

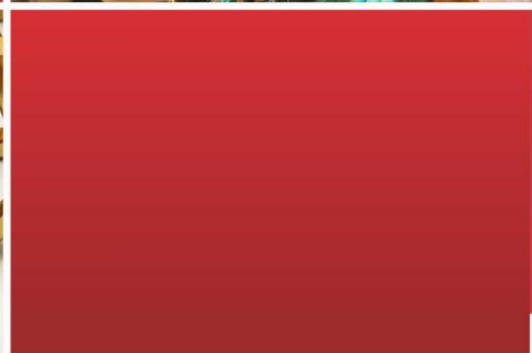
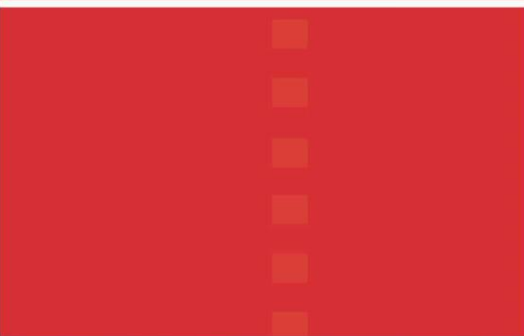


Hardware and Software Requirements – Engeman®



SOFTWARE DE MANUTENÇÃO

2019/04 Version



Hardware and Software Requirements for the operation of the solution Engeman®

This descriptive has as objective to specify the requirements of hardware and software necessary to use in a full and functional way the solution Engeman®. If the requirements available in your company are incompatible with the recommended or there is any doubt related to them, please, contact our support for more clarifications.

Installation, configuration and maintenance of: DBMS, operating system, network and any additional infrastructure, other than the Engeman system itself, are exclusive responsibilities of the customer. Our teams will not be able to perform any installation, configuration and maintenance service other than Engeman® software.

We can't guarantee the compatibility with operating systems or DBMS's versions unsupported by the manufacturers or developers, even though they are listed here.

DBMS's Homologated for the Solution Engeman®

For the creation of the database of Engeman® Solution the following DBMS's can be used:

DBMS's	32 Bits	64 Bits	Patch	Recommended
SQL Server 2012	✓	✓	11.0.5058 - SP2	
SQL Server 2014	✓	✓	12.0.2000 - RTM	
SQL Server 2016	n/a	✓	13.0	✓
SQL Server 2017	n/a	✓	14.0.3015.40	✓
Oracle 9i	✓	✓	9.2.0.1	
Oracle 10g	✓	✓	10.2.0.4	✓
Oracle 11g	✓	✓	11.2.0.1	✓
Oracle 12c	✗	✓	12.1.0.2.0	✓

Note: Engeman is also compatible with the versions *Express* of SQL Server and Oracle.

The codification of the characters, **Collation** for SQL Server and the **Character Set** for Oracle must follow the recommendations of the table below to ensure the correct operation of the solution Engeman®.

DBMS's	Character Codification
SQL Server	SQL_Latin1_General_CP1_CI_AI
Oracle	WE8ISO8859P1

(a) The use of Oracle requires permission in v\$database view for the user related to Engeman from the database.

GRANT SELECT ON v\$database to [USER]

(b)The SQL Server use requires the installation of the latest ODBC driver published by Microsoft (13.1 on 01/25/2018), available for checking in the link below.

<https://docs.microsoft.com/en-us/sql/connect/odbc/windows/microsoft-odbc-driver-for-sql-server-on-windows?view=sql-server-2017>

Important: (1) The Engeman Settings file (Engeman.INI, for example) must include the parameter driver, so that the connection is always performed by using the correct version of the SQL Server ODBC driver. Without this parameter the connection may eventually use other versions that are installed on Windows.

driver = <latest version of ODBC Driver for SQL Server>

[Example]: driver = ODBC Driver 13 for SQL Server

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By specifying the incorrect driver, the following error message will be displayed at Engeman startup. The solution is to check the installed driver version and if the parameter in Engeman settings file is correctly described.

[Error message]. Unable to connect to database Data source name not found and no default driver specified.

(2). Both ODBC newest driver version install and the Engeman settings file setup (Engeman.INI, for example) should be applied to all workstations where Engeman CS has access.

The DBMS server hardware requirements recommended are:

Users	Processor	Physical Processors	Cores	RAM Memory	
				Minimum	Recommended
Up to 5	Intel® Xeon® (64 bits, 8M Cache, 3.0 GHz) or equivalent.	1	2	4 GB	6 GB
Up to 10	Intel® Xeon® (64 bits, 8M Cache, 3.0 GHz) or equivalent.	1	2	4 GB	8 GB
Up to 20	Intel® Xeon® (64 bits, 8M Cache, 3.0 GHz) or equivalent.	2	4	8 GB	12 GB
Up to 50	Intel® Xeon® (64 bits, 8M Cache, 3.0 GHz) or equivalent.	2	4	12 GB	20 GB
Up to 100	Intel® Xeon® (64 bits, 8M Cache, 3.0 GHz,) or equivalent.	4	8	20 GB	32 GB
Up to 200	Intel® Xeon® (64 bits, 8M Cache, 3.0 GHz,) or equivalent.	8	12	36 GB	44 GB

Note: in doubts about the dimensioning or settings equivalence case, contact the DBMS support.

For a better performance in the operations of reading/ writing, we recommend the utilization of a SAS disk 10.000 RPM or superior. The configurations specified refer only to the services related to the solution Engeman®. Besides these ones, the requirements requested by the Operational System or other solution that shares the same server must be added.

We also recommend a network monitoring politics to ensure:

- Delay under 3 ms.
- Package loos under 1%

Engeman Client/Server (Desktop) – Workstation

To use Engeman Client/Server, the following Operational Systems are homologated:

Operational Systems	32 Bits	64 Bits	Patch	Recommended
Windows 7	✓	✓	SP1	
Windows 8	✓	✓	-	
Windows 8.1	✓	✓	-	✓
Windows 10 (Except Home Edition)	✓	✓	-	✓
Windows Server 2012	n/a	✓	SP1	
Windows Server 2012 R2	n/a	✓	SP1	✓
Windows Server 2016	n/a	✓	-	✓

Note: to use the module Advanced Report Editor it is necessary that the workstation/server have Microsoft.Net Framework 2.0, 3.0, 3.5 and 4.5.

The hardware requirements recommended for a workstation that will execute Engeman Client/Server are:

Processors	Physical Requirements	Cores	RAM Memory	
			Minimum	Recommended
32 or 64 bits, 3M Cache, 3.2 GHz or equivalent.	1	2/4	2 GB	4 GB

The configurations specified refer only to Engeman Client/Server. Beside these ones, the requirements requested by the Operational System or other solution that shares the same workstation must be added. Concerning to disk space necessary to installation, it is recommended to have at least 500 MB.

We also recommend a network monitoring politics to ensure the database access:

- Delay under 3 ms.
- Package loos under 1%

Advanced Report Editor (Desktop) – Workstation

To use the Advanced Editor the following Operational Systems are homologated:

Operational Systems	32 Bits	64 Bits	Patch	Recommended
Windows 7	✓	✓	SP1	
Windows 8	✓	✓	-	
Windows 8.1	✓	✓	-	✓
Windows 10 (Except Home Edition)	✓	✓	-	✓
Windows Server 2012	n/a	✓	SP1	
Windows Server 2012 R2	n/a	✓	SP1	✓
Windows Server 2016	n/a	✓	-	✓

Note: The workstation/server must have the Microsoft.Net Framework 2.0, 3.0, 3.5 and 4.5.

The hardware requirements recommended for a workstation that will run the Advanced Editor are:

Processor	Physical Processors	Cores	RAM Memory	
			Minimum	Recommended
32 or 64 bits, 3M Cache, 3.2 GHz or equivalent.	1	1/2	2 GB	4 GB

The configurations specify refer only to the execution of Engeman and Advanced Report Editor. Besides these, the requirements demanded by the Operational system or other solution that shares the same workstation must be added.

Engeman Client/Server (WTS) – Terminal Service

To use Engeman Client/Server with remote access, the following Operational Systems are homologated:

Operational Systems	32 Bits	64 Bits	Patch	Recommended
Windows Server 2012	n/a	✓	SP1	
Windows Server 2012 R2	n/a	✓	SP1	✓
Windows Server 2016	n/a	✓	-	✓

Note: to use the module Advanced Report Editor it is necessary that the server have the Microsoft .Net Framework 2.0, 3.0, 3.5 and 4.5.

The hardware requirements recommended for a WTS server that will execute Engeman Client/Server are:

Users	Processors	Physical Processors	Cores	RAM Memory	
				Minimum	Recommended
Up to 5	Intel® Xeon® (64 bits, 8M Cache, 3.0 GHz) or equivalent.	1	2	3 GB	4 GB
Up to 10	Intel® Xeon® (64 bits, 8M Cache, 3.0 GHz) or equivalent.	1	2	4 GB	6 GB
Up to 20	Intel® Xeon® (64 bits, 8M Cache, 3.0 GHz) or equivalent.	2	4	4 GB	8 GB
Up to 50	Intel® Xeon® (64 bits, 8M Cache, 3.0 GHz) or equivalent.	2	4	8 GB	16 GB
Up to 100	Intel® Xeon® (64 bits, 8M Cache, 3.0 GHz) or equivalent.	4	8	16 GB	24 GB
Up to 200	Intel® Xeon® (64 bits, 8M Cache, 3.0 GHz) or equivalent.	8	12	28 GB	44 GB

For better performance in read/write operations, we recommend using a SAS 10.000 RPM or higher disk.

The specified settings refer only to the implementation of Engeman Client /Server. In addition to these, you must add the requirements required by the Operating System or another solution that share the same server.

We also recommend a network monitoring politics to ensure parameters below to the database access:

- Delay under 3 ms.
- Package loos under 1%

Engeman Web (IntraWeb)

In order to use Engeman Web (IntraWeb), the following Operating Systems are approved:

Operational Systems	32 Bits	64 Bits	Patch	Recommended
Windows Server 2012	n/a	✓	SP1	
Windows Server 2012 R2	n/a	✓	SP1	✓
Windows Server 2016	n/a	✓	-	✓
Windows 10 (Except Home Edition)	✓	✓	-	

To publish the Engeman Web (IntraWeb) you can use one of the following versions of the Internet Information Service:

Web Server	32 Bits	64 Bits	Patch	Recommended
IIS 6.0	✓	✗	-	
IIS 6.5	✓	✓	-	
IIS 7.0	✓	✓	-	✓
IIS 7.5	✓	✓	-	✓
IIS 8.5	✓	✓	-	✓
IIS 10	✓	✓	-	✓

Note: To use the Advanced Web Report Editor module (IntraWeb) requires that the IIS server has the Microsoft .Net Framework 2.0, 3.0, 3.5 and 4.5.

Browsers approved for use Engeman Web (IntraWeb) are:

Browser	32 Bits	64 Bits	Patch	Recommended
Chrome	✓	✓	28 ou superior	✓
Internet Explorer 10	✓	✓	-	
Internet Explorer 11	✓	✓	-	
Edge	✓	✓		✓
Firefox	✓	✗	24.4.0 ou superior	✓

Note: In order to use Engeman Web (IntraWeb) you must have Java Script running in your browser.

The recommended hardware requirements for the Internet Information Service server that will host the Engeman Web application publication (IntraWeb) is:

Users	Processors	Physical Processors	Cores	RAM Memory	
				Mínimo	Recomendado
Up to 5	Intel® Xeon® (64 bits, 8M Cache, 3.0 GHz) or equivalent.	1	2	2 GB	4 GB
Up to 10	Intel® Xeon® (64 bits, 8M Cache, 3.0 GHz) or equivalent.	1	2	4 GB	6 GB
Up to 20	Intel® Xeon® (64 bits, 8M Cache, 3.0 GHz) or equivalent.	1	2	8 GB	10 GB
Up to 50	Intel® Xeon® (64 bits, 8M	2	4	16 GB	24 GB

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	Cache, 3.0 GHz) or equivalent.				
Up to 100	Intel® Xeon® (64 bits, 8M Cache, 3.0 GHz) or equivalent.	4	8	24 GB	32 GB

In order to have better server and application performance, better availability and better security, if the system is installed to run via IIS, it is recommended to create an application pool separately for every 50 users who will be accessing the system.

The specified settings refer only to Engeman Web execution. In addition, you must add the requirements required by the Operating System or another solution that shares the same server. As for the disk space required to publish the application, it is recommended to reserve 400 Mb.

We also recommend a network monitoring politics to ensure parameters below:

- Delay under 3 ms.
- Package loos under 1%

Engeman Web (.Net)

To use Engeman Web, the following Operational Systems are homologated:

Operational Systems	32 Bits	64 Bits	Patch	Recommended
Windows Server 2012 R2	n/a	✓	SP1	✓
Windows Server 2016	n/a	✓	-	✓
Windows 10 (Except Home Edition)	✓	✓	-	

To publish Engeman Web one of the following versions of Internet Information Service can be used:

Web Server	32 Bits	64 Bits	Patch	Recommended
IIS 8.5	✓	✓	-	✓
IIS 10	✓	✓	-	✓

Note: to use the module Web Advanced Report Editor it is necessary that the IIS server have the Microsoft .Net Framework 2.0, 3.0, 3.5 and 4.5.

The homologated browsers for the utilization of Engeman Web are:

Browsers	32 Bits	64 Bits	Patch	Recommended
Chrome	✓	✓	28 or superior	✓
Internet Explorer 11	✓	✓	-	
Edge	✓	✓		✓
Firefox	✓	✗	24.4.0 or superior	✓

Note: to use Engeman Web it is necessary allow JavaScript execution in your browser.

The hardware requirements recommended for Internet Information Service that will host the publication of the application Engeman Web is:

Users	Processor	Physical Processors	Cores	RAM Memory	
				Minimum	Recommended
Up to 5	Intel® Xeon® (64 bits, 8M Cache, 3.0 GHz) or equivalent.	1	2	4 GB	8 GB
Up to 10	Intel® Xeon® (64 bits, 8M Cache, 3.0 GHz) or equivalent.	1	2	6 GB	10 GB
Up to 20	Intel® Xeon® (64 bits, 8M Cache, 3.0 GHz) or equivalent.	1	2	10 GB	14 GB
Up to 50	Intel® Xeon® (64 bits, 8M Cache, 3.0 GHz) or equivalent.	2	4	20 GB	24 GB
Up to 100	Intel® Xeon® (64 bits, 8M Cache, 3.0 GHz) or equivalent.	4	8	32 GB	42 GB

In order to have a better server performance and application, better availability and better security if the system is installed for execution via IIS, it is recommended to create an application pool separately for each 50 users that will be accessing the system.

The specified settings refer only to the implementation of Web Engeman (.Net). In addition to these, you must add the requirements required by the Operating System or another solution that share the same server. As for the disk space required for publishing the application, it is recommended to reserve 900 Mb.

We also recommend a network monitoring politics to ensure parameters below:

- Delay under 3 ms.
- Package loos under 1%

Engeman SSW.Net

To use Engeman SSW.Net, the following Operational Systems are homologated:

Operational Systems	32 Bits	64 Bits	Patch	Recommended
Windows Server 2012	n/a	✓	SP1	✓
Windows Server 2012 R2	n/a	✓	SP1	✓
Windows Server 2016	n/a	✓	-	✓
Windows 10 (Except Home Edition)	✓	✓	-	✓

To publish Engeman Web one of the following versions of Internet Information Service can be used:

Servidor Web	32 Bits	64 Bits	Patch	Recomendado
IIS 6.0	✓	✗	-	
IIS 6.5	✓	✓	-	
IIS 7.0	✓	✓	-	✓
IIS 7.5	✓	✓	-	✓
IIS 8.5	✓	✓	-	✓
IIS 10	✓	✓	-	✓

Note: to use this module it is necessary that the IIS server have the Microsoft .Net Framework 2.0, 3.0, 3.5 and 4.5.

The homologated browsers for utilization of Engeman SSW.Net are:

Browsers	32 Bits	64 Bits	Patch	Recommended
Chrome	✓	✓	28 or superior	✓
Internet Explorer 10	✓	✓	-	
Internet Explorer 11	✓	✓	-	
Edge	✓	✓		✓
Firefox	✓	✗	24.4.0 or superior	✓

Note: to use Engeman SSW.Net it is necessary that the Java Script execution is activated in your browser.

The hardware requirements recommended for the Internet Information Service server that will host the publication of the application Engeman Web are:

Users	Processor	Physical Processors	Cores	RAM Memory	
				Minimum	Recommended
Up to 5	Intel® Xeon® (64 bits, 8M Cache, 3.0 GHz) or equivalent.	1	2	3 GB	4 GB
Up to 10	Intel® Xeon® (64 bits, 8M Cache, 3.0 GHz) or equivalent.	1	2	4 GB	6 GB
Up to 20	Intel® Xeon® (64 bits, 8M Cache, 3.0 GHz) or equivalent.	2	4	6 GB	8 GB
Up to 50	Intel® Xeon® (64 bits, 8M Cache, 3.0 GHz) or equivalent.	2	4	12 GB	16 GB

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Up to 100	Intel® Xeon® (64 bits, 8M Cache, 3.0 GHz,) or equivalent.	4	8	20 GB	26 GB
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The configurations specified refer only to the execution of Engeman SSW.Net. Besides these ones, the requirements requested by the Operational System or other solution that shares the same server must be added.

In order to have a better performance of the server and application, better availability and better security, if the system is installed for the execution via IIS, it is recommended to create a pool of applicative separately for each 50 users that will be accessing the system.

Concerning to disk space necessary to installation, it is recommended to have at least 250 MB.

We also recommend a network monitoring politics to ensure parameters below:

- Delay under 3 ms.
- Package loos under 1%

Engeman Mobile

To use the server Engeman Mobile, the following Operational Systems are homologated:

Operational Systems	32 Bits	64 Bits	Patch	Recommended
Windows Server 2012	n/a	✓	SP1	
Windows Server 2012 R2	n/a	✓	SP1	✓
Windows Server 2016	n/a	✓	-	✓
Windows 10 (Except Home Edition)	✓	✓	-	✓

To publish the Web Service of Engeman Mobile one of the following versions of Internet Information Service can be used:

Web Server	32 Bits	64 Bits	Patch	Recommended
IIS 7.0	✓	✓	-	
IIS 7.5	✓	✓	-	
IIS 8.5	✓	✓	-	✓
IIS 10	✓	✓	-	✓

Note: to use this module it is necessary that the IIS server have Microsoft .Net Framework 2.0, 3.0, 3.5 and 4.0.

The hardware requirements recommended for Internet Information Service server that will host the publication of Engeman Mobile Web Service are:

Users	Processor	Physical Processors	Cores	RAM Memory	
				Minimum	Recommended
Up to 5	Intel® Xeon® (64 bits, 8M Cache, 3.0 GHz) or equivalent.	1	2	2 GB	3 GB
Up to 10	Intel® Xeon® (64 bits, 8M Cache, 3.0 GHz) or equivalent.	2	4	3 GB	4 GB
Up to 20	Intel® Xeon® (64 bits, 8M Cache, 3.0 GHz) or equivalent.	2	4	4 GB	6 GB
Up to 50	Intel® Xeon® (64 bits, 8M Cache, 3.0 GHz) or equivalent.	2	4	6 GB	8 GB
Up to 100	Intel® Xeon® (64 bits, 8M Cache, 3.0 GHz) or equivalent.	4	8	8 GB	16 GB

The configurations specified refer only to the execution of Engeman Mobile. Besides these ones, the requirements requested by the Operation System or other solution that shares the same server must be added.

To have a better performance of the service and application, better availability and better security, if the system is installed for the execution via IIS, it is recommended to create a pool of applicative separately for each 50 users that will be accessing the system.

In the Orders/Service Requests with high synchronization demand scenery (number of records X reduced synchrony interval) for groups of 20 until 30 is advised to adjust in each application pool the quantity of users/device. The use of the application synchronizing with low quality of 3G/4G internet connection (unstable, slow speed, access restrictions, etc.) may require that the users/devices group which will share the connection pools be smaller.

The mobile devices for Engeman Mobile installation must have:

- **Android** 5.x (Lollipop), 6.x (Marshmallow), 7.x (Nougat) and 8.x (Oreo)
- **iOS** 9.x, 10.x, 11.x ou 12.x
- **Windows 10**, except Home Edition
- [Android] At least 150 MB of free space for storage, requiring more space on the device according to the volume of attachments to be used. Minimum 80 MB of RAM for the application. Considering too many applications running concurrently and consuming the operating system itself
- [Windows] Minimum 1 GB of free space for storage, requiring more space on the device according to the volume of attachments to be used. Minimum of 300 Mb of RAM for the application. Considering too many applications running concurrently and consuming the operating system itself
- [Windows] The application installation process requires credentials for a user with an administrative profile.

Engeman Mobile compatibility guarantee the use on devices with official Android distributions which are officially released by Google or authorized manufacturers and that are supported (active cycle of life) by Google.

Versions that had any modifications ("root") not homologated by Google and manufacturers which can present incompatibility and makes the use of the application impossible, please check with device manufacturer for compatibility with the latest Android version.

The QRCode reader or any other bar code pattern on smartphones, this is an emulation through the device's camera. The efficiency and read compatibility in this case are related to the camera quality, adaptations made by manufacturer in the Operating System on device and lastly the printing read quality. Low-quality cameras reading a small code tend to be less efficient, the device needs to be stabilized and close to the code which will be read, the code must to be with a good illumination conditions and good resolution/conservation. The code reader is the device Operating System responsibility and not Engeman Mobile. There is no intervention that can be done in our application to improve the device code reader.

General Notes

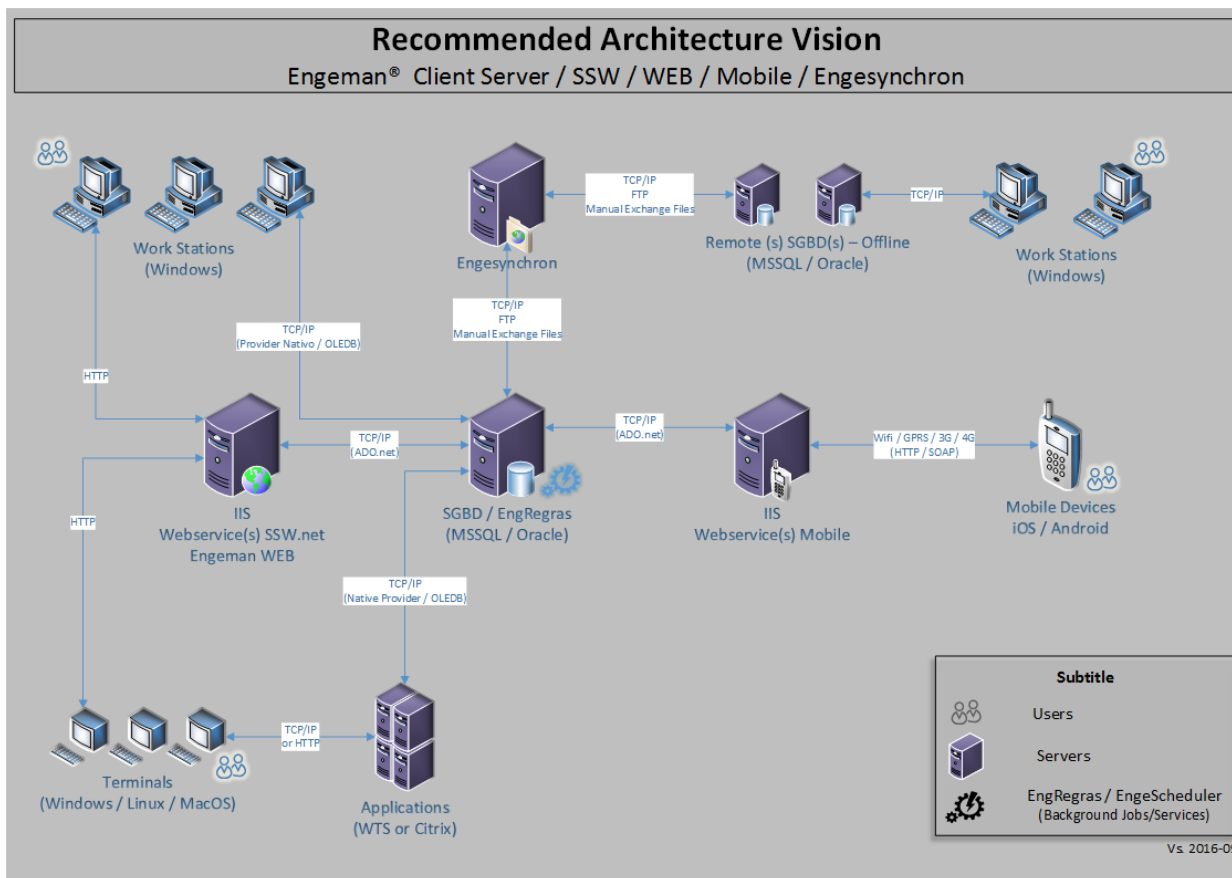
We recommend the creation of an account for connection with the database for each service that will be used at Engeman® implantation.

Example:

- When using Engeman Client/Server, Engeman Mobile and EngeRegras, create the accounts:
 - ENGEMAN to authenticate Engeman Client/Server in the stations or WTS.
 - ENGEMAN_MOBILE to authenticate the Web Service and data synchronism.
 - ENGEMAN_REGRAS to authenticate the execution of integration or business rules.
- Export to MS-Project requires this software is installed and licensed locally (or on the remote host) to complete this action. Installation, licensing and maintenance of MS-Project are exclusive responsibilities of the customer.
- Exporting to other proprietary file formats (XLS, DOC, etc.) may require locally (or on remote host) installation and licensing of the corresponding software to complete these actions. Installation, licensing and maintenance of these software are exclusive responsibilities of the customer.

Architecture Solution Engeman

The architecture of all the modules that composes the Engeman solution can be seen in the diagram below:



We note that this is the recommended architecture when used all modules Engeman solution. Variations of joints and services may exist, if the hardware supports the recommended requirements for each module.