

Vocera Platform Server Sizing Guide

Version 6.2.0

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Last modified: 2023-02-14 08:34

Acapella-620-Docs build 509

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Vocera Platform Server Sizing Guide

The following information provides guidelines for implementing the Vocera Platform server infrastructure.

Appliance Environment Requirements

Here is a list of the appliance required for Vocera Platform.

Appliance Requirements

Component	Specification
Vocera Platform	• A server rack capable of housing a 1U rack mountable enterprise appliance, 1.68"(w) x 14"(d) x 1.75" (h) and 25 lbs. • 120VAC Switching, 4A max, 260 Watts • 10 to 35 C (50 to 95 F) operating temperature • 90% non-condensing operating relative humidity • 887 BTU output, 12,000 hours, RFTB • EMI Safeguards

Vocera Platform VMware Requirements

To implement Vocera, you need to meet the Virtual Machine (VM) requirements that include network and VM components.

Access the VM through the FTP site and login credentials that Vocera provides to get to the appliance. The virtual machine is provided as an .ovf file containing the entire VM and application.

Network Requirements

All network segments from the monitor to the fixed or mobile communication device should have a network latency for an 8000 byte packet of no more than 70 milliseconds, or an end-to-end latency of no more than 500 milliseconds.

VM Requirements

The Vocera Platform VM requires the following resources:

Component	Specification
Network Addresses	1 – Static IP address with network connectivity to required data sources
Remote Connectivity	Remote connectivity via VPN client from Vocera Platform
Operating System	Support for Linux 64-bit operating system

Recommendations for VM Resource Allocation

The allocation of resources for the Vocera Platform (i.e., processor, memory, etc.) for optimal performance depends on factors such as the volume of inbound data, processing overhead of the data type, and the complexity of the solution implemented.

Resource Allocation for Small and Large Installations

It is not always practical to conduct a detailed analysis at the start of every project to determine the correct hardware selection. You can determine the virtual machine (VM) resource allocation requirements for your implementation using the information in the following tables.

Resource	Small Installations		Large Installations
	With Voice	With Voice and Integration	With Voice and Integration
Concurrent users	<450	<450	450-2000
Processor Type	Intel Xeon CPU	Intel Xeon CPU	Intel Xeon CPU
Frequency	3.20GHz	3.20GHz	3.60GHz
Cores/Threads	4/4	4/8	8/8
Memory	8GBytes	8GBytes	20Gbytes
Hard Disk (raw size)	300GB	300GB	800GB

Oversubscription

Oversubscription Type	Description
Disc	- No disk oversubscription is allowed on the host. - All virtual disks should use a “thick” provisioning method. - Only direct-attached storage is recommended. Recommendation: If you are using NAS or SAN, the maximum disk latency should be in line with the best practices for a real-time Voice application. For more information, see VMware vSphere® 5.5 Documentation Center.
CPU	- No CPU oversubscription is allowed on the host. - The amount of provisioned vCPU's should be one less than the amount of physical processor cores available in the hypervisor (ESXi host). - CPU affinity is not required or recommended. - Hyper-threading can be enabled but additional logical processors made available via the hyper-threading feature do not count toward the provisioning totals. For example, when the host machine contains 2 quad-core processors with hyper-threading enabled: - Physical CPUs = 8 - Logical processors = 16 - Maximum vCPU's allowed = 7 (8 – 1 available for hypervisor use)
Memory	- No memory oversubscription is allowed on the host. - Provisioned memory of all virtual machines combined should equal 1GB less than the amount of memory installed in the hypervisor. For example, when the host machine contains 24 GB of RAM, 24 – 1 = 23 GB of RAM is available for guest VMs memory allocation.

Vocera Platform IP Ports

External and internal port information is provided in tables, including required and optional port information for platform, adapter, voice service, SIP telephony gateway, Badge, and Vina.

Users should access the application with a Fully Qualified Domain Name (FQDN). Sites using TLS should install a trusted certificate with a matching FQDN.

External Port Requirements

The following table describes the firewall requirements which should be configured in order to successfully install, update, and support the Vocera Platform and its operating system.

Port Number	Protocol	Source	Destination	Feature	Purpose
443	TCP	Vocera Platform	svc.ext-inc.com 199.180.201.227	Provisioning	Provisioning APNS certificate retrieval
22	TCP	Vocera Platform	svc.ext-inc.com 199.180.201.227	Remote Support	Remote Support
443	TCP	Vocera Platform	box.voceracommun address subject to change or for legacy installations: yum.ext-inc.com 38.99.68.43	Software Update	Repository access for installing Redhat and Vocera software updates

The following table lists optional **external** ports that may be needed depending on the configured software and desired functionality.

Port Number	Protocol	Source	Destination	Feature	Purpose
443	TCP	Vocera Platform	api.push.apple.com17.0.0.0/8	XMPP	Send notifications for data and calls via the Apple Push Notification Service (APNS).
5223	TCP	Vina (iOS only)	*.push.apple.com17.0.0.0/8	XMPP	Receive push notifications on iOS device. According to Apple, the iOS device is using Wi-Fi, port 5223 must be open outbound and inbound to the Wi-Fi.
443	TCP	Vocera Platform	Google's ASN of 15169 See Firebase firewall configuration	XMPP	Send notifications for data and calls via Firebase Cloud Messaging (FCM)
5228, 5229, 5230	TCP	Vina (Android only)	Firebase Google's ASN of 15169 See Firebase firewall configuration	XMPP	Receive push notifications on Android device
443	TCP	External browser access (all networks)	Reverse proxy # Vocera Platform Firewall pinhole # Vocera Platform Port forwarder # Vocera Platform		When workflow page access for browsers outside the network is desired using a reverse proxy in a DMZ, traffic from any address to the proxy on port 443 must be open. Using a reverse proxy also has an internal requirement for the proxy to access Vocera.

Port Number	Protocol	Source	Destination	Feature	Purpose
5222	TCP	Vina	Vocera Edge # Vocera Platform Firewall pinhole # Vocera Platform Port forwarder # Vocera Platform	XMPP	External XMPP traffic communicates with Vocera Platform via the Vocera Edge XMPP proxy
443	TCP	Vocera Platform	www.amion.com	Amion Adapter	Download Amion schedule updates from the Amion cloud service
443	TCP	Vocera Platform	api.qgenda.com	Ogenda Adapter	Download Ogenda schedule updates from the Ogenda cloud service

Internal Port Requirements

It is assumed that the following sources or destinations are on the internal network. If a listed item has a source or destination outside the internal network, then it must also be opened in the external firewall.

Platform Ports

Port Number	Protocol	Source	Destination	Feature	Purpose
22	TCP	Any SSH client	Vocera Platform	SSH access	Command line administration
80	TCP	Cisco Phones SpectraLink Phones	Vocera Platform	Multiple	Workflow access from mobile devices
443	TCP	Any HTTPS client	Vocera Platform	Multiple	Admin Console and workflow access via HTTPS
161	UDP	SNMP Client	Vocera Platform	SNMP	Query Vocera Platform for SNMP parameters
161	UDP	Vocera Platform	SNMP Manager	SNMP	Send SNMP traps for audit events
25	TCP	Vocera Platform	SMTP Server	SMTP	Send SMTP messages for audit events

Clustering Ports

IP packets of type 112 must be allowed for VRRP; the Virtual Router Redundancy Protocol

Port Number	Protocol	Source (Client)	Destination (Server)	Feature	Purpose
22	TCP	Master	Slave	Rsync over SSH	Filesystem replication
5432	TCP	Slave	Master	Postgres	Database replication
5433	TCP	Slave	Master	Postgres	Database replication
61616	TCP	Master Slave	Slave Master	Apache Artemis	JMS broker clustering
61617	TCP	Master Slave	Slave Master	Apache Artemis	JMS broker replication

Adapter Ports

The following port usage depends on the configured integrations.

Port Number	Protocol	Source	Destination	Feature	Purpose
9443	HTTPS	Vocera Platform	Vocera Platform	Austco	Request to register a subscription
9443	WSS	Vocera Platform	Austco	Austco	Persistent connection to receive Austco alerts
443	TCP	Multiple inbound integrations	Vocera Platform	Multiple	Inbound adapter integrations that support HTTPS; e.g., ResponderSync, Hill-Rom Clinical API, SOAP Publisher
80	TCP	Multiple inbound integrations	Vocera Platform	Multiple	Available for inbound adapter integration\ support for HTTP when HTTPS is not supported
443	TCP	Vocera Platform	Multiple outbound integrations	Multiple	Outbound adapter integrations that support HTTPS; e.g., ResponderSync, Hill-Rom Clinical API, SOAP Publisher
80	TCP	Vocera Platform	Multiple outbound integrations	Multiple	Available for outbound adapter integration\ support for HTTP when HTTPS is not supported

Port Number	Protocol	Source	Destination	Feature	Purpose
80	TCP	Cisco Phones SpectraLink Phones	Vocera Platform	Multiple	Workflow access from mobile devices
443	TCP	Any HTTPS client	Vocera Platform	Multiple	Admin Console and workflow access via HTTPS
5222	TCP	Vina	Vocera Platform	XMPP	Client to server XMPP traffic for all data, messaging, presence
389	TCP	Vocera Platform	LDAP Server	LDAP	Authentication and user synchronization via LDAP
686	TCP	Vocera Platform	LDAP Server	LDAP	Authentication and user synchronization via LDAP over SSL
1322	TCP	Vocera Platform	Unite Connectivity Manager (UCM)	Ascom	Push interactive messages to Ascom devices
5000-5004 *	TCP	UCM	Vocera Platform	Ascom	UCM responses to message delivery
5005 *	TCP	Vocera Messaging Interface (VMI) Client	Vocera Platform	VMI	Inbound VMI integrations
5007 *	TCP	Vocera Messaging Interface (VMI) Client	Vocera Platform	VMI	Inbound VMI integrations using TLS
25 *	TCP	SMTP Client	Vocera Platform	Incoming Email	Inbound SMTP messages for the Incoming Email interface
25 *	TCP	Vocera Platform	SMTP Server	Outgoing Email	Outbound SMTP messages from the Outgoing Email interface
6661-6664 **	TCP	HL7	Vocera Platform	HL7 (ADT)	Inbound HL7 ADT messages via LLP
7000,8000-8010 **	TCP	HL7	Vocera Platform	HL7 (Alarms)	Inbound HL7 Philips, Capsule or IHE compliant Alarm messages via LLP
12000	TCP	Navicare Server	Vocera Platform	Navicare	Inbound Hill-Rom Navicare messages

Port Number	Protocol	Source	Destination	Feature	Purpose
2000 *	UDP	Carescape Network	Vocera Platform	Carescape	Time synchronization
70001	UDP	Carescape Network	Vocera Platform	Carescape	Device discovery
7001 *	UDP	Carescape Network	Vocera Platform	Carescape	Monitor Alarm Messages
5050 *		EarlySense Gateway	Vocera Platform		

Voice Service Ports

Port Number	Protocol	Source	Destination/Feature
5002	UDP	Badge	Vocera Server Signaling
5001	TCP	Vocera SIP Telephony Gateway	Vocera Server Signaling
5400	UDP	Badge/Badge Property Editor	Updater Signaling
5100	UDP	Badge	Vocera Server Audio
7200-7263	UDP	Badge	Vocera Server Audio Recording
7892 - 9100 ¹	UDP	Vocera Server	Badge/VSTG Audio
3306	TCP	MySQL Signaling	(Listening)
5251	TCP	Vocera Server Cluster Signaling	(Listening)
5555-5556	UDP	Badge	Vconfig (Vch) Signaling during Discovery
5555-5556	TCP	Badge	Vconfig (Vch) Signaling during Discovery
7023	TCP	Nuance Watcher Telnet Client	(Listening)
7890	UDP	Nuance Watcher	(Listening)
27000	TCP	Nuance License Manager	(Listening)
5059, 5058	TCP	Nuance Speech Server (allows UDP connections)	(Listening)
8200	TCP	Nuance Recognition Server	(Listening)
32768-60999	TCP	Vina (iOS only)	Signaling Gateway
32768-60999	UDP	Vina (Android only)	Signaling Gateway

¹ Only **even**-numbered ports are used. The range is configurable in \vocera\nuance\SpeechServer\config\NSSserver.cfg.

SIP Telephony Gateway Ports

This section provides information on ports supported for Vocera SIP Telephony Gateway (VSTG).



Note: Support for VSTG is added in Vocera Platform version 6.1.0 and later releases.

Port Number	Protocol	Source	Destination/Feature	Direction
5060	UDP	IP PBX	Vocera SIP Telephony Gateway Signaling	Bidirectional
5300-5555 ²	UDP	Vocera Platform	Vocera SIP Telephony Gateway Audio	Outbound
9200 - 9399 4000 - 4049	UDP	IP PBX	Vocera SIP Telephony Gateway Audio (RTP/RTCP)	Outbound
Any free port	UDP	Vocera Platform	Vocera SIP Telephony Gateway Signaling	Outbound

Badge Ports

Port Number	Protocol	Source	Destination/Feature	Direction
5002	UDP	Badge	Server Signaling	Bidirectional
5200	UDP	Vocera SIP Telephony Gateway	Badge Audio	Outbound
5400	UDP	Badge	Updater	Outbound
5555-5556	UDP	Badge	Updater Signaling	Bidirectional
5555-5556	UDP	Badge	Vconfig (Vch) Signaling during Discovery	Bidirectional
5555-5556	TCP	Badge	Vconfig (Vch) Signaling during Discovery	Bidirectional

² Only **even**-numbered ports are used. The range is configurable in \vocera\nuance\SpeechServer\config\NSSserver.cfg.

Vina Ports

Port Number	Protocol	Source	Destination	Feature	Purpose
5222	TCP	Vina	Vocera Platform Vocera Edge Firewall pinhole Port forwarding	XMPP	Client to server XMPP traffic for all data, messaging, presence. Communication with Edge proxy or other customer configured port 5222 access will off-premise.
32768-60999	TCP	Vina (iOS only)	Vocera Platform	Signaling Gateway	Call signaling and notifications
32768-60999	UDP	Vina (Android only)	Vocera Platform	Signaling Gateway	Call signaling and notifications
5800-5899	UDP	Vina	Vina	RTP	Client to client VoIP

Vocera Analytics Ports

This section provides information on ports supported for Vocera Analytics.

Port Number	Protocol	Source	Destination	Direction
9445	TCP	Voice Server (Remote Agent)	(Listening)	Inbound
4040	TCP	VA Server	Spark UI	Inbound
7778	TCP	VA Server (VMP Flume agent)	Spark	Bidirectional
7779	TCP	VA Server (Engage Flume agent)	Spark	Bidirectional
7780	TCP	Voice Server (VS Flume Agent)	Spark	Bidirectional
8443 (default) or user defined	TCP	VA Server (Reporting service)	(Listening)	Inbound
3306	TCP	Maria DB Signaling	(Listening)	Inbound

Legend

* These are the default values. The installer can choose a different port when configuring the adapter.

** These are the default values. The installer can choose a different port **or add more ports** when configuring the adapter.