Hillrom™

NURSE CALL AND FEATURE SERVER REQUIREMENTS

PDF for Distribution to Customers: The following table lists Voalte® Nurse Call server system requirements.

Hospitals may choose to virtualize any of the servers involved in the Voalte® Nurse Call system. Hillrom generally recommends allocating reserved resources to the virtual servers, or sparsely populating the virtual environment to ensure availability of resources. Nurse Call servers provide many real-time services to the hospital's clinical staff, such as locating and voice communications, so performance issues can impair normal staff operations.

When allocating CPU resources to virtual servers (vCPUs), a similar level of performance to the physical CPU specified is expected. Due to the variable nature of virtual environments, it may be appropriate to, for example, allocate fewer vCPUs if the processors in the hosts have a higher clock speed, or if the virtual environment frequently experiences wait times for multi-processor requests. In all cases, however, it is recommended to allocate a minimum of two vCPUs, in order to allow the applications to take advantage of multi-threading.

Server	CPU	RAM	Storage	Operating System	SQL
Consolidated Enterprise Server (small installations)	Quad-core Xeon E5 v3 or equivalent	16 GB	200 GB	Windows Server 2012 R2 or Windows Server 2016	Microsoft SQL Server 2014 or Microsoft SQL Server 2016
Voalte® Platform Services Server	Quad-core Xeon E5 v3 or equivalent	16 GB	150 GB	Windows Server 2012 R2 or Windows Server 2016	Not applicable
VoIP Server	Quad-core Xeon E5 v3 or equivalent	4 GB	60 GB	Windows Server 2012 R2 or Windows Server 2016	Not applicable
Database Server	Quad-core Xeon E5 v3 or equivalent	8 GB	150 GB - Serial Attached SCSI or better	Any operating system compatible with SQL requirements	Microsoft SQL Server 2014 with the following features: ***See list following this table**

For more information, please contact your local distributor or Hillrom sales representative at 1-800-535-6663.

hillrom.com

Hillrom™

Server	CPU	RAM	Storage	Operating System	SQL
Enhanced Locating Server - RTLS	Quad-core Xeon E5 v3 or equivalent	8 GB Note: 12 GB if >100 stars	100 GB	Windows Server 2012 R2 or Windows Server 2016	Not applicable

* List of features required for the Database Server:

Microsoft SQL Server 2014 with the following features:

Database Engine Services
    SQL Server Replication
    Full-Text and Semantic Extractions for Search
Reporting Services –Native
Client Tools Connectivity
Client Tools Backwards Compatibility
Documentation Components
Integration Services
Management Tools – Basic
    Management Tools – Complete

OR

Microsoft SQL Server 2016 with the following features:

Database Engine Services
    SQL Server Replication
    Full-Text Semantic Extractions for Search
Reporting Services – Native
Client Tools Connectivity
Integration Services
Client Tools Backwards Compatibility
Documentation Components

For more information, please contact your local distributor or Hillrom sales representative at 1-800-535-6663.

hillrom.com

ENTERPRISE REPORTING SERVER REQUIREMENTS (LESS THAN 500 BEDS)

This section describes the requirements for facilities with less than 500 beds.

The Voalte® Report Model is a self-service analytics tool that resides in-memory on a server. The server must be capable of handling a large amount of simultaneous requests, not only from direct users, but also from report subscriptions and execution snapshots. The server must also be able to handle resource-intensive activities such as cube processing.

The hardware requirements listed here are the absolute minimum recommended to achieve one hour or less of data latency when the supported system contains less than 500 beds.

If your Enterprise Reporting server contains only the minimum requirements, we recommend using a machine that can be upgraded as needed. All storage arrays must be on separate spindles for optimal performance.

Component	Server Specification	Considerations
Processer	8 Cores @2.66 Ghz	
Memory	64 GB	RAM should be at least 2.5x the model size
OS	Windows Server 2012 R2 or Windows Server 2016	Windows Server 2012 R2 or Windows Server 2016

SQL	SQL Server 2016 Standard
	
	Note: SQL 2016 Standard has a size restriction of its database to 16G, which equates to 500 beds for one year. The data retention option in the configuration wizard cannot be changed from the one year value.
		Required Components:
		  Database Engine Services
		  SQL Server Replication
		  Analysis Services (Tabular Only)
		  Reporting Services - Native
		  Integration Services
		  Management Services - Basic
		  Management Services - Complete

Installation Storage	150 GB	
TempDB Storage	100 GB	
Data Store Transaction Log Storage	5 GB per 100 beds	

For more information, please contact your local distributor or Hillrom sales representative at 1-800-535-6663.

hillrom.com

ENTERPRISE REPORTING SERVER REQUIREMENTS (LESS THAN 500 BEDS) CONT.

Component	Server Specification	Considerations
Data Store Database Storage	10 GB per 100 beds	
Data Warehouse Transaction Log	5 GB per 100 beds	
Data Warehouse Database Storage	10 GB per 100 beds	
SSAS Data Storage	10 GB per 100 beds	Important: Do not leave these directories on the OS drive
SSAS Log Storage	5 GB per 100 beds	

For more information, please contact your local distributor or Hillrom sales representative at 1-800-535-6663.

hillrom.com

ENTERPRISE REPORTING SERVER REQUIREMENTS (MORE THAN 500 BEDS)

This section describes the requirements for facilities with more than 500 beds.

The Voalte® Report Model is a self-service analytics tool that resides in-memory on a server. The server must be capable of handling a large number of simultaneous requests, not only from direct users, but also from report subscriptions and execution snapshots. The server must also be able to handle resource-intensive activities such as cube processing.

The hardware requirements listed here are the absolute minimum recommended to achieve one hour or less of data latency when the supported system contains less than 500 beds. For facilities with more than 1,800 beds, additional memory and/or processing capabilities are required to maintain one hour of data latency.

If your Enterprise Reporting server contains only the minimum requirements, we recommend using a machine that can be upgraded as needed.

All storage arrays must be on separate spindles for optimal performance.

Store the warehouses and data stores on separate disks with separate controllers. Otherwise, read and write I/O contention (read from the Data Store, and write to the Warehouse) reduces performance of Extract, Transform, Load (ETL) operations and increases data latency.

For more information, please contact your local distributor or Hillrom sales representative at 1-800-535-6663.

hillrom.com

ENTERPRISE REPORTING SERVER REQUIREMENTS (MORE THAN 500 BEDS)

Component	Data Store / Warehouse Server	Report Model Server	Considerations
Processor	8 Cores @2.66 GHz (per 1000 beds)	8 Cores @2.66 GHz (The CPU cores impact licensing costs and concurrent user loads. Utilize the comments regarding the Speed, Cores, Sockets, CPU Cache, and CPU Architecture to make the most appropriate decision for your organization. If you choose to start at the lower end of the specification, you should be prepared to increase CPU resources if user experience or data latency deteriorates.)	**Speed**: The faster, the better will help in computing results faster. **Cores**: Generally, the more the better, but too many cores can lead to CPU management overload. So, a balanced approach must be taken when determining the CPU Cores and Speed. For many software packages, licensing cost increases by the CPU. **Sockets**: (Report Model Server) The lower, the better as SSAS Tabular is not NUMA aware. However, this is expected to change in SQL 2016 where some NUMA optimizations have been made. For large tabular models, it might be a challenge to go single socket as the amount of RAM that can be supported on a system will depend on the CPU sockets. **CPU Cache**: The more, the better. Retrieving data from CPU caches are 10-100x faster than retrieving data from RAM. **CPU Architecture**: The newer, the better due to the hardware performance optimizations.
Memory	64 GB	64 GB (for up to 500 Beds) 5 GB for each additional 100 Beds.	*Amount of RAM*: Should have at least 2.5x the model size, if the model is going to be processed on the same server. The amount of RAM can be lesser in cases of certain scale out architectures where the model is processed in a separate server. *RAM Speed*: The faster, the better. This is very important for a memory-bound application like Tabular and should always go for the faster speeds, if budget allows. *Data Retention*: Memory for data storage can be sized according to storage needs, as follows: 1 Year > 24 GB for up to 500 beds 2 Years > 48 GB for up to 500 beds 3 Year > 64 GB for up to 500 beds 5 GB for each additional 100 beds

For more information, please contact your local distributor or Hillrom sales representative at 1-800-535-6663.

hillrom.com

ENTERPRISE REPORTING SERVER REQUIREMENTS (MORE THAN 500 BEDS)

Component	Data Store / Warehouse Server	Report Model Server	Considerations
OS	Windows Server 2012 R2 Standard or Windows Server 2016	Windows Server 2012 R2 Standard or Windows Server 2016	
SQL	SQL Server 2016 Standard or higher Required Components: ● Database Engine Services ● SQL Server Replication ● IntegrationServices ● Management Tools - Basic ● Management Tools - Complete	SQL Server 2016 Enterprise Required Components: ● Analysis Services (Tabular Only) ● Reporting Services - Native ● Management Tools - Basic ● Management Tools - Complete	
Installation Storage	150 GB	150 GB	**Data Store / Warehouse Storage**: Consider using faster storage (such as SSDs) improves ETL processing and reduces data latency. This applies to TempDB storage, Transaction Log storage, and Database Storage. **Report Model Storage**: Although the storage speed for this component does not have any effect on query performance, using faster storage (such as SSDs) reduces time required for maintenance related activities like backup, storage or getting the tabular model online faster when the service is restarted.

For more information, please contact your local distributor or Hillrom sales representative at 1-800-535-6663.

hillrom.com

ENTERPRISE REPORTING SERVER REQUIREMENTS (MORE THAN 500 BEDS)

Component	Data Store / Warehouse Server	Report Model Server	Considerations
TempDB Storage	200 GB	N/A	*Data Store / Warehouse Storage*: Consider using faster storage (such as SSDs) improves ETL processing and reduces data latency. This applies to TempDB storage, Transaction Log storage, and Database Storage.
Data Store Transaction Log Storage	4 GB per 100 beds	N/A	
Data Store Database Storage	8 GB per 100 beds	N/A	
Data Warehouse Transaction Log	4 GB per 100 beds	N/A	
Data Warehouse Database Storage	8 GB per 100 beds	N/A	
SSAS Data Storage	N/A	8 GB per 100 beds Important: Do not leave these directories on the OS drive	*Report Model Storage*: Although the storage speed for this component does not have any effect on query performance, using faster storage (such as SSDs) reduces time required for maintenance related activities like backup, storage or getting the tabular model online faster when the service is restarted. Do not leave these directories on OS drive.
SSAS Log Storage	N/A	4 GB per 100 beds Important: Do not leave these directories on the OS drive	

For more information, please contact your local distributor or Hillrom sales representative at 1-800-535-6663.

hillrom.com