

# OMNITRACKER System Requirements

System Requirements of OMNITRACKER 11.7.0  
Version: 10.08.2020

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## General Notes

In addition to the system requirements mentioned in this document, OMNITRACKER also requires that all supported third-party products are installed according to their respective hardware and software requirements. It is especially important that these third-party products are installed in a way that is compatible with the products and technologies mentioned in this document.

Those products that are described as “supported” in this document are supported only as long as the respective manufacturers offer standard support for that product.

Even if a product is described as “supported” in this document, it is no longer supported, if the date mentioned in the document “Retired 3rd-party product support” is reached. You can download this document from the OMNINET web site or request it via email from [support@omninet.de](mailto:support@omninet.de) .

OMNINET makes no warranty, implied or otherwise, about the performance or reliability of the mentioned third-party products.

# Software Requirements

## OMNITRACKER Client

The following operating systems are supported in 64bit architecture:

- Windows 8.1
- Windows 10 Professional / Enterprise (1709, 1803, 1809, 1903, 1909)
- Windows Server 2012, Windows Server 2012 R2
- Windows Server 2016
- Windows Server 2019

Please check document “Retired Third-Party Product Support” for details about supported versions.

- Microsoft .NET Framework Version 4.5.2., Version 4.6.2, Version 4.7 or Version 4.8.
- Windows Management Framework 3.0 or higher is required. On Windows 8 or higher and on Windows Server 2012 or higher, this version of Windows Management Framework already is preinstalled in the operating system.
- If you create your own report layouts, or if you want to change the standard layouts delivered with OMNITRACKER, then licenses for one of the following products are required on each PC intended for report development:
  - Crystal Reports 2013 or 2016
- In order to view reports, Crystal Reports runtime engine for .NET Framework (e.g. Version 13.0.24) is required.
- Please note: To view and print already defined reports, at least one Crystal Reports license provided by OMNINET is required; this license, however, must not be necessarily installed on the PCs on which you are viewing the report.
- If you want to integrate the Outlook address book with the OMNITRACKER client, Outlook 2016 or Outlook 2019 with the same bitness must be installed on the client PC.
- Microsoft Excel 2016 or Microsoft Excel 2019 must be installed, if you want to import data from Excel.
- Microsoft Word 2016 or Microsoft Word 2019 must be installed, if you want to use the “mail merge” feature.
- The OMNITRACKER Windows client can be run on Windows terminal servers. Any supported Windows server version can be used, but it is recommended to use at least Windows Server 2012 for optimum performance.
- The OMNITRACKER Windows client can be run on Citrix (XenApp) servers. At least Citrix Presentation Server 4.5 with FP1 is required. Make sure to configure the Citrix server for optimum WPF performance according to Citrix’s recommendations.
- ActiveX controls used in forms of the Windows client must match the bitness of the client

## OMNITRACKER Server

The following operating systems are supported in 64bit architecture:

- Windows 8.1
- Windows 10 Professional / Enterprise (1709, 1803, 1809, 1903, 1909)
- Windows Server 2012, Windows Server 2012 R2
- Windows Server 2016
- Windows Server 2019

Please check document “Retired Third-Party Product Support” for details about supported versions.

Windows Cluster Services can optionally be used if necessary.

- Microsoft .NET Framework Version 4.5.2., Version 4.6.2, Version 4.7 or Version 4.8. Please note that a full installation (as opposed to a client profile) is required.
- Windows Management Framework 3.0 or higher is required. On Windows 7 SP1 or higher and on Windows Server 2012 or higher, this version of Windows Management Framework already is preinstalled in the operating system.
- Microsoft Excel 2016 or Microsoft Excel 2019 must be installed, if you want to import data from Excel in server-side actions.
- Microsoft Word 2016 or Microsoft Word 2019 must be installed, if you want to use the “mail merge” feature in server-side actions.

## OMNITRACKER Database Server

OMNITRACKER supports the following databases:

- Built-in Microsoft Jet database. Please note that this is not supported in an OMNITRACKER Multi Server Architecture (MSA) cluster. When using a 64-bit OMNITRACKER server we advise against the usage of this type of database due to performance losses resulting from the communication between the 64-bit server and the 32-bit Microsoft Jet.
- Oracle Database 12.1.0.2 (with patch set 10 or newer patch sets), 12.2.x, 18c or 19c. The Oracle client software must have the same version number as the server. Please be informed that Oracle is only tested on Windows environments.
- Microsoft SQL Server Standard, Enterprise or Web 2016 SP1/SP2 (with Native Client 11.0 with SP2), Microsoft SQL Server Standard, Enterprise or Web 2017 (with Native Client 11.0 or ODBC Driver) or Microsoft SQL Server Standard, Enterprise or Web 2019 (with Native Client 11.0 or ODBC Driver).

## Data Export to External Databases

For data export to external databases, those databases are supported that can be used as back-end database for the OMNITRACKER server. (See above) In addition, MySQL 5.6.11 is supported as an export sink.

When using a 64-bit OMNITRACKER server large server-side exports and reporting tasks should be avoided, because the communication between the 64-bit server and the 32-bit Microsoft Jet processes is very slow.

## Version Compatibility

- You must install compatible versions of OMNITRACKER clients and server. Usually, this means that clients and server must have the same version number (unless specified otherwise in the OMNITRACKER Release Notes). This also applies to the OMNITRACKER Development Environment. If you installed 64-bit OMNITRACKER server, it is also possible to install and use 32-bit OMNITRACKER clients on other computers which shall connect to instances of the OMNITRACKER server.
- All other components (Email Gateway, Web Gateway, and so on) must have the same version number as the OMNITRACKER server.

## OMNITRACKER Email Gateway

The following operating systems are supported in 64bit architecture:

- Windows 8.1
- Windows 10 Professional / Enterprise (1709, 1803, 1809, 1903, 1909)
- Windows Server 2012, Windows Server 2012 R2
- Windows Server 2016
- Windows Server 2019

Please check document “Retired Third-Party Product Support” for details about supported versions.

Windows Cluster Services can optionally be used if necessary.

- Mail server: An email server providing Internet email protocols (SMTP, IMAP4 and/or POP3) or MAPI must be available. When using the MAPI protocol, certain advanced email functionalities of OMNITRACKER cannot be used.
- When using MAPI Outlook 2016 or Outlook 2019 must be installed on the OMNITRACKER server computer. Only 32-bit versions of Outlook are supported using the 32-bit version of OMNITRACKER. Using the 64-bit version of OMNITRACKER only 64-bit versions of Outlook are supported.

## ODBC Data Import

For ODBC data import, those databases are supported that can be used as back-end database for the OMNITRACKER server. (See page 5.) Exception: Microsoft Jet is not supported via ODBC; there is a dedicated Microsoft Jet (MDB) import instead.

In addition, MySQL 5.6.11 is supported as an import source.

## BPMN Standalone Modeler

A compatible version of the OMNITRACKER client or the OMNITRACKER server must be installed. Usually, this means that client/server and the BPMN Standalone Modeler must have the same version number.

## Interface Bus

The following operating systems are supported in 64bit architecture:

- Windows 8.1
- Windows 10 Professional / Enterprise (1709, 1803, 1809, 1903, 1909)
- Windows Server 2012, Windows Server 2012 R2
- Windows Server 2016
- Windows Server 2019

Please check document “Retired Third-Party Product Support” for details about supported versions.

Windows Cluster Services can optionally be used if necessary.

The Interface Bus supports the following systems:

- Microsoft Exchange Server
- Microsoft SharePoint
- baramundi Management Suite
- SAP Solution Manager 4.0 with activated service desk

The function BmsGw.FillClientInfo and the client details view of the ITSM Center reference integration require the supported Internet Explorer version for the Web Gateway (see chapter OMNITRACKER Web Gateway) to be installed.

## OMNITRACKER Telephony Integration

The OMNITRACKER Windows client can be integrated with TAPI 2.x compliant telephony systems.

A TAPI 2.x compliant driver must be installed on each machine on which the OMNITRACKER Windows client is running.

Non-TAPI compliant telephony systems can be integrated by using OMNITRACKER’s COM-based Telephony Integration Interface. (See the Administrator’s Guide for more information.)

## OMNITRACKER SAML Authentication

SAML stands for Security Assertion Markup Language.

It is an open protocol that allows users to authenticate against an identity provider (IdP) service. "Assertions" containing the user information are passed to the "Service Provider" (SP) during the authentication process.

In this scenario OMNITRACKER acts as the Service Provider (SP).

### Relation to Microsoft Active Directory Federation Services (ADFS)

Microsoft ADFS is one such specific identity provider, but there are numerous other SAML capable IdPs from other vendors. ADFS can extract user information from Active Directory, from SQL Server databases, or even from other companies' ADFS servers. ADFS also can distinguish between internal users (intranet) and external users (extranet) using ADFS proxy servers, and give them different SAML authentication replies depending on whether they are in the intranet or extranet.

### Technical Requirements

The SAML 2.0 Authentication implementation in OMNITRACKER requires that the IdP supports the following:

- SAML 2.0 Artifact Binding,
- SOAP Artifact Resolution,
- Hash algorithm: SHA-256,
- Digest algorithm for digital XML signatures: SHA-256,
- Algorithm for digital XML signatures: RSA-SHA256,
- Algorithm for canonicalizing XML documents: Exclusive Canonicalization XML 1.0 with comments omitted,
- Algorithm for transforming XML documents: Enveloped Signature Transform.

The IdP must fulfill all of the above requirements; otherwise, it cannot be used with OMNITRACKER SAML 2.0 authentication.

### Limitations

These are the limitations of the SAML authentication method:

- IdP initiated Single Sign On is not supported (only SP initiated is supported).
- Only one IdP server is supported. Authentication against multiple IdP servers is not possible.
- IdP servers sending only encrypted SAML assertions are not supported.
- There is no Automation Interface method for logging on using SAML.



## OMNITRACKER classic Web Gateway

### Web Server

The following operating systems are supported in 64bit architecture:

- Windows 8.1
- Windows 10 Professional / Enterprise (1709, 1803, 1809, 1903, 1909)
- Windows Server 2012, Windows Server 2012 R2
- Windows Server 2016
- Windows Server 2019

Please check document “Retired Third-Party Product Support” for details about supported versions.

The Web Gateway can be used with 32-bit or 64-bit OMNITRACKER servers; the Web Gateway settings need to be adapted to the used OMNITRACKER server bitness.

- Microsoft Internet Information Server (IIS) 7.0, 7.5, 8, 8.5 or 10.
- Microsoft .NET Framework Version 4.6.2, Version 4.7 and Version 4.8.
- In order to view reports, Crystal Reports Visual Studio 2010 .NET runtime components are required.
- For Windows Server 2012, and Windows Server 2012 R2, the IIS 6 compatibility modules must be installed.

### Web Server Dependencies

Depending on the version of the Operating System and IIS used, certain system components must be activated for the OMNITRACKER Web Gateway to function properly:

- Windows 10:
  - Internet Information Services / Web Management Tools / IIS Metabase and IIS 6 configuration compatibility
  - Internet Information Services / Web Management Tools / IIS Management Console
  - Internet Information Services / Web Management Tools / IIS Management Service
  - Internet Information Services / World Wide Web Services / Application Development Feature / .NET Extensibility
  - Internet Information Services / World Wide Web Services / Application Development Feature / ASP.NET
  - Internet Information Services / World Wide Web Services / Application Development Feature / ISAPI Extensions
  - Internet Information Services / World Wide Web Services / Application Development Feature / ISAPI Filters
  - Internet Information Services / World Wide Web Services / Common Http Features / Default Document
  - Internet Information Services / World Wide Web Services / Common Http Features / Static Content
  - Internet Information Services / World Wide Web Services / Security / Request Filtering
  - Internet Information Services / World Wide Web Services / Security / Windows Authentication

- Windows Server 2012 & Windows Server 2012 R2 & Windows Server 2016 & Windows Server 2019:
  - Roles / Web Server (IIS)
  - Web Server (IIS) - Role Services / Web Server / Common HTTP Features / Static Content
  - Web Server (IIS) - Role Services / Web Server / Common HTTP Features / Default Document
  - Web Server (IIS) - Role Services / Web Server / Common HTTP Features / HTTP Errors
  - Web Server (IIS) - Role Services / Web Server / Common HTTP Features / Directory Browsing
  - Web Server (IIS) - Role Services / Web Server / Application Development / ASP.NET 4.5 (for Windows Server 2012 and Windows Server 2012 R2), ASP.NET 4.6 (for Windows Server 2016 and Windows Server 2019)
  - Web Server (IIS) - Role Services / Web Server / Application Development / ASP.NET 3.5 (if also OMNITRACKER Server is installed on the system)
  - Web Server (IIS) - Role Services / Web Server / Application Development / .NET Extensibility 4.5 (for Windows Server 2012 and Windows Server 2012 R2), .NET Extensibility 4.6 (for Windows Server 2016 and Windows Server 2019)
  - Web Server (IIS) - Role Services / Web Server / Application Development / .NET Extensibility 3.5 (if also OMNITRACKER Server is installed on the system)
  - Web Server (IIS) - Role Services / Web Server / Application Development / ISAPI Extensions
  - Web Server (IIS) - Role Services / Web Server / Application Development / ISAPI Filters
  - Web Server (IIS) - Role Services / Web Server / Security / Windows Authentication
  - Web Server (IIS) - Role Services / Web Server / Security / Request Filtering
  - Web Server (IIS) - Role Services / Web Server / Performance Features / Static Content Compression
  - Web Server (IIS) - Role Services / Web Server / Performance Features / Dynamic Content Compression
  - Web Server (IIS) - Role Services / Web Server / Health and Diagnostics Features / HTTP Logging
  - Web Server (IIS) - Role Services / Web Server / Health and Diagnostics Features / Request Monitor
  - Web Server (IIS) - Role Services / Management Tools / IIS 6 Management Compatibility / IIS 6 Metabase Compatibility
  - Web Server (IIS) - Role Services / Management Tools / IIS Management Console

## Supported Web Browsers

The following browsers are supported on the given Operating Systems:

|                             | Windows | MacOS | Linux | Android | iOS (iPad, iPhone) |
|-----------------------------|---------|-------|-------|---------|--------------------|
| <b>Chrome 75</b>            | Yes     | Yes** |       | Yes**   | Yes**              |
| <b>Firefox 68 ESR</b>       | Yes     | Yes** | Yes** | Yes**   |                    |
| <b>Firefox 73.0 Quantum</b> | Yes     |       |       |         |                    |
| <b>Edge 42</b>              | Yes     |       |       |         |                    |
| <b>Edge (Chromium)</b>      | Yes**   | Yes** | Yes** |         |                    |
| <b>IE 11</b>                | Yes     |       |       |         |                    |
| <b>Safari 13</b>            |         | Yes*  |       |         | Yes*               |

OMNINET does not perform any quality testing for browser-OS combinations marked with \*.

OMNINET does not perform any quality testing for browser-OS combinations, however assumes browser vendors assure feature parity between different platforms marked with \*\*

**Please note that browser support is subject to availability on the given Operating Systems. E.g. Safari 10 is only available on Mac OS and iOS, so only this combination is supported. Please also see the notes on Internet Explorer and Firefox later in this chapter. Please also be informed that the support is only valid as long as main stream support for the browser version is supplied by the browser manufacturer (please be informed that by Microsoft this is no longer coupled with the Operating system included the browser version).**

- Internet Explorer 11: Please note that the compatibility mode of Internet Explorer is not supported. The "Display intranet sites in Compatibility View" option in particular is not supported. PLEASE NOTE that Internet Explorer is only supported if .NET Framework Version 4.6, Version 4.7 or Version 4.8 is installed on the Web Server.
- Edge Browser: Please be advised, this browser does not support "integrated authentication" (Windows Authentication) in URLs of kind "http://localhost" or "http://<machine name>" where <machine name> is the name of the current computer.

Minimum Screen Resolution required for the classic OMNITRACKER Desktop Web Gateway is: 1280x1024

JavaScript must be activated in the browser settings.

To view reports in the browser, Adobe Acrobat Reader version XI or Adobe Acrobat Reader version DC is required.

Microsoft Excel 2016 or Microsoft Excel 2019 must be installed, if you want to export data to Excel using your web browser.

## OMNITRACKER Web Gateway 2.0

### Web Server

See OMNITRACKER classic Web Gateway - Web Server

### Web Server Dependencies

See OMNITRACKER classic Web Gateway - Web Server Dependencies

Additional components have to be installed on the Web Server, more information can be found in the OMNITRACKER update guide.

### Supported Web Browsers

The following browsers are supported on the given Operating Systems:

|                             | Windows | MacOS | Linux | Android | iOS (iPad, iPhone) |
|-----------------------------|---------|-------|-------|---------|--------------------|
| <b>Chrome 65/75/77</b>      | Yes     | Yes** |       | Yes     | Yes                |
| <b>Firefox 68 ESR</b>       | Yes     | Yes** | Yes** |         |                    |
| <b>Firefox 73.0 Quantum</b> | Yes     |       |       |         |                    |
| <b>Firefox 18/20</b>        |         |       |       | Yes     | Yes                |
| <b>Edge 42</b>              | Yes     |       |       | Yes     |                    |
| <b>Edge (Chromium)</b>      | Yes**   | Yes** | Yes** |         |                    |
| <b>IE 11</b>                | Yes***  |       |       |         |                    |
| <b>Safari 13</b>            |         | Yes** |       |         | Yes                |
| <b>Samsung Internet 10</b>  |         |       |       | Yes     |                    |

OMNINET does not perform any quality testing for browser-OS combinations, however assumes browser vendors assure feature parity between different platforms marked with \*\*

\*\*\*: OMNINET does not recommend using OMNITRACKER WebGW 2.0 with Internet Explorer 11. There might be limitations in terms of performance and visual appearance.

## OMNISCAN Inventory Scanner

The following operating systems are supported in 64bit architecture:

- Windows 8.1
- Windows 10 Professional / Enterprise (1709, 1803, 1809, 1903, 1909)
- Windows Server 2012, Windows Server 2012 R2
- Windows Server 2016
- Windows Server 2019

Please check document “Retired Third-Party Product Support” for details about supported versions.

Windows Cluster Services can optionally be used if necessary.

The scanner can scan all Windows PCs that fulfil the following requirements:

- Windows Management Instrumentation (WMI) is installed and active.
- The Remote Registry Service is active.
- The Remote Registry Service must have a start type other than “Deactivated”
- If a firewall is present, it must allow WMI and Remote Registry communication.

More than one inventory scanner can be installed in the network. The scanner can run on a different machine than the OMNITRACKER server.

## OMNITRACKER Web Service

The following operating systems are supported in 64bit architecture:

- Windows 8.1
- Windows 10 Professional / Enterprise (1709, 1803, 1809, 1903, 1909)
- Windows Server 2012, Windows Server 2012 R2
- Windows Server 2016
- Windows Server 2019

Please check document “Retired Third-Party Product Support” for details about supported versions.

Windows Cluster Services can optionally be used if necessary.

- Microsoft Internet Information Server (IIS) 7.0, 7.5, 8, 8.5 or 10.
- Microsoft .NET Framework Version 4.5.2., Version 4.6.2, Version 4.7 or Version 4.8.

## 64-bit specifics

For OMNITRACKER client and server not only 32-bit but also 64-bit versions exist. The behavior is almost the same as the 32-bit versions. Following some specifics are listed.

When using Terminal Server, we recommend to use the 64-bit version of the OMNITRACKER client.

When using a 64-bit OMNITRACKER server we advise against the use of MS Jet Engine (.mdb) as database type due to performance losses resulting from the communication between 64-bit server and the 32-bit Microsoft Jet.

If Crystal Reports is used and a 64-bit OMNITRACKER Server is chosen, the administrator must manually set the correct user account for the "OT-Crystal Rep." COM+ service. It has to be identical to the user account used for the OMNITRACKER service.

The report type "HTML with preview" is unavailable while using a 64-bit version of the Web Gateway.

Running the OMNITRACKER end-user-client in 64-bit mode the report viewer is opened in an external program instead of a document pane like it is the case in 32-bit mode.

When using MAPI for the Email Gateway there are dependencies based on the bitness. Only 32-bit versions of Outlook are supported using the 32-bit version of OMNITRACKER. Using the 64-bit version of OMNITRACKER only 64-bit versions of Outlook are supported.

Please be informed that on forms in a 64-bit OMNITRACKER client only 64-bit ActiveX controls may be used.

In the Web Gateway configuration, there is a new property "64-bit support". If 64-bit Automation Interface is installed on the Web server and the IIS application pool of the Web Gateway is running in 64-bit mode, this property must be checked. It must be unchecked if the Web Gateway is running in 32-bit mode.

Please note: Upgrading from 32-bit to 64-bit versions and vice versa is not supported. You have to uninstall the existing OMNITRACKER version beforehand.

## Minimum Hardware Requirements

This section describes the minimum requirements to run OMNITRACKER at a reasonable speed and gives recommendations of how to increase system performance. Please note that OMNITRACKER can run on slower systems but a drop below the reasonable performance threshold is to be expected (for a more detailed definition of what can be considered speed see „Dimensioning of the OMNITRACKER Application and Database Server“ below).

Unless noted otherwise, the specified hardware requirements do not describe a system configuration that allows OMNITRACKER to perform at optimal speed.

Since OMNITRACKER is an application

- which may be highly customized and
- the configuration schema may strongly affect the resource utilization (CPU, memory, disk, network, ...)

it is impossible to recommend hardware sizing to optimize performance for specific configurations and load profiles without further analysis.

For an installation with more than 100 concurrent users, we recommend to use a Multi Server Architecture with two nodes. For an installation with more than 500 concurrent users, we recommend to use a Multi Server Architecture with three nodes.

## Server Dimensioning

The minimum hardware requirements depend on the usage scenario for OMNITRACKER.

You must consider

- the maximum number of concurrent users, and
- the user action frequency (UAF).

User action frequency (UAF) means the average number of actions a user performs per minute. A typical mix of action types is given in the Application Server and Database Server sections.

For less than 100 concurrent users, you usually obtain the maximum performance if application server and database server are running on the same machine. This requires that the machine is sized in a form that it can accommodate both servers; furthermore, the database server must be configured in a form that it leaves enough main memory for the OMNITRACKER server and the operating system.

If you want to separate application and database servers, you should make sure that both servers are connected via a 1.000 MBIT/s link.

Below you can find dimensioning suggestions for application and database server. If you intend to use only a single server, please add up CPU Passmark rating, RAM sizes, and hard drive requirements respectively.

### Dimensioning of the OMNITRACKER Application and Database Server

The following information is based on the benchmark rating calculated by the Passmark tool PerformanceTest 8.0 ([www.passmark.com](http://www.passmark.com)).

We recommend the following dimensions for your server for a given number of concurrent users and a given User action frequency.

The numbers below are based on the following mix of action types: <sup>(1)</sup>

- 10% Write actions (Create and Modify Objects)
- 50% Read actions (Visiting folders)
- 40% Read actions (Opening objects)

With this mix of action types and the server dimensions given, a reasonable minimum performance could be achieved for peak-time user action frequencies (6 actions per user per minute): A server response time (not counting client-side processing) of less than 1s for at least 90% of all user actions, and an average response time of less than 1 second.

<sup>(1)</sup> Please note that it is assumed that only typical actions are performed. Atypical actions are complex actions such as report generation, modifying many objects at once (e.g. via scripting), accessing external systems etc.

## Hardware Sizing (CPU)

### Database Server

|                            |         |        |                           |
|----------------------------|---------|--------|---------------------------|
| Number of Concurrent Users | <= 1000 | <=1200 | <=2000 (Calculated value) |
| CPU Passmark               | 10460   | 23544  | 39240                     |

### Application Server

|                            |         |        |                           |
|----------------------------|---------|--------|---------------------------|
| Number of Concurrent Users | <= 1000 | <=1200 | <=2000 (Calculated value) |
| CPU Passmark               | 11646   | 21118  | 31056                     |

## Hardware Sizing (Disk)

### Database Server

|                            |        |                           |
|----------------------------|--------|---------------------------|
| Number of Concurrent Users | <=1200 | <=2000 (Calculated value) |
| Disk Passmark              | 470    | 940                       |
| Max. Throughput (MB/sec)   | 10     | 20                        |

### Application Server

Fulltext Search Index, Attachments and Email Queue Directories should be located on different physical hard drives (MSA: on a shared directory).

OMNITRACKER Log Files (normal logs and activity logs) should be located on a local hard disk.

### IMPORTANT Notes:

All values are based on a standard test case where there are no database blocking scenarios and where all indices are correctly set.

Database blockings, complex queries, improper database index settings will compromise scalability. Especially complex queries and missing indexes might generate higher CPU load so that higher CPU passmark values might be necessary.

All values are based on tests where the whole database fits into the main memory of the database server.

### Example Database Server:

A CPU Passmark rating of **11772** can be achieved by system properties such as:

|                          |            |
|--------------------------|------------|
| Number of physical cores | 24         |
| Processor type           | Xeon X5670 |
| CPU-clock speed          | 2.93 GHz   |
| RAM                      | 8 GByte    |

For optimum performance, the database server's RAM should be as large as the database files (i.e. as large as the database tables and indices, excluding attachments). E.g. if your database files have a size of 10 GB, assign at least 10 GB RAM to your database. You must also make sure that the RAM is assigned to your database server software, not only to the hardware; some database servers require that you assign the RAM manually to the database server. You also must consult your database documentation to ensure that your specific database edition supports the required amount of memory. This also means that for RAM sizes above 3 GByte the respective 64-bit edition of the operating system is usually required.

Even though it is technically possible to have other applications access the OMNITRACKER server's database server, this configuration is not recommended in order to avoid versioning problems and in order to ease diagnosis of performance issues.



**Example Application Server:**

A CPU Passmark rating of **7977** can be achieved by system properties such as:

|                          |            |
|--------------------------|------------|
| Number of physical cores | 8          |
| Processor type           | Xeon E5620 |
| CPU-clock speed          | 2.4 GHz    |
| RAM                      | 4 GByte    |

**Multi Server Architecture Dimensioning<sup>12</sup>**

When using the Multi Server Architecture, all the above dimensions apply to the single server nodes with one exception: The Passmark CPU indices of all server nodes should roughly add up to the required CPU Passmark index for a given load.

**Example:**

To support 400 users with a User Action Frequency of 6 as above, the sum of CPU Passmark ratings of all Application server nodes should be slightly greater than the CPU Passmark rating of 2153 required of a single server node.

**Dimensioning of a Terminal Server**

The most important things to consider when dimensioning Terminal Servers for OMNITRACKER clients are required RAM size (at least 2GByte RAM + 300MByte per user) and required network bandwidth (at least 256 kbit/s per user).

Rough CPU Passmark indices for the Terminal Server can be obtained by scaling up the respective CPU Passmark indices for OMNITRACKER clients (see below).

**Ethernet link between OMNITRACKER Application Server and Database Server**

We recommend a gigabit Ethernet connection between the servers.

**Dimensioning of the Web Server(s)**

The following Passmark rating is a recommended value of the Web Server which serves about 100 concurrent Web users. The Benchmark rating consists of the rating values of the CPU, RAM and Hard Disk.

|                            |      |
|----------------------------|------|
| Concurrent Users           | 100  |
| Web Server Passmark Rating | 724  |
| CPU Passmark               | 1248 |
| RAM (4,00 GB)              | 698  |
| Hard Disk (20 GB)          | 392  |

For more than 100 concurrent Web users, you should use multiple Web servers.

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<sup>1</sup> Please also verify the supported databases in the OMNITRACKER server section.

<sup>2</sup> Please also refer to the Networking section for additional Multi Server Architecture specific requirements.

## Client Dimensioning

### Benchmark Rating:

The basis for dimensioning the Client hardware is using the **Passmark** PerformanceTest7.0 benchmark tests ([www.passmark.com](http://www.passmark.com)), using only the following measurements:

- CPU
- GPU
- memory

### Minimal System Properties:

The minimal Passmark rating – only for assuring functional correctness - is **242** both for WPF- and MFC-client types, which can be achieved by system properties such as:

|                             |            |
|-----------------------------|------------|
| Number of processors        | 1          |
| Processor type              | Pentium 4  |
| CPU-clock speed             | 2.8 GHz    |
| RAM                         | 1 GByte    |
| Hard drive: OT system files | 500 Mbytes |
| GPU system                  | Tier-1     |
| Screen resolution           | 1280x800   |

The Passmark rating of 242 is composed of:

- CPU Mark: 384.1
- 2D / 3D Graphics Mark: 295.4 / 62.8
- Memory Mark: 437.4

### Recommended System Properties:

When using the WPF-Client instead of the MFC-Client, OMNINET recommends that the hardware for the WPF-Client performs at least twice as good (by doubling the Passmark rating) as the hardware used for the MFC-client, in order to achieve comparable performance standards.

The recommended Passmark rating is **400** for typical OMNITRACKER configurations both for WPF- and MFC-client types, which can be achieved by system properties such as:

|                             |                |
|-----------------------------|----------------|
| Number of processors        | 1              |
| Processor type              | Core Duo T2250 |
| CPU-clock speed             | 1.73 GHz       |
| RAM                         | 2 GByte        |
| Hard drive: OT system files | 500 Mbytes     |
| GPU system                  | Tier-1         |
| Screen resolution           | 1280x800       |

The Passmark rating of 400 is composed of:

- CPU Mark: 836.3
- 2D / 3D Graphics Mark: 237.4 / 104.6
- Memory Mark: 430.0

A Passmark rating of **800** can be achieved by system properties such as:

|                             |                 |
|-----------------------------|-----------------|
| Number of processors        | 1               |
| Processor type              | Core2 Duo E8400 |
| CPU-clock speed             | 3 GHz           |
| RAM                         | 2 GByte         |
| Hard drive: OT system files | 500 MBytes      |
| GPU system                  | Tier-2          |
| Screen resolution           | 1280x800        |

The Passmark rating of 800 is composed of:

- CPU Mark: 2063.3
- 2D/3D Graphics Mark: 282.7 / 218.9
- Memory Mark: 904.3

**Please note:**

- When you are upgrading from OMNITRACKER 8.x or earlier (based on MFC technology) to OMNITRACKER 9.x or later (based on WPF technology), you need to upgrade your hardware, if you want the client to run with the same performance; this is caused by the WPF technology that is used in OMNITRACKER 9.x and later.
- The above requirements refer to situations when OMNITRACKER is the only running application on the client. If other applications are running concurrently, you must add the OMNITRACKER system requirements to the sum of the system requirements of all other applications.
- The best performance results can be achieved by using Windows 10.

## Network Configuration (OMNITRACKER)

OMNITRACKER uses TCP/IP for communication.

Recommended bandwidths:

- For Windows Client connections, a bandwidth of at least 128 kbit/s per user is recommended. The network latency should not be higher than 50 ms.
- For Web Client connections, a bandwidth of at least 256 kbit/s per user is recommended.
- When operating OMNITRACKER using Terminal Services or Citrix Metaframe, a bandwidth of at least 256 kbit/s per user is recommended.

For security reasons, OMNITRACKER applications are digitally signed; when they are started, an Internet connection to a certificate revocation list server is created to ensure the validity of the signature. This check does not happen, if Windows detects that there is no Internet access. In very rare circumstances, a Windows system might be configured in such a way that it does not correctly detect that the current user has no Internet access. In this case, starting OMNITRACKER applications (e.g. the Windows client) might take up to several minutes. In order to avoid that, either grant Internet access to all users, or suppress the certificate checking using a config file (see <http://support.microsoft.com/kb/936707/en-us> for details).

## Network Configuration (OMNITRACKER Multi Server Architecture)

### Cluster Internal Network

When using OMNITRACKER in a Multi Server Architecture setup, a dedicated high-bandwidth (1 Gbit/s or better), low-latency (<< 1ms) network is required for inter-server communication.

For a 2-node cluster, this can be a direct link; for three or more nodes, additional networking hardware (switches etc.) is required.

In order to use Multi Server Architecture, UDP broadcasting must be available in the cluster internal network.

### Storage

When using OMNITRACKER in a Multi Server Architecture setup, several file system areas need to be shared between the cluster nodes and must therefore be available through the network (usually on a NAS), namely:

- The full-text search index files,
- The Email queue files,
- And the attachments files.

## Recommendations for Remote Desktop

When running the Windows client on a Windows terminal server, the following recommendations apply to the remote desktop clients:

- For small-bandwidth connections, select the appropriate connection speed in the remote desktop client.
- For high-latency connections ( $\geq 100$ ms round-trip), select the appropriate connection speed in the remote desktop client (e.g. "Satellite (2 kbits-16Mbps with high latency)").
- Set the color depth to 16 bit.
- Disable all checkboxes (e.g. font smoothing, visual styles, etc.) except "Persistent bitmap caching".
- Do not use large windows sizes. Use the smallest window size that still allows you to work efficiently.

## Network Configuration (OMNISCAN)

OMNISCAN uses TCP/IP for communication.

OMNISCAN transfers approximately 2-3 MBs of data between the scanned PC and OMNISCAN.

## Virtualized Hardware

OMNITRACKER server and client components can be used with virtualized hardware or virtualized operating systems (VMWare, Microsoft Virtual Server, Hyper-V). In order to ensure reasonable performance, the virtualized environment must meet the same Passmark requirements as non-virtualized hardware.

Please note that the latency of most virtualized network adapters in current virtualization products is higher than in purely hardware-based environments. Please make sure the specific latency and networking requirements (see above) are met before running OMNITRACKER Multi-Server-Architecture cluster in a virtualized environment.

When using OMNITRACKER in virtualized environments, support restrictions apply (e.g. the OMNINET support team may ask the customer to reproduce the problem using real hardware or may refer the customer to the support team of the virtualization software vendor). Please note that the vendors of Windows, Crystal Reports, SQL Server, Oracle or DB2 may have similar support restrictions.

The above-mentioned virtualization software products are manufactured by companies that are independent of OMNINET. OMNINET makes no warranty, implied or otherwise, about the performance or reliability of these products.