

## Contents

- [1 Some content has been moved!](#)
- [2 Cisco WFO Desktop Recording](#)
- [3 SQL Server Guidelines for Contact Metadata](#)
  - ◆ [3.1 Standalone SQL Server](#)
  - ◆ [3.2 Increasing vRAM for SQL](#)
  - ◆ [3.3 Estimating Number of Contacts Stored in the Database](#)
- [4 Daily Recording Storage](#)
- [5 Permanent Recording Storage](#)
- [6 QM OVA Design Examples](#)

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## Cisco WFO Desktop Recording

Desktop recording is a recording method that involves installing a recording client application on a desktop PC that can capture packets from an IP phone daisy-chained to the PC. Desktop recording can be used in addition to any of the existing OVA designs that might use the Recording service for Server recording (SPAN), Network recording (Built in Bridge), MediaSense recording, or Gateway (CUBE) recording.

## SQL Server Guidelines for Contact Metadata

The contact metadata for Quality Management is stored in a Microsoft SQL Server database server. To ensure satisfactory response rates from the SQL database, the resources listed in the following table must be available and configured for use by SQL Server on its hosting server.

### Standalone SQL Server

Customer have the option to deploy a standalone SQL Server database server to improve response rates and allow for scalability. If customers choose to implement a standalone SQL Server, then use one of the QM All in One OVA templates:

- 2vCPU
- 4vCPU
- 6vCPU
- 8vCPU

Which template to use should be based on your contact metadata calculations (call volumes, retention periods, number of agents, and so on).

## Increasing vRAM for SQL

Customers also have the option to add additional vRAM in increments of 2 GB for SQL Server in order to scale properly as the amount of contact metadata increases. This will ensure satisfactory response rates from the SQL Server database. Reference the table below for guidelines. This applies to co-resident SQL Server with QM All in One OVA deployments and standalone SQL Server deployments.

### Estimating Number of Contacts Stored in the Database

The formula used to estimate the maximum number of contacts stored in the database is as follows:

$A \times B \times C \times D = \text{Total saved contacts in the database}$

where:

A = Number of agents

B = Average number of recorded contacts per day per agent

C = Number of days per month the contact center handles calls

D = Configured retention time in months

#### Example

$300 \text{ agents} \times 25 \text{ avg contacts/day} \times 22 \text{ days/month} \times 12 \text{ retention months} = 2.1 \text{ million recorded calls}$   
(contacts in database)

Specifications	2vCPU All in One System	4vCPU All in One System	6vCPU All in One System	8vCPU All in One System	8vCPU All in One + Expansion Server System
No. of recording users	25	100	300	400	600
Avg no. recorded contacts per day/per user	40	40	40	40	40
No. of days per month taking calls	22	22	22	22	22
Configured retention time (months)	12	12	12	12	12
Example calculation of total saved contacts in DB based on OVA	264,000	1,056,000	3,168,000	4,224,000	6,336,000
	< 500,000		2?3 million	4+ million	6+ million

Total saved contacts in DB		500,000?2 million			
Minimum SQL edition	SQL Express (up to 500K contacts) or SQL Standard Edition	SQL Standard Edition	SQL Standard Edition	SQL Standard Edition	SQL Standard Edition
Requires offboard SQL Server	No	No	No	Yes	Yes
Optional standalone SQL Server	Use 2vCPU QM All in One OVA	Use 4vCPU QM All in One OVA	Use 6vCPU QM All in One OVA	Use 8vCPU All in One OVA	Use 8vCPU All in One OVA

**Note:** You can use SQL Server Express if the overall number of WFO contacts in the database is less than 500,000, and the following SQL Server Express limitations are not exceeded:

- Limited to the lesser of 1 socket or 4 cores
- Maximum 1 GB RAM
- Maximum database size 10 GB

## Daily Recording Storage

You need to determine your hard disk space requirements for the daily recording storage. Daily recording storage is where the Recording service stores recorded files temporarily until they are uploaded to permanent storage.

The formula used to determine hard disk daily storage requirements in GB for a single recording server configuration is as follows:

$$\text{Daily storage} = C \times D$$

Where

C = number of GB (see table below)

D = number of recording users

File Format	Voice Recording	Voice and Screen Recording
SPX	0.5 GB	1.0 GB
8-bit WAV	2.0 GB	2.5 GB
16-bit WAV	6.0 GB	6.5 GB

### Example

The space required for 100 recording users recording voice only in SPX format is:

$$0.5 \times 100 = 50 \text{ GB daily storage required}$$

## Permanent Recording Storage

To calculate the storage a contact center needs, you must collect the following data:

- Number of agents who will be recorded
- Average length of calls that are recorded
- Number of calls that are recorded per agent per day
- Number of work days per agent per month
- Number of months that recordings are kept

To estimate the amount of disk storage required for permanent recording storage, use the following formulas:

Value	Formula
Daily recorded minutes	(number of agents recorded) × (average call length) × average number of recorded calls per agent per day)
Total recorded minutes to store	(daily recorded minutes) × (days per month) × (months to store)
Voice recording storage required (SPX format)	0.12 MB per recorded minute
Voice recording storage required (8-bit WAV format)	0.48 MB per recorded minute
Voice recording storage required (16-bit WAV format)	1.44 MB per recorded minute
Screen recording storage required  <b>Note:</b> The storage requirements for screen recording depend on three factors:  <ol style="list-style-type: none"> <li>1. Screen activity</li> <li>2. Monitor resolution</li> <li>3. Number of monitors being recorded</li> </ol> The value shown here is based on low to moderate screen activity, 768 × 1024 resolution, and a single monitor. This rate can increase by 200%–400% when recording dynamic, graphical, or media-intensive applications.	1.20 MB per recorded minute

## QM OVA Design Examples

The following are examples of scaling when recording capacities are reached.

**Note:** For any of the three QM All in One OVA solutions, you can add a separate Recording server OVA in order to increase capacity.

Example 1: 2vCPU All in One OVA with additional Recording server

OVA Description	Concurrent Users for Network Recording
	25

2vCPU QM All in One OVA (includes SQL Server)	
2vCPU Expansion Recording server OVA	150
<b>Total</b>	<b>175</b>

Example 2: 4vCPU All in One OVA with additional Recording server

OVA Description	Concurrent Users for Network Recording
4vCPU QM All in One OVA (includes SQL Server)	100
4vCPU Expansion Recording server OVA	300
<b>Total</b>	<b>400</b>

Example 3: QM + Recording Server OVA + Standalone SQL Server

OVA Description	Concurrent Users for Network Recording
4vCPU QM All in One OVA	100
4vCPU Expansion Recording Server OVA	300
4vCPU QM All in One OVA for Standalone SQL Server	n/a
<b>Total</b>	<b>400</b>

Example 4: Redundant CTI with Standalone SQL Server

OVA Description	Concurrent Users for Network Recording
4vCPU QM All in One OVA	100
4vCPU Expansion Recording Server OVA	300
2vCPU QM All in One OVA for redundant CTI Server	n/a
	n/a

4vCPU QM All in One OVA for Standalone SQL Server	
<b>Total</b>	<b>400</b>

## Example 5: Redundant CTI and Recording Servers with Standalone SQL Server

<b>OVA Description</b>	<b>Concurrent Users for Network Recording</b>
6vCPU QM All in One OVA	300
6vCPU Expansion Recording Server OVA	500
6vCPU Expansion Recording Server OVA for redundant Recording Server	500
2vPU QM All in One OVA for redundant CTI Server	n/a
4vCPU QM All in One OVA for Standalone SQL Server	n/a
<b>Total</b>	<b>800</b>