

**Oracle® Hospitality OPERA Property Management**  
Hardware Sizing Guide for Microsoft OS  
OPERA Release 5.0.04.03 and Higher

**E78130-01**

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# Preface

This document serves as a guide when determining hardware requirements (such as servers, printers, workstations) for hotel installations running Oracle Hospitality OPERA Property Management version 5.0.04.03 or higher. The installation requires Oracle Weblogic application server media.

## Audience

The Hardware Sizing Guide is intended for customers of Oracle Hospitality OPERA Property Management version 5.0.04.03 or higher. Using this guide, customers can determine their hardware needs and discuss them with the appropriate personnel for installation and implementation.

## Documentation

Oracle Hospitality product documentation is available on the Oracle Help Center at <http://docs.oracle.com/en/industries/hospitality/?tab=2>.

## Revision History

Date	Description of Change
December 2014	<ul style="list-style-type: none"><li>Initial 5.0.04.03 sizing guide</li></ul>
September 2016	<ul style="list-style-type: none"><li>Conform to Oracle Corporation documentation standards. Updated data in certain tables to reflect current technology.</li></ul>

# 1 Sizing Methodology Overview

## Servers

Servers have three main components:

1. CPU
2. Memory
3. Drives

Each component has factors that determine the proper size:

- At a high level, CPU and memory are driven by the number of users and the type of processing.
- Disk configuration is driven by data size and the necessity for speed of access (Reduced IO contention).

The sizes published in this document are based on analysis of empirical data from Beta sites and load testing results. The hardware specifications are based on available hardware at the time of writing.

The number of connections is the sum of the number of PC's with the ability to connect to Oracle Hospitality OPERA Property Management at one time, plus the number of external connection sources, such as third party software and interface PC(s).

Examples and generic calculations are included for determining the user equivalent load of CRS interfaces, GDS, and OWS.

Server sizes are designed to support all Oracle Hospitality OPERA Property Management modules in any configuration, as long as the number of connections is not exceeded. Compatibility and performance of Oracle Hospitality OPERA Property Management hotel servers with other products such as Yield Management, Materials Management, or Back Office products has not been evaluated and should be considered separately when specifying servers.

## Large Installations (over 150 connections)

Larger installs classified as greater than 150 users require a detailed analysis for proper sizing. Contact your Oracle account representative for help with large configurations, as there are many possibilities based on customer preferences.

## Supported Platforms

For supported platforms, refer to the document *OPERA 5 and OPERA Cloud Client and Server Compatibility Matrix*. It is located on the Oracle Global Business Units Hospitality Central/Hospitality Industry Solutions: Hotel Technical Documentation site. <http://my.oracle.com/site/gbu/hgbu/industry/hotel/documentation/cnt2536865.pdf>

## 2 OPERA Xpress Limited Services Server Sizing (6 Users)

OPERA Xpress Limited Services sizing applies to the release of Oracle Hospitality OPERA Property Management version 5.0.04.03 or higher. For other configurations, refer to either the Single server sizing or use the Standard dual server sizing in this document.

The following criteria must be met in order to use these specifications:

1. The server machine is dedicated only to OPERA Xpress and serves no other purpose.
2. Maximum of:
  - 6 concurrent PMS users
  - 4 property interfaces
  - 1 Central systems interface connection (OXI) allowed
3. PMS module is the only product in use. Other Oracle Hospitality OPERA Property Management modules are not designed to be used in this server configuration. Refer to 2 and 4 CPU single server sizing for deployment options with other modules active.
4. Use of the OPERA Xpress server as a workstation is not supported.
5. Separate workstations are required for each user.
6. Printers should be connected to workstations, not to the server.

**Table 1 - OPERA Xpress Server – 6 Users Specifications**

<b>Operating System</b>	Supported 64 bit Microsoft Windows Server OS	
<b>Number of Users</b>	Up to 6 Users	
	Minimum	Recommended
<b>CPU</b>	2 CPU core, fastest available	4 CPU core, fastest available
<b>Memory Minimum</b>	8 GB	12 GB
<b>Disk Minimum</b>	1 x 500 GB IDE 7200k RPM drive. No specific drive letter requirements.  <b>Optional recommended upgrades</b> Additional IDE disk for Raid 1 configuration Upgrade to ATA or SCSI and Raid Controller  <b>NOTE:</b> Hardware RAID controller is required in order to use RAID Disk configuration.	
<b>Interface Ports</b>	4 port RS232 expansion card. (built in surge protection highly recommended)	
<b>Backup device</b>	IDE tape drive. Microsoft Windows Backup can be used to perform cold backups to tape. Hot Backups require regionally approved backup software and additional Disk space for Archive logs.	
<b>Printer</b>	Laser printer	

## 3 Single Server Sizing (2 CPU Cores – 20 Users)

This Single Server Sizing (2 CPU cores) applies to Oracle Hospitality OPERA Property Management PMS and S&C modules of release 5.0.04.03 or higher.

The following criteria must be met to use these specifications:

1. The server machine is dedicated only to Oracle Hospitality OPERA Property Management and can serve no other purpose.
2. Maximum of:
  - 20 concurrent users
  - 8 property interface
  - 1 Central systems interface connection (OXI) allowed
3. Postscript print drivers are the only print drivers allowed on the server.

**Table 2 - Single Server 2 CPU Cores – 20 Users Specifications**

<b>Operating System</b>	Supported 64 bit Microsoft Windows Server OS	
	Minimum	Recommended
<b>Number of Users</b>	Up to 15 Users	Up to 20 Users
<b>CPU</b>	2 CPU core, fastest available	4 core, fastest available
<b>Memory Minimum</b>	12 GB	16 GB
	When tuning Oracle database buffers or other system components that impact memory consumption, consideration should be given to the fact that approximately 64MB per user is required for user sessions.	
<b>Disk Minimum</b>	2 x 72 GB 10K or 15K RPM SATA drive space. No specific drive letter requirements.	
	<p><b>Recommendations</b></p> <p>C: 16GB System partition drive 0                      D: Remainder of Drive 0                      E: Drive 1</p> <p><b>Optional Upgrades</b></p> <p>Additional disks for Raid 1 or Raid 0+1 configuration. Hardware RAID controller is required in order to use Raid Disk configurations.).</p> <p>SCSI tape backup device, backup software with Oracle Agent, and additional drive space for archive logs required if Hot Backups are used.</p> <p>Example 4x72 GB drives (SCSI Ultra 320 or 10k SAS):                      RAID 1 = 2 x 72 GB usable space                      RAID 0+1 = 1 x 144 GB usable drive</p>	
<b>Interface Ports</b>	4 or 8 port RS232 expansion card (built in surge protection highly recommended).	
<b>Backup device</b>	IDE tape drive and Microsoft Windows Backup can be used to copy cold backups to tape. SCSI Tape device and third party backup software required for Hot Backups.	
<b>Printer</b>	Laser printer (Postscript drivers only)	

Consideration should be given to using a separate PC for support connectivity for sites with more than 10 users. Connecting to the server via any remote desktop tools, terminal services, or VNC takes resources and can impact performance if the site has the

maximum allowed users connected. A support PC will also allow Support to have a dedicated client machine to investigate any issues that the site may report.

## 4 Single Server Sizing (4 CPU Cores – 40 Users)

This Single Server Sizing (4 CPU cores) applies to Oracle Hospitality OPERA Property Management PMS and S&C modules of release 5.0.04.03 or higher.

The following criteria must be met to use these specifications:

1. The server machine is dedicated only to Oracle Hospitality OPERA Property Management and can serve no other purpose.
2. Print spooling, third-party software, and other network services are not supported on the Oracle Hospitality OPERA Property Management Server.
3. Maximum of:
  - 40 concurrent users
  - 4 properties if configured for multi property
  - 1 Central systems interface connection (OXI) allowed
4. Property interfaces should be installed on a separate server. More details can be found in the section *Supporting Hardware Sizing*.
5. Postscript print drivers are the only print drivers allowed on the server.

**Table 3 - Single Server 4 CPU Cores – 40 Users Specifications**

<b>Operating System</b>	Supported 64 bit Microsoft Windows Server OS
<b>Number of Users</b>	Up to 40 Users
<b>CPU</b>	4 CPU core, fastest available
<b>Memory</b>	16 GB
	8 x 72 GB 10K or 15K RPM SATA drive space. No specific drive letter requirements.  <b>Recommended setup using 8x 72GB drives</b> Drives configured as 2 separate Raid strips, one RAID 1 and one Raid 0+1. 128Kb stripe sets. Set 0 to use 2 drives (72GB usable space), set 1 to use remaining 6 drives (216 GB usable drive space) C: 16 GB System partition on strip set 0 D: Remainder of stripe set 0 E: Strip set 1  <b>NOTE:</b> Hardware RAID controller is required in order to use Raid Disk configurations.
<b>Backup device</b>	Tape device compatible with backup software. Backup software must use Oracle Agent.

Consideration should be given to using a separate PC for support connectivity. A support PC will allow Support to have a dedicated client machine to investigate any issues that the site may report.

## 5 Single Server Sizing (8 CPU Cores – 80 Users)

This sizing for 8 CPU cores (80 users) applies to Oracle Hospitality OPERA Property Management PMS and S&C modules of release 5.0.04.03 or higher.

The following criteria must be met to use these specifications:

1. The server machine is dedicated only to Oracle Hospitality OPERA Property Management and can serve no other purpose.
2. Print spooling, third party software, and other network services are not supported on the OPERA Server.
3. Maximum of:
  - Up to 80 concurrent users
  - 1 Central systems interface connection (OXI) allowed
  - 4 properties if configured for multi property
4. Property interfaces should be installed on a separate server.
5. More details can be found in the section *Supporting Hardware Sizing*.
6. Postscript print drivers are the only print drivers allowed on the server.

**Table 4 - Single Server 8 CPU Cores – 80 Users Specifications**

<b>Operating System</b>	Supported Microsoft Windows Server x64 OS (64 bit OS)
<b>Number of Users</b>	Up to 80 Users
<b>CPU</b>	2 x 4 CPU core, fastest available
<b>Memory</b>	18 GB
<b>Disk Minimum</b>	<p>8 x 72 GB 15K RPM SATA drive space. No specific drive letter requirements</p> <p><b><u>Recommended setup using 8x 72GB 15K RPM drives</u></b>                      Drives configured as 2 separate Raid strips, one RAID 1 and one Raid 0+1. 128Kb stripe sets. Set 0 to use 2 drives (72GB usable space), set 1 to use remaining 6 drives (216 GB usable drive space)                      C:16 GB System partition on strip set 0                      D: Remainder of stripe set 0                      E: Strip set 1</p> <p><b>NOTE:</b> Hardware RAID controller is required in order to use Raid Disk configurations.</p>
<b>Backup device</b>	Tape device compatible with backup software. Backup software must use Oracle Agent.

Consideration should be given to using a separate PC for support connectivity. A support PC will allow Support to have a dedicated client machine to investigate any issues that the site may report.

## 6 Single Server Sizing (8 CPU Cores – 140 Users)

The 8 CPU cores – 140 users sizing applies to Oracle Hospitality OPERA Property Management PMS and S&C modules of release 5.0.04.03 or higher.

The following criteria must be met to use these specifications:

1. The server machine is dedicated only to Oracle Hospitality OPERA Property Management and can serve no other purpose.
2. Print spooling, third party software, and other network services are not supported on the OPERA Server.
3. Postscript print drivers are the only print drivers allowed on the server.
4. Maximum of:
  - Up to 140 concurrent users
  - 1 Central systems interface connection (OXI) allowed
  - 4 properties if configured for multi property
6. Property interfaces should be installed on a separate server. More details can be found in the section *Supporting Hardware Sizing*.

**Table 5 - Single Server 8 CPU Cores – 140 Users Specifications**

<b>Operating System</b>	Supported 64 bit Microsoft Windows Server OS
<b>Number of Users</b>	Up to 140 Users
<b>CPU</b>	2 x 4 CPU core, fastest available
<b>Memory</b>	24 GB
<b>Disk Minimum</b>	<p>14 x 72 GB 10K or 15K RPM SATA drive space. No specific drive letter requirements.</p> <p><b>NOTE:</b> This configuration in typical hardware configurations will require an external drive array.</p> <p><b><u>Recommended setup using 14x 72GB 10K RPM drives</u></b>                      Drives configured as 2 separate Raid strips, one RAID 1 and one Raid 0+1. 128Kb stripe sets. Set 0 to use 2 drives (72GB usable space), set 1 to use remaining 12 drives (432 GB usable drive space)                      C: 16 GB System partition on strip set 0                      D: Remainder of stripe set 0                      E: Strip set 1</p> <p><b>NOTE:</b> Hardware RAID controller is required in order to use Raid Disk configurations.</p>
<b>Backup device</b>	Tape device compatible with backup software. Backup software must use Oracle Agent.

Consideration should be given to using a separate PC for support connectivity. A support PC will allow support to have a dedicated client machine to investigate any issues that the site may report.

# 7 OPERA Microsoft Windows Server Sizing

**Table 6 - Microsoft Windows OPERA Property Management Server Sizing**

No. of Concurrent Sessions (Note 1)		<20	21-40	41-80	81-120	121-150	
Database Server	CPU Memory	See Single Server Specifications	2 CPU core, fastest available	2 CPU core, fastest available	4 CPU core, fastest available	4 CPU core, fastest available	
	SCSI Drive Count and size (Raid 1) (Note 3)		4 GB  (4 x 72 GB)	6 GB  (6 x 72 GB)	8 GB  (8 x 72GB)	8 GB  (8 x 72GB)	
Application Server	CPU Memory (Note 4)	See Single Server Specifications	2 CPU core, fastest available	2 CPU core, fastest available	4 CPU core, fastest available	2 Servers in Parallel (Note 6) 2 CPU core, fastest available	
	Drive size (Raid 1 or 5) (Note 5)		8 GB  36 GB Usable drive space	12GB  36 GB Usable drive space	16GB 64 bit OS  72 GB Usable drive space	16GB  36 GB Usable drive space	4 CPU core, fastest available  24GB 64 bit OS  72 GB Usable drive space

- Note 1:** No. of Connections is the sum of the number of PC's with the ability to connect to OPERA at one time plus the number of external connection sources, such as third party software, interfaces, Web Booking, and other. For more information on determining the number of users and the interface traffic load, refer to the section *Guidelines for Determining User Counts*.
- Note 2:** Servers are sized to support hot backups using 3<sup>rd</sup> party backup solutions that use an Oracle Agent.
- Note 3:** Raid level 5 not supported for drives containing data files due to disk write performance impact. Using bigger drives and reducing the number can negatively impact I/O performance. Number of drives is more important than size for IO distribution. It is not intended that external disk storage be required for standard installations. 72GB configurations for db server are based on SCSI Ultra320 or SAS controllers and drives with < 5ms seek times. Recommended drive configurations are Raid 1, 0+1 or 1+0.
- Note 4:** Application server sizing based on 1 current generation CPU core per 40 concurrent users. Memory sizing based on median of memory consumption of a mix of "medium-lightly" active users 32MB user and "heavily" active users 64 MB/user.
- Note 5:** Raid level 1 or Raid level 5 supported for Application server. Application Server is not I/O intensive but requires disk space for storage of NA reports and export files as well as temporary space used in generating other reports. When using multiple applications servers a shared disk location for NA reports and exports will need to be available. UNC locations on network file servers, DFS and mapped drives can all be used for this purpose.
- Note 6:** For multiple applications servers, Oracle recommends the implementation of Network Load balancers. These can either be hardware based such as F5, Cisco Load Director or software based, such as Microsoft Windows network load balancing and DNS round robin. Contact your Oracle account representative for details on options and solutions that may be available as a service.

**Table 7 – Microsoft Windows OXI HUB Queue Manager Sizing**

OXI HUB messages per day (Note1)		< 75,000	75,000 – 200,000
Monitor Server	CPU Memory Drive Count x size	2x2.0 GHz or 1x Dual Core 1 GB (Recommend 2GB) 1 x 18 GB	2 Servers as per Specifications for <75,000

**Note 1:** Estimating OXI messages per day. ((Total number of Rooms / Avg stay length) \* 2) \* % Occupancy. Use of statistics from existing central interfaces will provide a more accurate determination of the number of messages per day.

**Table 8 - Microsoft Windows OWS, GDS, OAP Server Sizing**

Services (Note 2)	Sizing	
Per Major Distribution Channel, GDS Pegasus, GDS XML, OWS XML etc. (1 server will support 50,000 messages per hour)	CPU Memory Drive Count x size	2x2.0 GHz or 1x Dual Core 1 GB (recommend 2 GB) 1 x 72 GB
Up to 2 low volume XML interfaces, (< 1000 messages per hour)	CPU Memory Drive Count x size	1x2.0 GHz 512 MB (recommend 2 GB) 1 x 72 GB

**Note 2:** Estimating OWS messages.

((Annual bookings) \* % annual bookings acquired from internet) \* 1000 Availability requests per actual booking) = OWS messages per year.  
 OWS messages per year / 365 = OWS messages per day.  
 Typical internet traffic occurs in peaks. Assume that all the messages per day are actually processed within a 12 hour period.  
 OWS messages per day / 12 hours = Average OWS hourly message load.  
 Average OWS XML message size = 1.5 Kbytes

## 8 Supporting Hardware Sizing

**Table 9 – Interface PC**

OS	Microsoft Windows 7 Professional	Use for determining interface PC memory: . 80 MB for each installed property interface, defined as Voicemail, Call Accounting, Movies, etc. . Add 40 MB per additional PMS in case of Multi Property setup. . Add 150MB for the IFC Controller
CPU	1 x Dual Core	
Memory	3 GB	
Min. Free Disk	4 GB	

**Table 10 – Microsoft Windows 7 Workstation**

	Minimum <sup>1</sup>	Recommended	
OS	Microsoft Windows 7 Business <sup>4</sup>	Microsoft Windows 7 Enterprise <sup>2</sup>	Bandwidth of 16 KB per user min. available for WAN connections. See <b>Note: 2</b> for Latency.
CPU	1 x Dual Core	1 x Dual Core	
Memory	Above 2 GB	Above 2 GB	
Min. Free Disk	80 MB	80 MB	

**Note 1:** Minimum PC configuration supports one OPERA session and a small application (< 5 MB memory usage). Users who require multiple sessions or use other large applications need a Power User sized PC. Power User sizing should support two sessions with one other application. Power users with larger needs should add more memory.

**Note 2:** WAN latency should be below 120 ms for a 1K packet (ping – l 1024) for optimal performance. If the WAN circuit is used to transport other software, such as email, internet connection, or other, it is highly recommended to use QoS (Quality of Service) software or a dedicated circuit. This ensures that mission critical applications have priority use of the bandwidth.

**Note 3:** PCs installed with Microsoft Windows 7 require additional configuration. On 64-bit workstations, use the 32-bit browser. For more information, refer to the document *Oracle® Hospitality OPERA Property Management Workstation Setup Guide Release 5.5* on the Oracle® Hospitality OPERA Property Management Documentation page: [http://docs.oracle.com/cd/E53533\\_01/docs/E76452-01.pdf](http://docs.oracle.com/cd/E53533_01/docs/E76452-01.pdf).

**General Note:** PCs installed with personal firewall software and/or current anti-virus clients could require additional memory than specified above.

## 9 Guidelines for OPERA BI Sizing

Opera Business Intelligence sizing varies significantly on how the customer uses the product. Different combinations and configuration of cubes, length of online historical data, length of future date modeling, and the configuration of OPERA components can all impact the sizing for the BI data. Disk space requirements can vary greatly, so always err on the side of extra storage space.

**Table 11 – BI Single Property Sizes**

Number of Rooms	GB of Disk Space Required for OBI Cubes (See Note 2)	GB of Disk Space Required for Block/Reservation Detail Data (optional) (See Note 2)	Amount of extra CPU Cores and Physical Memory Required (See Notes 3,4,6)
1 - 100	15	10	+1 CPU core
101 – 300	45	30	+1 CPU core
301 – 500	75	50	+1 CPU core
501 – 1000	150	100	+2 CPU cores +1 GB RAM
1001 – 2000	250	150	+4 CPU cores +2 GB RAM
2001 – 3000	350	200	+8 CPU cores +4 GB RAM
3001+	Custom (See Note 5)	Custom (See Note 5)	+16 CPU cores +8 GB RAM

**Note 1:** If there are multiple properties, then add 20% extra space for each property. (Example: A 4 multi property OPERA installation with 1,200 rooms would need  $250 + (250 \times (4 \times 0.2)) = 450$  GB of space). If Codes and Categories are standardized and strictly enforced, this value can be reduced to 10%.

**Note 2:** The disk space requirements in the table include an additional 20% disk space allocation for larger than standard database temp segment needs.

**Note 3:** For installs larger than 1000 rooms, it is required to have a separate application server for running OPERA BI.

**Note 4:** For installs with 1000-3000 rooms, it is recommended to have a separate database server for running OPERA BI. For installs with 3000+ rooms, it is required to have a separate database server for running OPERA.

**Note 5:** For custom sizing, the most accurate method for calculating needed disk space is to build sample test cubes with customer production data. It is preferred for this to be done before disk size requirements are finalized.

**Note 6:** For installs larger than 500 rooms, the extra physical memory will be needed for increasing the DB parameter OLAP\_PAGE\_POOL\_SIZE (manual memory settings) or PGA\_AGGREGATE\_TARGET (auto tuned memory settings).

# 10 Guidelines for Determining User Counts

The best method to determine the correct site sizing is to get actual numbers from existing systems and business input for changes that will occur once the Oracle Hospitality OPERA Property Management system is deployed. Sometimes it is not possible to gather all required information for a variety of reasons such as a new site, expansion, or no previous comparable system.

Here are some guidelines to follow to get an estimate of the hardware sizing. The numbers obtained with these methods should be reviewed by Oracle and the customer to ensure everyone understands the assumptions that were made and make adjustments as necessary.

1. Real users
  - a. Each time a user launches a browser and logs into OPERA, it counts as a User.
  - b. OPERA launches Child sessions during normal use of the application. These sessions are already included in the sizing.
  - c. As a rule of thumb, OPERA PMS user count averages at about 10% of the number of rooms. Slightly higher for high-end properties, and slightly lower for Express type hotels. PMS user counts <5% or >20% of the number rooms may be fine, however they warrant a double check with the customer to ensure these numbers are accurate.
  - d. S&C and ORS user counts are very site dependent and need to be gathered from the customer.
2. Property interfaces
  - a. Count one equivalent OPERA user for 4 property interfaces in database sizing.
  - b. On IFC8 installations, count one equivalent OPERA user for 4 property interfaces in application server sizing.
3. 2 way CRS interface
  - a. 6 equivalent OPERA users are considered per 1000 rooms in database sizing. This general rule uses two formulas: 1) 1200 reservation messages per day per user and 2) the 100 bookings per day per user. These figures are empirically derived from production sites and load testing information. As block messages can hold a large number of details, block messages need to be converted to equivalent reservation messages. A 10 day block with 20 rooms would equate to 100 reservation messages.
    - i. 
$$\frac{\# \text{ Rooms} * 7 \text{ Msgs per room per day}}{1200 \text{ msg per day per user}} = \text{equivalent users.}$$
    - ii. 
$$\frac{\# \text{ Rooms} * \text{avg Stay Length} * \% \text{ occupancy}}{100 \text{ bookings per day per user}} = \text{equivalent users.}$$

- b. Retention of up to 4 days of interface messages is included in the server disk sizing. If the retention period for OXI messages is increased, additional disk space is needed.  
100 Rooms would require ~ 50MB per additional day of retention.
- 4. OPERA Electronic Distribution Systems (OEDS), such as GDS, OWS, ADS.
  - a. These interfaces can have a large effect on sizing since the actual load is generated by basically uncontrolled end users. It is very important that the customer understand how peaks in load from these interfaces can affect sizing / performance.
  - b. In the past, the calculation of 250 messages = 1 OPERA user was used. Different versions of OPERA and different rate configurations affect the cost of an OWS message so this number is subject to changes in each customer location. Generally, take the cost (measured in logical reads) of 1 general availability lookup message (X) and use the following formula to determine the number of messages/hour that equal 1 OPERA user:
    - i.  $1,200,000 / X = \text{Messages per hour}$
  - c. If other means are not available to measure / estimate the message rate from these interfaces, use the following formula:

Typical electronic traffic occurs in peaks. Empirical analysis indicates that 80% of all traffic occurs in 6 hours. For calculation purposes, assume all traffic occurs in 6 hours.

$(\text{Bookings per day from interface} * \text{Look to book ratio for the interface}) / 6 = \text{avg peak msgs per hour.}$

Est. Look to book ratios. OWS 1000, GDS 200.