



**PUBLIC**

SAP Work Manager

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# SAP Work Manager Sizing Guide

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# Document History

Before you begin reading this guide, be sure that you have the latest version. Find the latest version at [https://help.sap.com/viewer/p/SAP\\_WORK\\_MANAGER](https://help.sap.com/viewer/p/SAP_WORK_MANAGER).

The following table provides an overview of the most important document changes.

Document Version	Release Date	Description of Changes
1.0	JUL 2021	Original release of the <i>SAP Work Manager Sizing Guide</i> , version 6.6.
1.1	OCT 2021	Replacement of problematic language (ex: master data to user data)

# 1 Sizing Guide Introduction

This sizing guideline document is intended for service providers and enterprises that plan to deploy SAP Work Manager and need to understand the different technology options and sizing considerations.

Before deploying SAP Work Manager, you will need to make several technology decisions based on the requirements of the mobile application. These technologies impact downstream sizing estimates for each component of the system. These guidelines help define the questions and answers related to technologies and sizing that everyone should ask before deploying SAP Work Manager. Making these assessments and decisions early in the process is essential to ensuring a successful product rollout.

## 1.1 Functions of SAP Work Manager

SAP Work Manager is a comprehensive mobile solution for the automation of asset management and field service processes.

Regardless of connectivity, SAP Work Manager allows remote employees to access, complete, and manage their assigned work orders and service requests via mobile devices. With SAP Work Manager, they have SAP ERP data readily available including task lists, short and long text, repair histories, and material availability. Armed with more information, employees work smarter, have more work time, improve their first-time fix rates and extend asset lives by conducting more preventative maintenance.

SAP Work Manager comes packaged with the Mobile Add-On for ERP. Since an SAP ABAP add-on that installs into an SAP namespace in your SAP system, the Mobile Add-On for ERP offers tight integration and easier deployment without interference to or from your existing SAP system customizations or standard SAP objects. It allows for full configuration, management, and visibility into your SAP Work Manager application from within your SAP system infrastructure.

The main features and functions in SAP Work Manager include the following:

- Single Sign-On (SSO)
- Work order processing
- Notification processing
- Time recording
- Attachments
- Linear Asset Management (LAM)
- Inspection rounds
- Geographic Information System (GIS)
- Meter Management component
- Crew Management component
- Customer Service component
- Vehicle Stock feature
- Rounds feature

## Single Sign-On (SSO)

Single sign-on (SSO) allows the user to log into SAP Work Manager from the mobile device using SSO (network) credentials instead of using the back end ERP user name and password.

## Work Order Processing

Initial transmit, or synchronization, has taken place and data has been downloaded to the mobile client device. Every transmit afterwards downloads only new or changed data on the device. By default, the SAP Work Manager application determines the assignment of a work order using the personnel number of the work order header.

The application requires that a single assignment field assignment is used. Work orders can be assigned to a technician at the assignment field level or the operation level.

Work orders can also be distributed to the mobile device based on a specific order type. You can customize the specific order type in the Configuration Panel in the back end.

## Notification Processing

The application requires that a single assignment field assignment is used. Notifications can be assigned to a technician at the personnel field level, work center level, or other custom field. On the mobile client device, notifications can be accessed directly.

## Time Recording

A field technician can access the time records directly on the mobile client device. They can also record time worked from the mobile device, either independent of the processed work order, or in connection with a certain work order, depending on the configuration.

## Attachments

SAP Work Manager supports viewing of user data or transaction data attachments on the mobile device. Types of attachments include documents from Microsoft Office, PDF files, and other commonly used file formats, including videos, pictures, and audio files.

## Linear Asset Management (LAM)

Linear Asset Management (LAM) is designed to meet the requirements of linear asset maintenance. A linear asset is a special type of asset that has an associated length dimension. This dimension is represented through starting and ending points or by specifying the asset length. For the mobile device, the linear asset management functionality enables the field technician to work on orders and notifications that have linear equipment and functionality locations. Field personnel can create work orders, notifications, time confirmations, and material confirmations for the linear assets.

## Inspection Rounds

An inspection round collects similar repetitive activities and inspections for many different technical objects. These inspection rounds are defined and scheduled in the back end. The ERP system allows the user to customize the variant or the range of inspection rounds that they want to download to the mobile device.

## Geographic Information System (GIS)

A geographic information system (GIS) integrates hardware, software, and data for capturing, managing, analyzing, and displaying all forms of geographically referenced information. SAP Work Manager is delivered with a GIS integration framework. It is delivered out-of-the-box with predefined mobile parameters that are Esri-specific, but you can configure and point to any GIS supplier you choose.

## Meter Management Component

The Meter Management component gives technicians access to SAP through a mobile device, with or without network access. Install the Meter Management component with SAP Work Manager to handle work orders of type *SMO1*, *RPO1*, *MRO1*, and *SMO2*.

## Crew Management Component

The Crew Management component is an optional component that allows supervisors and team leaders to manage their crew with significantly lower cost and improved flexibility. When this add-on component is implemented, it adds the following functionality to the core SAP Work Manager application: Add, remove, and select crew technicians and vehicles, track vehicle usage through odometer readings, and report, review, and approve crew time.

## Customer Service Component

The Customer Service component is an optional component intended for use at sites where part or all of a work of a technician involves maintenance or services performed under contract for customers or other third parties. With the Customer Service component installed, you can view service orders only, no work orders.

## Vehicle Stock Feature

The Vehicle Stock feature is used by operators who keep stock items in their vehicles meant for daily work. Vehicle stock is also used for tracking tools and other items kept in the vehicles. The Vehicle Stock feature for SAP Work Manager provides functionality for stock transport orders, inventory receipts, transports, and used or actuals.

## Rounds Feature

Using SAP Work Manager with the Rounds component, technicians can record the measuring points for rounds. You can view these rounds and their points by entry lists, locations, equipment, and by round number. You enter measurements, and SAP Work Manager enforces upper and lower limits of the measurements if necessary. Counter readings and observations without reading values are also supported.

## 1.2 Architecture of SAP Work Manager

SAP Work Manager is deployed on the SAP Mobile Platform as an Agentry application, built with the Agentry toolkit within the SAP Mobile SDK. Following are the primary components of the SAP Mobile Platform that are of importance to SAP Work Manager:

- SAP Mobile Platform runtime
- Agentry development server
- Agentry Editor
- Agentry client
- Agentry Test Environment (ATE)

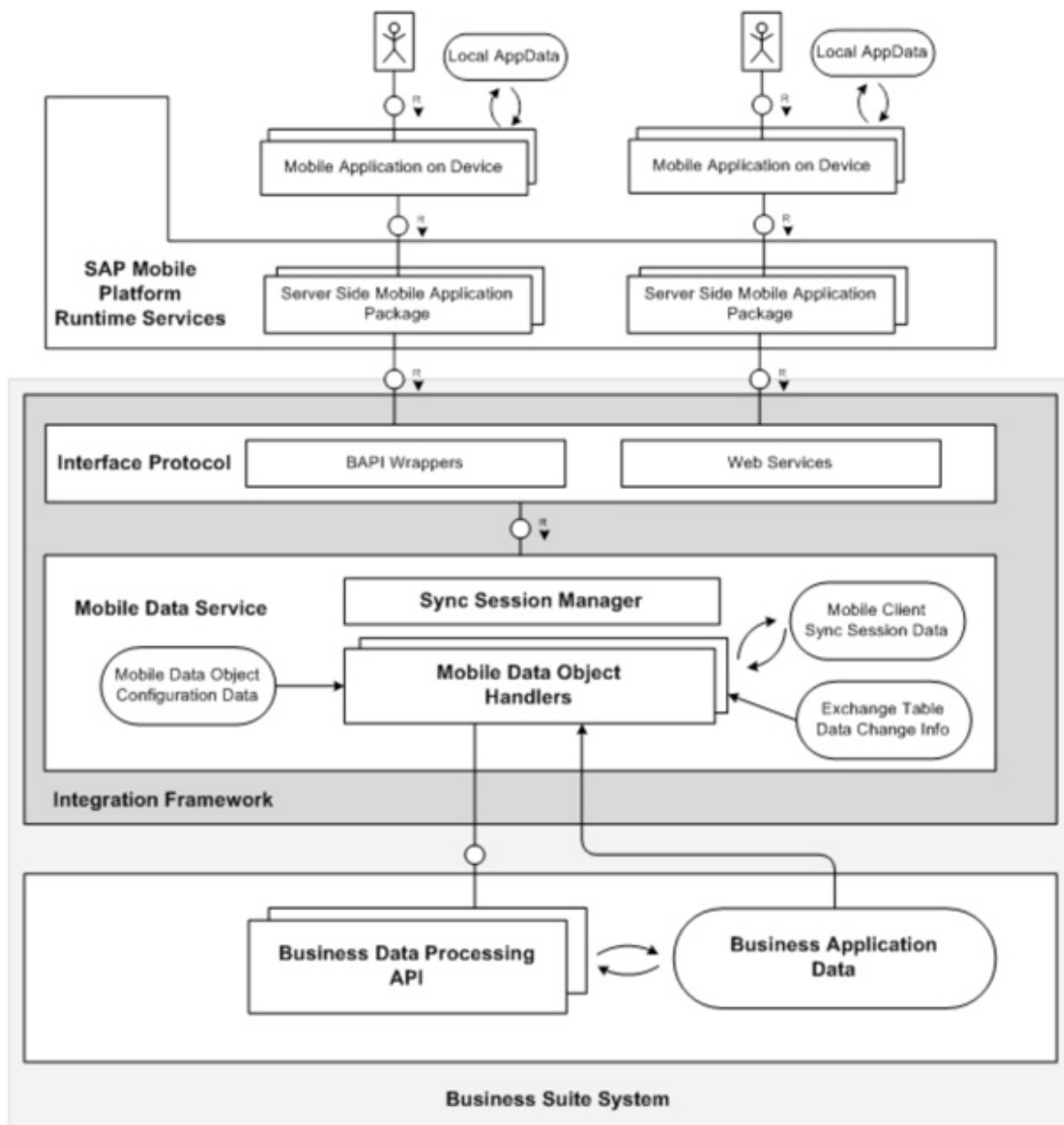
### 1.2.1 Mobile Add-On for ERP Overview

The Mobile Add-On for ERP provides an efficient way to build mobile solutions for SAP, using the SAP Mobile Platform.

The framework was developed to address the following business needs:

- Establish a common mobile integration service layer and architecture for the mobile adaptation of enterprise business processes and business object data for enterprise mobile applications.
- Define a consistent integration pattern for mobile data object modeling, change detections, data distribution, delta sync calculation, and data pushes.
- Provide a framework for mobile application logging, tracing, administration, and monitoring.
- Uses a combined coding and configuration approach that enables a comprehensive and flexible application paradigm. Standard objects are configurable and extensible. Partners and customers are able to develop their own integration services using the same integration pattern.
- Uses the latest technology supported by SAP to protect the return on investment.

The Mobile Add-On for ERP consists of several components shown in the following diagram.



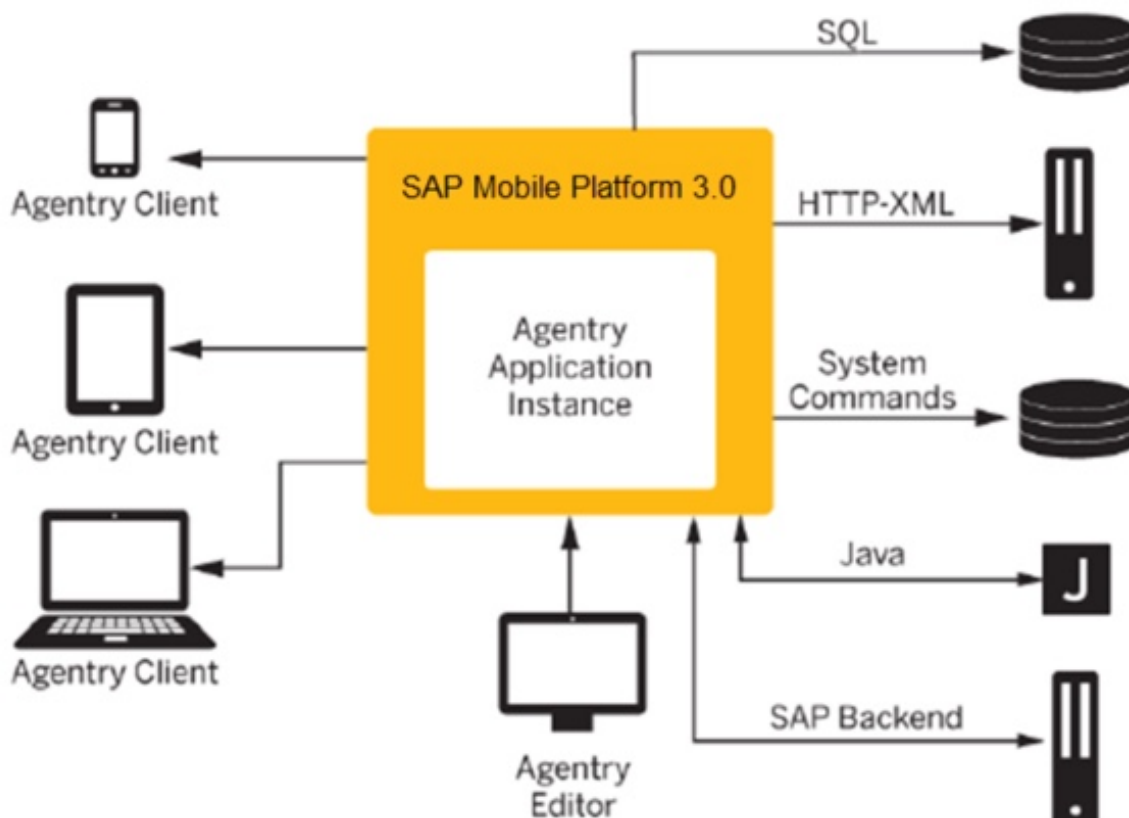
## 1.2.2 Agentry Applications

The Agentry architecture provides 4th generation language development of client-side behaviors for a mobile application, coupled with back end synchronization logic in the language of the enterprise systems being mobilized.

Typical use cases for an Agentry application include mobile workflows with simple or complex business requirements and rules, an intelligent client with native on-device data storage, and potential implementation-specific configuration. Agentry also ships with, and supports, several out-of-the-box bundled applications, which typically include:

- The ability to process a moderate-to-high volume of data
- Simple or complex user interface
- Online and offline support of application functionality and data access
- Potential for multiple system connections between the Agentry server and enterprise systems, possibly with different synchronization paradigms (for example, SQL, Java)

Agentry software components include the Agentry Runtime Instance, which serves as a proxy to back end synchronization or requests, the Agentry Editor, and the Agentry clients. Each component serves a specific purpose, and all work together to provide the overall software solution.



## 1.2.3 Agentry Runtime Application Instance

The SAP Mobile Platform Agentry runtime application instance is the component that triggers synchronization logic for all production data between the back-end system and the Agentry clients. The application instance in the middle tier does not cache any production data. The application instance also distributes the application metadata *definitions* published from the Agentry Editor that are executed by the device client through the application instance.

## 1.2.4 Back-End System Support

An Agentry application instance can synchronize data between one or more back-end systems for a single application.

With respect to enterprise system integration, an application can synchronize production data with a single system, or with multiple back-end systems of varying types.

A single application can synchronize data with:

- A database system using SQL
- A Web server, by making CGI requests and receiving structured XML data in return
- The Windows host system on which the Agentry server is running
- A Java API, using the JVM
- An SAP back-end system that supports Java Connector (JCo) technology

Each Agentry application instance can also connect to multiple back-end systems, including one or more of the types in the previous bulleted list. The ability to connect to multiple back-end systems and system types allows for data synchronization from disparate systems in a seamless manner for mobile application end users.

You can use Connector Studio, which is part of the Agentry Editor, to configure connectivity to WSDL or SQL systems. You can use the Agentry SDKs to develop custom code that provides connectivity logic for setting up back end connections. For example, you can use the Agentry 'steplet' APIs to write SAP back end interface code that connects the Agentry application to ABAP. You can make connections to multiple back-end systems using both custom code and Connector Studio configuration for access through a single application.

## 2 Sizing Fundamentals and Terminology

Sizing determines the hardware requirements of an SAP application, such as the network bandwidth, physical memory, CPU processing power, and I/O capacity.

The size of the hardware and database is influenced by both business aspects and technological aspects. Take into account both the number of users using the various application components and the data load they put on the server.

This topic explains the most important sizing terms. These terms are used extensively in this *Sizing Guide*.

SAP provides general sizing information on the SAP Service Marketplace. For the purpose of this guide, we assume that you are familiar with sizing fundamentals. You can find more information at <http://service.sap.com/sizing> ► [Sizing Decision Tree](#) ► [General Sizing Information](#) ►.

### Benchmarking

Determine sizing information using SAP Standard Application Benchmarks and scalability tests (<http://www.sap.com/benchmark>). Released for technology partners, benchmarks provide basic sizing recommendations to customers by placing a substantial load upon a system during the testing of new hardware, system software components, and relational database management systems (RDBMS). All performance data relevant to the system, user, and business applications are monitored during a benchmark run and are used to compare platforms.




### SAP Application Performance Standard (SAPS)

The SAP Application Performance Standard (SAPS) is a hardware-independent unit that describes the performance of a system configuration in the SAP environment. It is derived from the Sales and Distribution (SD) benchmark, where 100 SAPS is defined as the computing power to handle 2,000 fully business processed order line items per hour. (For more information about SAPS, see <https://www.sap.com/about/benchmark/measuring.html>).

### Initial Sizing

Initial sizing refers to the sizing approach that provides statements about platform-independent requirements of the hardware resources necessary for representative, standard delivery, SAP applications. The initial sizing guidelines assume optimal system parameter settings, and standard business scenarios.

## Expert Sizing

*Expert sizing* refers to a sizing exercise where customer-specific data is analyzed and used to put more detail on the sizing result. The main objective of the exercise determines the resource consumption of customized content and applications (not SAP standard delivery) by comprehensive measurements. For more information, see <https://service.sap.com/sizing>  [Sizing Decision Tree](#)  [Expert Sizing](#) .

## Configuration and System Landscaping

Hardware resources and optimal system configuration depend on the requirements of the customer-specific project. These resources and system configuration include the implementation of distribution, security, and high availability solutions by different approaches using various third-party tools. In the case of high availability through redundant resources, for example, adjust the final resource requirements accordingly.

There are some best practices, which may be valid for a specific combination of operating system and database. To provide guidance, SAP created the SAP NetWeaver configuration guides. Find all SAP NetWeaver documentation here:

[https://help.sap.com/viewer/p/SAP\\_NETWEAVER](https://help.sap.com/viewer/p/SAP_NETWEAVER).

# 3 Initial Sizing for SAP Work Manager

Many customers and partners are interested in mobilizing their mission critical business applications by modifying SAP standard applications or developing their own applications from scratch using Mobile Infrastructure. Since every customer application is different, giving concrete sizing figures for any customer application is not possible. Nonetheless, SAP does provide some sample scenarios that can serve as a guideline for sizing custom-made mobile applications.

## i Note

If your data volume is beyond the volume of the largest scenarios described in this section, then it is necessary to perform customer-specific sizing.

Customers developing their own applications should pay particular attention to the performance chapter in the SAP Mobile Platform. They should also use application-specific tuning options, such as additional indices on important tables.

## 3.1 Prerequisites and Supported Devices

The SAP Work Manager mobile application has the following prerequisites:

## i Note

Since Android devices are manufactured by several device manufacturers, the device you are planning to use for SAP Work Manager needs minimal device requirements.

Feature / Function	Device OS Supported	SAP System Requirement	SAP Mobile Platform Server OS
SAP Work Manager 6.5.1 (core product)	iOS 10.x and 11.x  Android (phone and tablet) 6.x and 7.x  Windows 7, 8, and 10 <ul style="list-style-type: none"><li>• Windows 10 laptop and tablet</li><li>• Windows 8.1 Pro tablet</li><li>• Windows 8 Pro tablet</li><li>• Windows 8 RT tablet is NOT supported</li><li>• Windows 8 phone is NOT supported</li></ul>	SAP ECC 6.0 Ehp7 SP014 or later	Windows 7 and above  Linux

Feature / Function	Device OS Supported	SAP System Requirement	SAP Mobile Platform Server OS
SAP Meter Management (component)	<p>iOS 10.x and 11.x</p> <p>Android (phone and tablet) 6.x and 7.x</p> <p>Windows 7, 8, and 10</p> <ul style="list-style-type: none"> <li>• Windows 10 laptop and tablet</li> <li>• Windows 8.1 Pro tablet</li> <li>• Windows 8 Pro tablet</li> <li>• Windows 8 RT tablet is NOT supported</li> <li>• Windows 8 phone is NOT supported</li> </ul>	SAP ECC 6.0 with IS-UT Ehp7 with SP14 or later	<p>Windows 7 and above</p> <p>Linux</p>
SAP LAM/Inspection Rounds (component)	<p>iOS 10.x and 11.x</p> <p>Android (phone and tablet) 6.x and 7.x</p> <p>Windows 7, 8, and 10</p> <ul style="list-style-type: none"> <li>• Windows 10 laptop and tablet</li> <li>• Windows 8.1 Pro tablet</li> <li>• Windows 8 Pro tablet</li> <li>• Windows 8 RT tablet is NOT supported</li> <li>• Windows 8 phone is NOT supported</li> </ul>	SAP ECC 6.0 Ehp7 SP014 or later	<p>Windows 7 and above</p> <p>Linux</p>
SAP Customer Service (component)	<p>iOS 10.x and 11.x</p> <p>Android (phone and tablet) 6.x and 7.x</p> <p>Windows 7, 8, and 10</p> <ul style="list-style-type: none"> <li>• Windows 10 laptop and tablet</li> <li>• Windows 8.1 Pro tablet</li> <li>• Windows 8 Pro tablet</li> <li>• Windows 8 RT tablet is NOT supported</li> <li>• Windows 8 phone is NOT supported</li> </ul>	SAP ECC 6.0 Ehp7 SP014 or later	<p>Windows 7 and above</p> <p>Linux</p>

Feature / Function	Device OS Supported	SAP System Requirement	SAP Mobile Platform Server OS
SAP Crew Management (component)	<p>iOS 10.x and 11.x</p> <p>Android (phone and tablet) 6.x and 7.x</p> <p>Windows 7, 8, and 10</p> <ul style="list-style-type: none"> <li>• Windows 10 laptop and tablet</li> <li>• Windows 8.1 Pro tablet</li> <li>• Windows 8 Pro tablet</li> <li>• Windows 8 RT tablet is NOT supported</li> <li>• Windows 8 phone is NOT supported</li> </ul>	SAP ECC 6.0 Ehp7 SP014 or later	<p>Windows 7 and above</p> <p>Linux</p>
SAP Vehicle Stock (feature)	<p>iOS 10.x and 11.x</p> <p>Android (phone and tablet) 6.x and 7.x</p> <p>Windows 7, 8, and 10</p> <ul style="list-style-type: none"> <li>• Windows 10 laptop and tablet</li> <li>• Windows 8.1 Pro tablet</li> <li>• Windows 8 Pro tablet</li> <li>• Windows 8 RT tablet is NOT supported</li> <li>• Windows 8 phone is NOT supported</li> </ul>	SAP ECC 6.0 Ehp7 SP014 or later	<p>Windows 7 and above</p> <p>Linux</p>
Rounds (feature)	<p>iOS 10.x and 11.x</p> <p>Android (phone and tablet) 6.x and 7.x</p> <p>Windows 7, 8, and 10</p> <ul style="list-style-type: none"> <li>• Windows 10 laptop and tablet</li> <li>• Windows 8.1 Pro tablet</li> <li>• Windows 8 Pro tablet</li> <li>• Windows 8 RT tablet is NOT supported</li> <li>• Windows 8 phone is NOT supported</li> </ul>	SAP ECC 6.0 Ehp7 SP014 or later	

## 3.2 Assumptions

SAP Mobile Work Manager allows remote employees to access, complete, and manage their assigned work orders and service requests via mobile devices. It enables them to carry out their daily functions without having to be tied by to a certain location and machine. Employee or user data such as work orders, notifications, and timesheets are downloaded /sync to the device when a connection to the SAP Work Manager Agency server is initiated. The synchronization operation executes the client operations (transactions) which include device initiated update, delete, and insert operations. The device then sends transaction data to the SAP Work Manager Agency server for processing. When the client operation is done, the fetch operation is started where the device sends all object primary keys and last-changed timestamps to the server and completes the synchronization process. This process is constantly done by users to manage their daily workload and utilized much of the server resources thus it makes a good candidate for sizing exercise.

The following are the assumptions used in this sizing guide:

1. The resource consumption of a sync process in Work Manager depends on the volume of data that needs to be handled by the backend servers. Therefore, a throughput-based sizing is applied in this guide.
2. All sizing data in this document is related to client-initiated syncs. If heavy volumes of scheduled or ad-hoc pushes are required, more detailed analysis and implementation-specific performance testing is recommended.
3. The business process used to estimate the sizing information was the sync of updated and new work orders. During sync a number of updated and new work orders on the mobile device were sent to the SAP backend while performance and server resource utilization were measured. The Sizing Performance tables outline the different data sets used to simulate this scenario.

Type of Data	Number of Records		
	Data Volume 1 (DV1)	Data Volume 2 (DV2)	Data Volume 3 (DV3)
Updated Work Orders	12	36	60
New Work Orders (every WO has 5 Operations / 5 functional locations)	3	9	15

The primary goal of the scenario was to measure the resource consumption on both the SMP server and the SAP backend when an expected peak data volume is synchronized with backend system.

During the sync the data is uploaded and downloaded between the mobile device and the backend. The mobile device tells the server what new information it has and then the server adds these changes and new information to the SAP backend. Next, the server checks the SAP backend for new or changed information after the client's previous sync and retrieves it. It will then send this information down to the client. This entire process is measured for this sizing guide given the data set above.

To measure the number of SAPS required, the expected peak throughput was simulated using the data volume in the table above. If the expected throughput (sync/hour) during the peak period of operation is 100 syncs/hr and every sync consists of 3 new Work Orders and 12 updated work orders this translates to:

- Total New Work Orders in an hour (3 \* 100) = 300 new work orders added to the system
- Total Updated Work Orders in an hour (12 \*100) = 1200 updated work orders added to the system

## 3.3 Sizing Guidelines

To size an SAP Work Manager server, consider which functionality of the application affects the performance of the middleware and back-end servers. The transmit, or sync, is one of the functionalities of SAP Work Manager that users would typically execute on a daily or hourly basis. The sync consumes much of the server resources that affect overall performance. These guidelines are based on the transmit function executed with an average payload shown in the table in the [Assumptions \[page 16\]](#) topic.

The Sizing Performance in this topic explains the sizing performance for three servers categorized into small, medium, large, and extra large syncs, and shows the following:

- Sync/hr is a throughput measurement of the total number of client initiated syncs from all concurrent users during a peak hour of activity
- Number of syncs per hour for every server
- CPU utilization value based on 65% CPU usage
- SAPS scores are divided into different data volume described in the table in the Assumptions topic
  - SAPS scores for a Small sync consisting of 100 syncs/hour
  - SAPS scores for a Medium sync consisting of 250 syncs/hour
  - SAPS scores for a Large sync consisting of 400 syncs/hour
  - SAPS scores for an Extra Large sync consisting of 700 syncs/hour

\*SAPS, the SAP Application Performance Standard, is a hardware-independent unit of measurement. For information on SAPS sizing, refer to: <http://global.sap.com/campaigns/benchmark/measuring.epx>

### Note

Consider the minimum SAP Mobile Platform server hardware requirement before using the sizing guide. The minimum system requirement for the SAP Mobile Platform is described as follows:

- Processor: 1 Intel Quad Core @ 2.00 GHz
- RAM: 6GB
- Operating System: Windows 2008 Server R2

SAPS measurements in this document are based on SAP Work Manager load only. Consider any other application load that could execute on a given server when sizing the server.

## Sizing Performance Tables

### Data Volume 1

Updated work orders	12
New work orders (every work order has five operations or five functional locations)	3

### Sizing

Type of Server	100 syncs/hour	250 syncs/hour	400 syncs/hour	700 syncs/hour
SAP Mobile Platform server (SAPS*)	1000	2000	2500	4500
SAP ABAP server (SAPS*)	1000	2500	3500	6000
SAP DB server (SAPS*)	500	1500	2000	3000

#### i Note

Total Number of Work Orders Synced per Hour = Throughput (syncs/hr ) \* Data Volume 1

### Data Volume 2

Updated work orders	36
New work orders (every work order has five operations or five functional locations)	9

### Sizing

Type of Server	100 syncs/hour	250 syncs/hour	400 syncs/hour	700 syncs/hour
SAP Mobile Platform server (SAPS*)	1500	3500	6000	10000
SAP ABAP server (SAPS*)	2000	4500	7500	12500
SAP DB server (SAPS*)	1000	2000	3000	5500

#### i Note

Total Number of Work Orders Synced per Hour = Throughput (syncs/hr ) \* Data Volume 2

### Data Volume 3

Updated work orders	60
New work orders (every work order has five operations or five functional locations)	15

### Sizing

Type of Server	100 syncs/hour	250 syncs/hour	400 syncs/hour	700 syncs/hour
SAP Mobile Platform server (SAPS*)	2500	5500	9000	15500
SAP ABAP server (SAPS*)	3000	7000	11500	19500
SAP DB server (SAPS*)	1500	3500	5500	9500

#### **i** Note

Total Number of Work Orders Synced per Hour = Throughput (syncs/hr ) \* Data Volume 3

## 4 Comments and Feedback

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