP Standard system cooperates with the following versions of Comarch e-Shop:

<b>Comarch e-Shop Version</b>	<b>Comarch ERP Standard Version</b>
Comarch e-Shop 7.4, 7.5	Comarch ERP Standard 6.3
Comarch e-Shop 7.5	Comarch ERP Standard 2015.0 and 2015.1
Comarch e-Shop 7.6, 7.7, 7.8	Comarch ERP Standard 2015.2
Comarch e-Shop 7.9, 2015.5.2 (8.0)	Comarch ERP Standard 2015.5 and 2015.6
Comarch e-Shop 2015.5 and 2016.0	Comarch ERP Standard 2016.0
Comarch e-Shop 2015.5, 2016.0 and 2016.2	Comarch ERP Standard 2016.1
Comarch e-Shop 2015.5, 2016.0 and 2016.2	Comarch ERP Standard 2016.5
Comarch e-Shop 2016.5	Comarch ERP Standard 2016.5
Comarch e-Shop 2017.0	Comarch ERP Standard 2017.0
Comarch e-Shop 2017.1	Comarch ERP Standard 2017.0 , 2017.1, 2017.5.1
Comarch e-Shop 2017.5	Comarch ERP Standard 2017.1 , 2017.5.1
Comarch e-Shop 2018.0	Comarch ERP Standard 2018.0.1
Comarch e-Shop 2018.1	Comarch ERP Standard 2018.0.1
Comarch e-Shop 2018.2	Comarch ERP Standard 2018.0.1
Comarch e-Shop 2018.3	Comarch ERP Standard 2018.0.1, 2018.1.1
Comarch e-Shop 2018.5	Comarch ERP Standard 2018.2
Comarch e-Shop 2018.6, 2018.7	Comarch ERP Standard 2018.5
Comarch e-Shop 2019.1	Comarch ERP Standard 2019.0

#### Note

Cooperation with Comarch e-Shop is not possible on computers

with Windows 98, Windows ME and Windows XP operating systems.

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## **BI requirements**

Minimum requirements for BI server, BI Web Reports Book and BI Point are presented in tables below.

In case of BI server, it is recommended that server collation is the same as collation of Comarch ERP Standard collation and collation of SQL server on which the production environment is located.

### **Note**

Business Intelligence module has been adjusted to operate in a domain-based environment (Active Directory) and all its functionalities can be used only in such configuration. In cooperation with Excel program, the required minimum MS Office version is 2003 (or later). BI can cooperate with a mail client (MS Outlook only) when the application is already running and configured.

## **BI Server**

In the table below, there are minimum requirements for a Business Intelligence server, depending on a Comarch ERP Standard system database size.



<b>Comarch ERP Standard Database Size*</b>	<b>&lt;10 GB</b>	<b>10-50 GB</b>	<b>50-80 GB</b>
<b>Number of Reporting Persons</b>	2	5	10
<b>CPU</b>	1 CPU Quad Core > 2,0 GHz	1 CPU Eight Core > 2.0 GHz	2 CPU Eight Core > 2.4 GHz
<b>RAM***</b>	16 GB**	40 GB**	64 GB**
<b>Disk Drives****</b>	100 GB	300 GB	600 GB
<b>RAID</b>		At least RAID 0, recommended RAID 10	
<b>Operating System*****</b>	Microsoft Windows Server x64 2008 R2 Standard or later****	Microsoft Windows Server x64 2008 R2 Standard/Enterprise or later****	
<b>SQL*****</b>	MS SQL Server 2008 R2/2012/2014/2016/2017 Standard Edition x64****	MS SQL Server 2008 R2/2012/2014/2016/2017 BI/Enterprise Edition x64****	
<b>Additional</b>		.NET Framework 4.6.2	

\*Does not apply to binary data, individual consultations are recommended for databases over 80 GB

\*\* 0.5 GB must be added for each BI user

\*\*\* RAM with high frequency, e.g. 21333 MHZ is recommended. All RAM should maintain the same frequency

\*\*\*\* Fast SSD drives are recommended

\*\*\*\*\* With the latest Service Pack

## Note

Real Time Data Warehouse and Data Mining functionalities require environment with installed MS SQL 2008 R2/2012/2014/2016/2017 Enterprise/BI Edition. MS SQL 2008/2008 R2/2012/2014/2016/2017 Standard Edition version allows to run Business Intelligence module without mentioned functionalities.

## Web Reports Book

Below are the requirements for server and client workstation in order to use the Web Reports Book application.

	<b>Server</b>	<b>Client</b>
Operating System	Microsoft Windows Server 2008 R2 x64 Microsoft Windows Server 2012 x64 Microsoft Windows Vista x64 Microsoft Windows 7 x64 Microsoft Windows 8 (8.1) x64 Microsoft Windows 10 x64	Any operating/mobile system supporting one of the following Internet browsers in the latest available version:  Internet Explorer 11 or higher  Firefox 3.6 or higher  Latest version of Google Chrome available
SQL	MS SQL Server 2008 R2/2012/2014/2016/2017	-

	<b>Server</b>	<b>Client</b>
Additional Requirements	NET Framework 4.0  Internet Information Services 7.0 or higher	-
Active Directory	Domain environment required	

## BI Point

In case if Business Intelligence installation uses BI Point functionality, hardware configuration should include the following requirements

	<b>Server</b>	<b>Client</b>
<b>CPU</b>	Up to 10 <b>simultaneous users</b> – 2x2.4 GHz, additional core for each subsequent 5 users	-
<b>RAM</b>	Minimum 8 GB for maximum 4 simultaneous (using BI at the same time) users + 0.5 GB for each additional user	-

	<b>Server</b>	<b>Client</b>
<b>Operating System**</b>	<p>Microsoft Windows Server 2008 R2 x64</p> <p>Microsoft Windows Server 2012 x64</p> <p>Microsoft Windows Vista x64</p> <p>Microsoft Windows 7 x64</p> <p>Microsoft Windows 8 (8.1) x64</p> <p>Microsoft Windows 10 x64</p>	<p>Any operating/mobile system supporting one of the following Internet browsers in the latest available version:</p> <p>Internet Explorer 11 or higher**</p> <p>Firefox 3.6 or higher</p> <p>Latest version of Google Chrome available</p> <p>Latest version of Safari available</p>
<b>SQL</b>	<p>MS SQL Server 2008 R2/2012/2014/2016/2017</p>	-
<b>Additional Requirements</b>	<p>.NET Framework 4.6.2</p> <p>Internet Information Services 7.5 or higher</p> <p>PostgreSQL 9.6.3</p> <p>PostGIS 2.2.0 or higher</p>	-

\* 0.5 GB must be added for each BI user

\*\* Selection of the system depends on maximum quantity of RAM

which is supported

\*\*\* Comarch does not ensure support for Internet Explorer with Enhanced Security configured

Hint

A recommended Web browser for BI Point service is Google Chrome.

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# **Additional requirements**

## **Environment management**

In order to facilitate management of system infrastructure and application environment, all servers should be assigned to one domain and all SQL instances used in stores should be linked in the Headquarters. Performing of administration activities for many subsidiaries is significantly simplified in case of having a domain and the possibility of central control of resources. It is particularly important in case of Comarch Retail system, where it is necessary to manage an environment comprised of several dozens of computers

In a distributed environment, computers should be members of a domain or be connected to the internal network via a VPN tunnel, because a properly operating agent network requires a permanent IP of computers on which a child agent is installed.

## **Disk matrix**

Appropriate disk matrix must be provided for correct, efficient and uninterrupted operation of the system. Depending

on particular needs, requirements and funds, corresponding matrix solutions should be implemented (e.g., RAID 1, 5, 10) with appropriate options such as Hot-Spare.

## **Virtualization**

Instead of purchasing separate physical servers which will have a specific role, it is recommended (particularly in case of having own hardware infrastructure) to purchase one machine with better parameters, which will act as a virtualizer, on which subsequent virtual machines will be run. The division into virtual machines allows for running each server role (database, terminal server, Business Intelligence, etc.) separately on one server while maximally using maximally resources of the server with simplified management of other server roles, as well as with easier monitoring of resource use.

## **Comarch ERP BPM Server**

Comarch ERP BPM Server service does not require Microsoft SQL Server Standard version – Microsoft SQL Server Express version is sufficient to run the service.

### **Note**

In order to provide correct configuration and operation of BPM processes, Comarch ERP BPM Server must be registered and run on a database server.

## **Hard disk space for Comarch ERP Standard/Comarch Retail installation**

Space on a disk occupied by individual installations of Comarch system:

<b>Product</b>	<b>Space on Disk</b>
Comarch ERP Auto Update	4 GB*
Headquarters Server/Workstation	1.5 GB
Comarch Retail POS	0.5 GB

\* Application along with all components. Free disk space required for download of new versions must be taken into account

## Hardware requirements for a workstation

This article presents minimum hardware requirements for a workstation, which are necessary to run Comarch ERP Standard and Comarch Retail systems as well as other components of those systems.

	<b>ERP Standard</b>	<b>BI</b>	<b>POS 2.0</b>
<b>Operating System</b>	Microsoft Windows 8/8.1/10		Microsoft Windows 8.1/10
<b>CPU</b>	Intel Core i3/i5/i7 3rd Gen/ Intel Core i3/i5/i7 4th Gen AMD ATHLON II X2 AMD ATHLON II X4		Intel Dual Core Intel Core 2 Duo
<b>RAM*</b>	4 GB	8 GB	4 GB
<b>Screen Resolution</b>	1280x768 pixels		1024x768 pixels

	<b>ERP Standard</b>	<b>BI</b>	<b>POS 2.0</b>
<b>SQL**</b>	Microsoft SQL Server 2012 Express Microsoft SQL Server 2014 Express Microsoft SQL Server 2016 Express Microsoft SQL Server 2017 Express	Microsoft SQL Server 2012 Standard Edition x64 Microsoft SQL Server 2014 Standard Edition x64 Microsoft SQL Server 2016 Standard Edition x64 Microsoft SQL Server 2017 Standard Edition x64	Microsoft SQL Server 2014 Express Microsoft SQL Server 2016 Express Microsoft SQL Server 2017 Express

\*In case of client applications (such as the BI Reports Book) installed on server version of Windows systems, RAM should be increased by 2 GB (that is, there should be 6 GB instead of 4 GB)

\*\* With the latest Service Pack. In the case of ERP Standard and BI, the requirements refer to the simplest installation for a single workstation with a local database. Workstations connecting with a database on an external server do not need the SQL Server software.

**Note**

The above-mentioned minimum requirements allow for starting the application. Each other system installed on a workstation may cause decrease of performance and increase of requirements.