



Avaya Aura[®] Contact Center Deployment using VMware[®] in a Virtualized Environment

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Contents

Chapter 1: Introduction	6
Purpose	6
Intended audience	6
Related resources	6
Documentation	6
Viewing Avaya Mentor videos	8
Support	9
Chapter 2: Overview	10
Virtualization considerations	11
VMware components	12
VMware feature support	13
Licensing	14
VMware vSphere host considerations	14
Avaya Aura® Contact Center VMware Snapshot considerations	16
Avaya Media Server VMware Snapshot considerations	16
Performance monitoring and management	17
Chapter 3: Deployment process	19
Chapter 4: Deployment checklist	20
Avaya WebLM deployment checklist	20
Avaya Media Server deployment checklist	20
Voice and Multimedia Contact Server deployment checklist	21
Chapter 5: Avaya WebLM OVA deployment	24
WebLM OVA	24
WebLM OVA deployment procedures	25
Deploying the WebLM OVA using vSphere	27
Deploying the WebLM OVA using vCenter	32
Obtaining the WebLM server Host ID	36
Installing the WebLM license file	38
Installing a WebLM patch, feature pack, or service pack	39
Chapter 6: Avaya Media Server OVA deployment	41
Avaya Media Server OVA	41
Avaya Media Server OVA deployment procedures	42
Deploying the Avaya Media Server OVA using vSphere	44
Deploying the Avaya Media Server OVA using vCenter	53
Logging on to Avaya Media Server Element Manager	59
Installing Avaya Media Server patches	60
Securing your Avaya Media Server	61
Commissioning Avaya Media Server	62
Chapter 7: Voice and Multimedia Contact Server OVA deployment	63

Voice and Multimedia Contact Server OVA	64
Voice and Multimedia Contact Server OVA deployment procedures.....	65
Deploying the Voice and Multimedia Contact Server OVA using vSphere.....	67
Deploying the Voice and Multimedia Contact Server OVA using vCenter.....	72
Configuring the Windows operating system.....	77
Configuring the Voice and Multimedia Contact Server network settings.....	84
Configuring the Voice and Multimedia Contact Server installation data.....	86
Adding the Voice and Multimedia Contact Server to a domain.....	91
Installing the supported operating system service packs.....	92
Installing Voice and Multimedia Contact Server software patches.....	92
Securing the Voice and Multimedia Contact Server.....	93
Commissioning the Voice and Multimedia Contact Server.....	94
Appendix A: VMware Best Practices for performance.....	95
BIOS settings.....	95
Intel Virtualization Technology support.....	95
Dell PowerEdge Servers — BIOS settings.....	96
HP ProLiant Servers — BIOS settings.....	96
VMware networking best practices.....	96
VMware Tools.....	97
Network Time Protocol and time configuration.....	97
Troubleshooting VMware.....	98
Glossary.....	100

Chapter 1: Introduction

This document describes how to deploy Avaya Aura® Contact Center Release 6.4 using the VMware Open Virtual Appliance (OVA) deployment mechanism.

Purpose

This document includes installation, configuration, and troubleshooting procedures.

Intended audience

The primary audience for this document is anyone who is involved with installing, configuring, and verifying Avaya Aura® Contact Center in a VMware® vSphere™ virtualization environment at a customer site. The audience includes and is not limited to implementation engineers, field technicians, business partners, solution providers, and customers.

This document does not include optional or customized aspects of a configuration.

Related resources

Documentation

The following table lists some of the other documents related to Avaya Aura® Contact Center. Download the documents from the Avaya Support website at <http://support.avaya.com>.

	Title	Description
Overview	<i>Avaya Aura® Contact Center Fundamentals and Planning (44400-211)</i>	This document contains technological details you need to set up your Contact Center suite. The document contains the background information you need to plan and engineer your system (server preparation information, routing options, licensing configurations, and hardware configuration). The document also contains background information you require to install all software components that are part of and work with Contact Center. General information about considerations for upgrading your existing suite of Contact Center is also included. This document also contains strategies and requirements to plan your network configuration and prepare your servers for Contact Center software installations.
Commissioning	<i>Avaya Aura® Contact Center Commissioning (44400-312)</i>	This document contains information for Contact Center preparation, process, initial configuration, and verification of the installation in SIP-enabled Contact Centers.
Server Administration	<i>Avaya Aura® Contact Center Server Administration (44400-610)</i>	This document contains information and procedures for day-to-day maintenance of all servers in the Contact Center suite, including server maintenance tasks, administrative tasks, managing data, configuring data routing, performing archives, and backing up data. It also describes the optional configuration procedures for server configuration.
Client Administration	<i>Avaya Aura® Contact Center Manager Administration – Client Administration (44400-611)</i>	This document contains information and procedures to configure the users and user access, skillsets, server management, and configuration data in the Contact Center Manager Administration database.
Upgrades	<i>Avaya Aura® Contact Center Upgrade and Patches (44400-410)</i>	This document contains information and procedures to upgrade from previous releases to Contact Center, migrating the databases, and information and procedures to download and install service packs.
Troubleshooting	<i>Avaya Aura® Contact Center Troubleshooting (44400-712)</i>	This document contains system-wide troubleshooting information and procedures for Contact Center hardware, software, and network.

Table continues...

	Title	Description
Platform	<i>Avaya Aura® Contact Center Configuration – Avaya Aura® Unified Communications Platform Integration</i> (44400-521)	This document contains information and procedures to integrate the Avaya Aura® Unified Communications platform with Contact Center.

1. Read *Avaya Aura® Contact Center Fundamentals and Planning* (44400-211).
2. Follow the instructions in this book to deploy Avaya Aura® Contact Center software in a virtualized environment.
3. Follow the instructions in the commissioning book, *Avaya Aura® Contact Center Commissioning* (44400-312) to fully commission contact center.
4. Follow the instructions in *Avaya Aura® Contact Center Server Administration* (44400-610) and *Avaya Aura® Contact Center Manager Administration – Client Administration* (44400-611) to complete configuring the solution. For example, configure skillsets, features, supervisors, and agents.

Viewing Avaya Mentor videos

Avaya Mentor videos provide technical content on how to install, configure, and troubleshoot Avaya products.

About this task

Videos are available on the Avaya Support website, listed under the video document type, and on the Avaya-run channel on YouTube.

Procedure

- To find videos on the Avaya Support website, go to <http://support.avaya.com> and perform one of the following actions:
 - In **Search**, type `Avaya Mentor Videos` to see a list of the available videos.
 - In **Search**, type the product name. On the Search Results page, select **Video** in the **Content Type** column on the left.
- To find the Avaya Mentor videos on YouTube, go to www.youtube.com/AvayaMentor and perform one of the following actions:
 - Enter a key word or key words in the **Search Channel** to search for a specific product or topic.
 - Scroll down Playlists, and click the name of a topic to see the available list of videos posted on the website.

Note:

Videos are not available for all products.

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Go to the Avaya Support website at <http://support.avaya.com> for the most up-to-date documentation, product notices, and knowledge articles. You can also search for release notes, downloads, and resolutions to issues. Use the online service request system to create a service request. Chat with live agents to get answers to questions, or request an agent to connect you to a support team if an issue requires additional expertise.

Chapter 2: Overview

Avaya Aura® Contact Center supports VMware virtualized environments where some or all of the solution is virtualized. For increased productivity, efficiency, and flexibility, Avaya Aura® Contact Center supports the VMware Virtual Appliance and Open Virtual Appliance (OVA) deployment methods.

A virtual appliance contains a pre-installed, pre-configured Operating System and an application stack optimized to provide a specific set of services. You can use a single Open Virtual Appliance (OVA) package to distribute a Virtual Appliance. An OVA package includes all of the Open Virtualization Format (OVF) information required to describe and deploy a Virtual Appliance on a VMware host. A Virtual Appliance is pre-packaged; this reduces the complexity of installation and commissioning and reduces the cost of support.

You can use an OVA package to create a Virtual Appliance on a VMware host. You deploy one OVA package to create one virtual machine. You can install multiple OVA packages on a single VMware host server, depending on the number of virtual machines (guests) on that host server. The number of virtual machines on a VMware host server depends on the virtual machines' requirements and on the host server hardware specification.

Avaya Aura® Contact Center provides two VMware Virtual Appliances; a SIP-enabled Voice and Multimedia Contact Server OVA and an Avaya Media Server OVA. These Virtual Appliances support only an Avaya Aura® Unified Communications platform SIP-enabled contact center solution.

The following diagram shows a typical SIP-enabled virtualized contact center solution using Avaya Aura® Contact Center, Avaya Media Server, and Avaya WebLM Virtual Appliances installed on a single VMware host server:

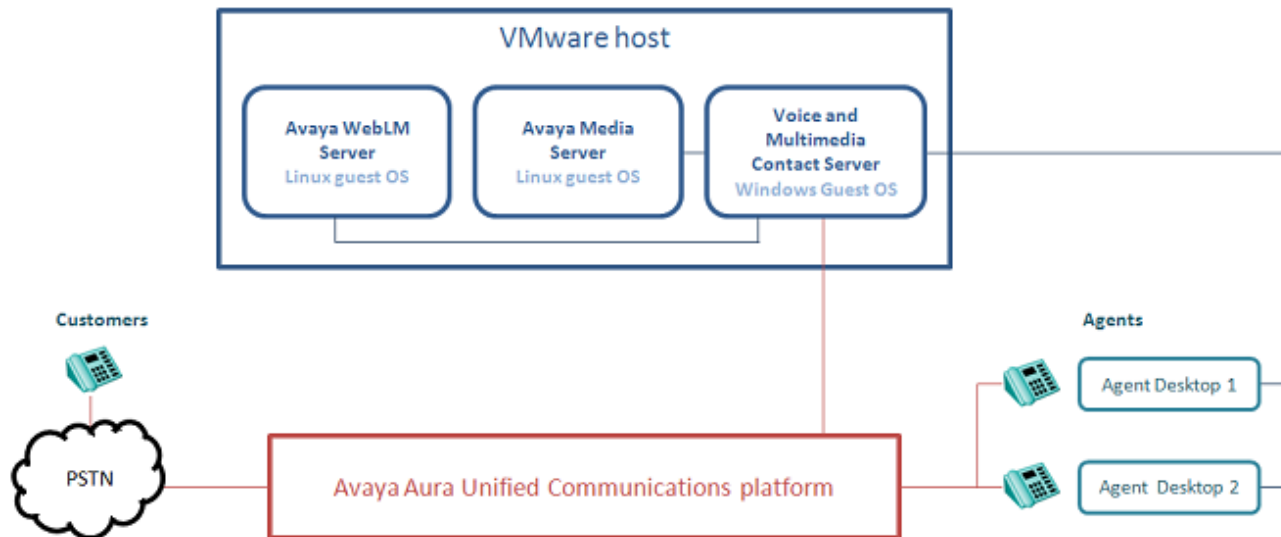


Figure 1: Typical SIP-enabled virtualized contact center solution using Avaya Aura® Contact Center, Avaya Media Server, and Avaya WebLM Virtual Appliances installed on a single VMware host server

You can use VMware vSphere or vCenter and these Avaya Aura® Contact Center OVA packages to create virtual machines in your virtualized environment.

The OVA packages are created as VMware hardware version 8 archives.

The Avaya Aura® Contact Center Virtual Appliances are supported only on the following virtualization environments:

- ESXi 5.0 (with VMFS 5.54 or later)
- ESXi 5.1 (with VMFS 5.54 or later)
- ESXi 5.5 (with VMFS 5.54 or later)

Avaya Aura® Contact Center supports the Avaya WebLM Release 6.3.8 guest co-resident on the same VMware host server or deployed on a separate VMware host server.

The Avaya Aura® Contact Center three OVA deployment (Avaya Aura® Contact Center OVA, Avaya Media Server OVA, and WebLM OVA) is supported only on the 8-core and 10-core high-end server specifications. For more information about the ESXi host server hardware requirements for the Avaya Aura® Contact Center Virtual Appliances, see *Avaya Aura® Contact Center Fundamentals and Planning* (44400-211).

Virtualization considerations

Using virtualization in a contact center enterprise solution requires careful up-front planning, engineering, and implementation. While the technical and business advantages are clear, virtualization imposes extra considerations when designing the contact center solution architecture. Environmental isolation allows multiple operating systems to run on the same VMware host machine. While virtualization offers these forms of isolation, virtualization environments do not

provide performance isolation. The behavior of one virtual machine can adversely affect the performance of another virtual machine on the same host. Most modern virtualization environments provide mechanisms that you can use to detect and reduce performance interference. You must carefully engineer your virtualized contact center solution to avoid performance interference.

If you plan to install non-Avaya Aura® Contact Center software applications on other guests on the host server, you must carefully analyze the impact of these applications on the contact center solution and provide extra performance isolation to safeguard Contact Center functionality.

! Important:

Deploy Avaya Aura® Contact Center on an enterprise-grade virtual environment with the most recent hardware that supports hardware-assisted virtualization. Avaya recommends that you apply virtualization planning, engineering, and deployment with full organizational support for virtualization rather than organically growing a virtualization infrastructure.

VMware components

The following table describes some common VMware components and terms

VMware components	Description
ESXi host	The physical machine running the ESXi hypervisor software.
ESXi hypervisor	A platform that runs multiple operating systems on a host computer at the same time.
vSphere Client	The client application that is installed on a personal computer or accessible through a Web interface. It connects to a vCenter server or directly to an ESXi host in the case where vCenter Server is not used. You use vSphere Client software to install and manage virtual machines.
vCenter Server	vCenter Server provides centralized control and visibility of the virtual infrastructure. Virtual machines are managed through vSphere Client software which provides alarming and performance monitoring of ESXi hosts and virtual machines. vCenter Server provides additional VMware features such as VMware High Availability and vMotion.
VMware virtual machine	A virtual machine (VM) is a software-based emulation of a Microsoft Windows OS or Linux OS computer. A VMware ESXi server can host one or more virtual machines.

VMware feature support

Avaya Aura® Contact Center is a collection of real-time applications running on the Microsoft Windows Server 2008 R2 SP1 operating system. Avaya Aura® Contact Center provides real-time call control, multimedia handling, and statistical reporting.

Avaya Media Server is a real-time media processing application running on the Red Hat Enterprise Linux (RHEL) operating system. Avaya Media Server provides the real-time conferencing and media processing capabilities for Avaya Aura® Contact Center.

Some VMware features require host CPU, Disk I/O, or networking resources to function. Running these VMware features can cause resource constraints and impact the real-time performance of the Avaya Aura® Contact Center and Avaya Media Server Virtual Machines (VMs). These features are therefore not supported while Avaya Aura® Contact Center or Avaya Media Server are active.

Some VMware features are not supported by Avaya Aura® Contact Center or Avaya Media Server. Some other VMware features are supported only while the Avaya Aura® Contact Center or Avaya Media Server Virtual Machines are stopped for maintenance.

The following table shows the Avaya Aura® Contact Center (AACC) and Avaya Media Server level of support for VMware features.

VMware Feature	Supported on active AACC VM	Supported during AACC VM maintenance window	Supported on active Avaya Media Server VM	Supported during Avaya Media Server VM maintenance window
Cloning	No	Yes	No	No
Distributed Power Management (DPM)	No	Yes	No	Yes
Distributed Resources Scheduler (DRS)	No	Yes	No	Yes
Distributed Switch	No	No	No	No
Fault Tolerance	No	No	No	No
High Availability (HA)	No	No	No	No
Snapshots	No	Note 1	No	Note 2
Storage DRS	No	Yes	No	Yes
Storage Thin Provisioning	No	N/A	No	N/A
Storage vMotion	No	Yes	No	Yes
Suspend & Resume	No	N/A	No	N/A
vMotion	No	Yes	No	No
Note 1: See Avaya Aura Contact Center VMware Snapshot considerations on page 16 Note 2: See Avaya Media Server VMware snapshot considerations on page 16				

Licensing

Avaya Aura® Contact Center License Manager supports only the Virtualized Environment deployment of Avaya WebLM server.

When Contact Center License Manager starts, it extracts WebLM license keys from the remote WebLM server. Contact Center License Manager then converts the WebLM license keys into local PLIC license keys and distributes the keys to the Avaya Aura® Contact Center applications as required. Contact Center License Manager distributes PLIC license keys to Contact Center Manager Server, Contact Center Manager Administration, Communication Control Toolkit, Contact Center Multimedia, and Avaya Media Server as required.

When Contact Center License Manager requests licenses from a remote Avaya WebLM server, it reserves all the Contact Center licenses available on that server. Avaya Aura® Contact Center therefore supports only the PLDS standard license file (SLF) type. Avaya Aura® Contact Center does not support the WebLM Enterprise model. Avaya Aura® Contact Center supports WebLM in nodal contact centers. WebLM does not support Avaya Aura® Contact Center corporate licensing.

Contact Center License Manager distributes nodal license keys to all configured Avaya Media Servers in the solution. Configure Avaya Media Server as a Media Server in Contact Center Manager Administration. Contact Center License Manager, when restarted, pushes license keys to that Avaya Media Server. Do not configure WebLM licensing on Avaya Media Server servers.

How to obtain a license

In an Avaya Aura® Unified Communications platform SIP-enabled environment, Avaya Aura® Contact Center uses a remote WebLM server to provide nodal licensing control.

1. Obtain the Avaya WebLM host ID from the WebLM user interface.
2. Use the WebLM host ID to obtain WebLM license keys from the Avaya Product Licensing and Delivery System (PLDS).
3. Enter these license keys on the remote Avaya WebLM server. Contact Center License Manager connects to the remote WebLM server and uses the Contact Center-specific license keys from it to control Contact Center licensed features. Avaya Aura® Contact Center does not import the license file to a Contact Center server; WebLM stores the license file on the WebLM server.

You can use the License Manager Configuration Utility to check which Avaya Aura® Contact Center features are licensed and how many agent licenses are available.

VMware vSphere host considerations

When planning virtual machines (guests) on your host system, the total resources needed by the virtual machines running on the host server must not exceed the total capacity of the host. It is good practice to under-commit CPU and memory resources on the host. If the host CPU capacity is overloaded, Contact Center does not function correctly.

! Important:

Avaya Aura® Contact Center is not supported on an over-committed host where the total virtual resources from all virtual machines hosted exceeds the physical resources of the host.

Virtual Machine File System (VMFS)

VMware virtual machines and snapshots are stored in a Virtual Machine File System (VMFS) datastore. To support Avaya Aura® Contact Center on a virtual machine, the VMware datastore containing Contact Center must be VMFS 5.54 or later. If you upgrade an existing VMware host server, ensure the associated datastore is upgraded to VMFS 5.54 or later.

Hardware-Assisted Virtualization

Most recent enterprise-level processors from Intel and AMD support virtualization. There are two generations of virtualization support: the first generation introduced CPU virtualization; the second generation included CPU virtualization and added memory management unit (MMU) virtualization. For the best performance, make sure your system uses processors with at least second-generation hardware-assist features.

Hardware-Assisted CPU Virtualization (Intel VT-x and AMD AMD-V)

The first generation of hardware virtualization assistance includes VT-x from Intel and AMD-V from AMD. These technologies automatically trap sensitive interrupts, eliminating the overhead required to do so in software. This allows the use of a hardware virtualization (HV) virtual machine monitor (VMM).

Hardware-Assisted MMU Virtualization (Intel EPT and AMD RVI)

More recent enterprise-level processors also include a feature that addresses the overheads due to memory management unit (MMU) virtualization by providing hardware support to virtualize the MMU. VMware vSphere supports this feature both in AMD processors, where it is called Rapid Virtualization Indexing (RVI) or nested page tables (NPT), and in Intel processors, where it is called Extended Page Tables (EPT).

Storage Area Network (SAN)

A Storage Area Network (SAN) is a dedicated storage network that provides access to consolidated block level storage. SANs are used to make storage devices such as disk arrays, accessible to servers so that the devices appear as locally attached to the operating system.

When Avaya Aura® Contact Center is installed on virtual machines it supports a SAN. You must monitor the Contact Center demand on the SAN storage device. Adhere to your vendor-specific SAN configuration recommendations to ensure the SAN storage device meets the demands of Contact Center.

Disk drive provisioning

Provision sufficient hard disk drive space on the host server to support all the guest virtual machines, an ISO library, and provision additional space for snapshot image storage.

Avaya Aura® Contact Center VMware Snapshot considerations

VMware snapshots save the current state of the virtual machine, so you can return to it at any time. Snapshots are useful when you need to revert a virtual machine repeatedly to the same state, but you don't want to create multiple virtual machines.

The following considerations apply when using snapshots with Avaya Aura® Contact Center on VMware:

- Snapshots must be taken during an Avaya Aura® Contact Center maintenance window. Do not take a snapshot of a Contact Center virtual machine while Contact Center is running. Snapshots have a negative impact on the performance of a virtual machine over time. You must *Consolidate* snapshots at the end of the maintenance window, before putting the Contact Center virtual machine back into production. For more information about consolidating snapshots, refer to VMware documentation.
- Create a snapshot for the Contact Center virtual machines all at the same time. Likewise, when you restore a snapshot, restore all snapshots to ensure the data is consistent across the Contact Center suite.
- In solutions using the Avaya Aura® Contact Center High Availability feature, take a snapshot of the Active and Standby virtual machines at the same time. The Active and Standby virtual machines must be hosted on different host servers.
- When restoring snapshots, carefully consider the possible impact from out-of-date antivirus definitions, missed Microsoft Windows OS and security updates, and lapsed domain accounts on the contact center. Isolate the restored virtual machine until these issues are resolved.
- By default, a Windows Server 2008 machine account password is changed every 30 days. This is an important consideration when reverting to a snapshot of a virtual machine that has been in use for more than 30 days, as it can cause the machine to lose its connection to the Windows domain. If this issue occurs, rejoin the Windows Server 2008 virtual machine to the domain.

VMware snapshots are not a replacement for Avaya Aura® Contact Center database backup and restore procedures and practices. You must continue to perform regular and frequent Contact Center backups. For more information, see *Avaya Aura® Contact Center Routine Maintenance* (44400-514).

Avaya Media Server VMware Snapshot considerations

VMware snapshots save the current state of the virtual machine, so you can return to it at any time. Snapshots are useful when you need to revert a virtual machine repeatedly to the same state, but you don't want to create multiple virtual machines.

The following considerations apply when using snapshots with Avaya Media Server on VMware:

- Snapshots must be taken during an Avaya Media Server maintenance window. Do not take a snapshot of an Avaya Media Server virtual machine while the contact center is running. Snapshots have a negative impact on the performance of a virtual machine over time. You must *Consolidate* snapshots at the end of the maintenance window, before putting the Avaya Media Server virtual machine back into production. For more information about consolidating snapshots, refer to VMware documentation.
- When restoring snapshots, carefully consider the possible impact from out-of-date antivirus definitions, missed Linux operating system updates and security updates. Isolate the restored virtual machine until these issues are resolved.

VMware snapshots are not a replacement for Avaya Media Server database backup and restore procedures and practices. For more information, see *Avaya Aura® Contact Center Routine Maintenance* (44400-514).

Performance monitoring and management

You must continuously monitor and measure the performance of the Contact Center VMware host server. You can use VMware vCenter to measure the critical host performance metrics in real-time. VMware vCenter aggregates and archives performance data so that data can be visualized and reported on.

Configure VMware vCenter statistics collection to collect 5 minute and 30 minute Interval Duration data for the host at Statistics Level 3. Retain the 5 minute Interval Duration data for 3 days and retain the 30 minute Interval Duration for 1 week.

Generate performance reports using vCenter Report Performance and archive these reports to provide a baseline performance reference. Generate and store 1-day and 1-week reports. Store the associated vCenter Report Summary with the performance reports. You must analyze performance reports after changes to the host to assess the impact of the change on the host.

Monitor, acknowledge, and resolve VMware vCenter alarms. In particular, you must immediately investigate and resolve host CPU usage and host memory usage alarms.

In addition, the command-line tools “esxtop” and “resxtop” are available to provide a fine-grained look at real-time metrics. There are a number of critical CPU-related counters to watch out for:

- If the load average listed on the first line of the CPU Panel is equal to or greater than the number of physical processors in the system, this indicates that the system is overloaded.
- The usage percentage of physical CPUs on the PCPU line can indicate an overloaded condition. In general, 80 percent usage is a reasonable ceiling in production environments. Use 90 percent as an alert to the VMware administrator that the CPUs are approaching an overloaded condition, which must be addressed.
- %RDY - The percentage of time a schedulable entity was ready to run but is not scheduled to a core. If %RDY is greater than 10 percent, then this can indicate resource contention.

- %CSTP - The percentage of time a schedulable entity is stopped from running to allow other vCPUs in the virtual machine to catch up. If %CSTP is greater than 5 percent, this usually means the virtual machine workload is not using VCPUs in a balanced fashion. High %CSTP can be an indicator of a system running on an unconsolidated snapshot.

For more information about using esxstop or resexstop, see the *VMware Resource Management Guide*.

Chapter 3: Deployment process

This work flow shows you the sequence of tasks you perform to deploy Avaya Aura® Contact Center.

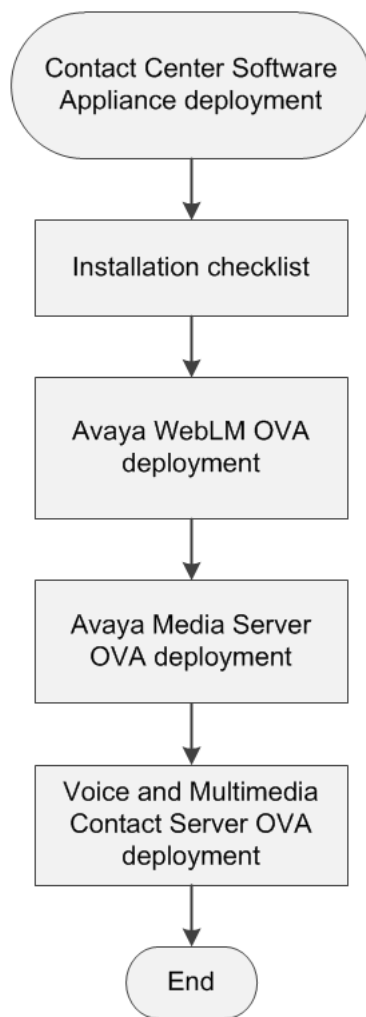


Figure 2: Avaya Aura® Contact Center deployment process

Chapter 4: Deployment checklist

The following sections list the main Avaya WebLM, Avaya Media Server, and Avaya Aura® Contact Center configuration and deployment details. You must know these configuration details to deploy and commission an Avaya Aura® Contact Center solution.

Complete these checklists.

Avaya WebLM deployment checklist

The following table lists and describes the configuration details required by WebLM.

Configuration Item	Your value	Description
Guest or virtual machine name in VMware inventory		The name of the WebLM virtual machine as it appears on the VMware inventory list.
Server hostname		The host name of the WebLM server
Server IP address		The IP address of the WebLM server.
Server mask		The network mask of the WebLM server.
Server domain name		The domain the WebLM server is on.
Server default gateway		The default gateway used by the WebLM server.
DNS server IP address		The IP address of the DNS server used by the WebLM server.
WebLM User Name		The user name used to log on to the WebLM web interface.
WebLM Password		The password used to log on to the WebLM web interface.
Primary Host ID		The WebLM server Host ID used to obtain a license.

Avaya Media Server deployment checklist

The following table lists and describes the configuration details required by Avaya Media Server.

Configuration Item	Your value	Description
Guest or virtual machine name in VMware inventory		The name of the Avaya Media Server virtual machine as it appears on the VMware inventory list.
Server hostname		The host name of the Avaya Media Server Linux server.
Root password		A password for the Avaya Media Server Linux server root administration account.
IP address		The IP address of the Avaya Media Server server.
Network Mask		The network mask of the Avaya Media Server server.
Default Gateway IP address		The default gateway used by the Avaya Media Server server.
DNS server IP address		The IP address of the DNS server used by Avaya Media Server.
Trusted IP address		The IP address of the Contact Center server.
SIP Domain name		The SIP domain name used by Avaya Media Server. This must match the SIP domain name as configured for your voice platform.
Language locale		The language and country locale used by Avaya Media Server.
NTP server IP address		The IP address for the Network Time Protocol (NTP) server.
Administration account "amsuser" password		A password for the Avaya Media Server Element Manager interface.

Voice and Multimedia Contact Server deployment checklist

The following table lists and describes the configuration details required by the Avaya Aura® Contact Center Voice and Multimedia Contact Server. The email and instant messaging (IM) configuration items are optional.

Configuration Item	Your value	Description
Guest or virtual machine name in VMware inventory		The name of the Voice and Multimedia Contact Server virtual machine as it appears on the VMware inventory list.
Computer Name or Hostname		The host name of the Voice and Multimedia Contact Server.

Table continues...

Configuration Item	Your value	Description
IP address		The IP address of the Voice and Multimedia Contact Server.
Subnet Mask		The network mask of the Voice and Multimedia Contact Server.
Default gateway		The default gateway used by the Voice and Multimedia Contact Server.
DNS server IP address		The IP address of the DNS server used by Voice and Multimedia Contact Server.
Country or region		The Microsoft Windows Server 2008 country or region server setting.
Time and currency		The Microsoft Windows Server 2008 time and currency server setting.
Keyboard layout		The Microsoft Windows Server 2008 keyboard layout server setting.
Microsoft Windows Server 2008 R2 SP1 Standard Edition product key		The Microsoft Windows Server 2008 R2 SP1 Standard Edition product key used to activate the Operating System.
Administrator password		A password for the Voice and Multimedia Contact Server Microsoft Windows "Administrator" account.
Site Name		The site name for the Voice and Multimedia Contact Server.
Avaya Media Server Locale		The language and country locale used by Avaya Media Server.
System Account Configuration Password.		A password for the Avaya Aura® Contact Center administration account.
WebLM IP Address		The IP address of the Remote WebLM server.
SIP Voice Proxy Server - IP Address		The Avaya Aura® Session Manager IP address.
SIP Voice Proxy Server - Port		The Avaya Aura® Session Manager port number.
SIP Voice Proxy Server - Transport		The transport type used by Avaya Aura® Session Manager.
SIP CTI Proxy Server - IP Address		The Avaya Aura® Application Enablement Services IP address.
SIP CTI Proxy Server - Port		The Avaya Aura® Application Enablement Services port number.
SIP CTI Proxy Server - Transport		The transport type used by Avaya Aura® Application Enablement Services.
SIP domain		The SIP domain name as configured in Avaya Aura® Session Manager.

Table continues...

Configuration Item	Your value	Description
IM Server IP Address		The IP address of the instant messaging provider server.
XMPP Domain		The domain name of the Extensible Messaging and Presence Protocol (XMPP) server. The XMPP Domain name must be different to the SIP domain name.
IM Server details		The port number and transport type for the instant messaging (IM) service provider server.
Incoming Mail Server Host Name		The name of the server on which email messages are received in your network.
Incoming Mail Server Protocol		The communication protocol for the inbound email server.
Outgoing Mail Server Host Name		The name of the server from on which email messages are sent. Your inbound and outbound mail servers can have the same name.
Outgoing Mail Server Protocol		The communication protocol for the outbound email server.

Chapter 5: Avaya WebLM OVA deployment

Deploy the Avaya WebLM OVA to provide solution licensing. You can deploy the Avaya WebLM OVA on the same VMware host server as the Contact Center OVA and the Avaya Media Server OVA. Alternatively, you can deploy the Avaya WebLM OVA standalone on a separate VMware host server.

For additional information about deploying the Avaya WebLM OVA, see *Avaya WebLM using VMware® in the Virtualized Environment Deployment Guide* available on the Avaya Support website at <http://support.avaya.com>.

After you have deployed WebLM, you can apply WebLM patches, feature packs, or service packs. For example, you can install a WebLM patch to upgrade WebLM from Release 6.3.2 to Release 6.3.8.

WebLM OVA

Contact Center supports the WebLM license manager server. For increased efficiency and flexibility, the WebLM license manager supports the VMware Virtual Appliance and Open Virtualization Archive (OVA) deployment mechanisms. In a virtualized Contact Center environment, you can use VMware to load the WebLM OVA package onto a separate virtual machine in your contact center solution. The virtualized Contact Center server can then use the virtualized WebLM server as the license manager.

The WebLM OVA contains a hardened Linux operating system.

The WebLM OVA requires the following:

vCPU	Minimum CPU speed	Virtual memory reservation	Number of NICs	Virtual disk storage reservation
1	—	1 GB	1 shared	30 GB

 Note:

Do not change any of these WebLM OVA VMware guest settings.

The WebLM OVA uses the following network mapping:

WebLM Server VM Interface	Application
Eth0	License management

The WebLM server for VMware is packaged as a vAppliance ready for deployment using either VMware vSphere Client or VMware vCenter.

Deploy the WebLM OVA using Disk Format - Thick Provision Lazy Zeroed. Avaya WebLM does not support thin provisioning in production environments.

WebLM OVA deployment procedures

About this task

This task flow shows you the sequence of procedures you perform to deploy the WebLM OVA.

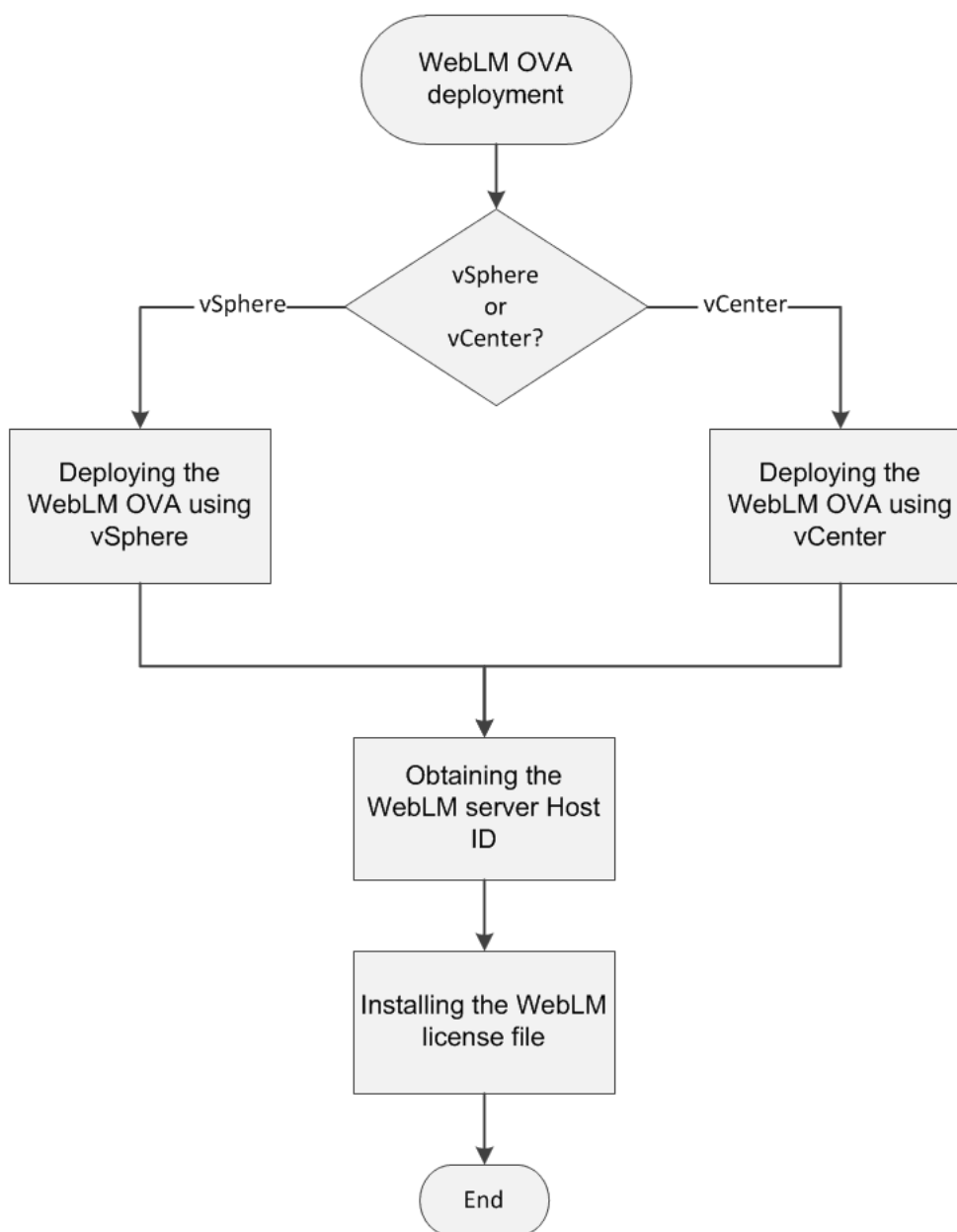


Figure 3: WebLM OVA deployment process

Deploying the WebLM OVA using vSphere

Before you begin

- Download the WebLM OVA file from the Avaya Product Licensing and Delivery System (PLDS) website at <https://plds.avaya.com/>.
- Know the IP address and network details of the WebLM server.

About this task

Deploy the WebLM OVA file onto a VMware ESXi host server. This creates a single instance of WebLM server for use in Contact Center solutions.

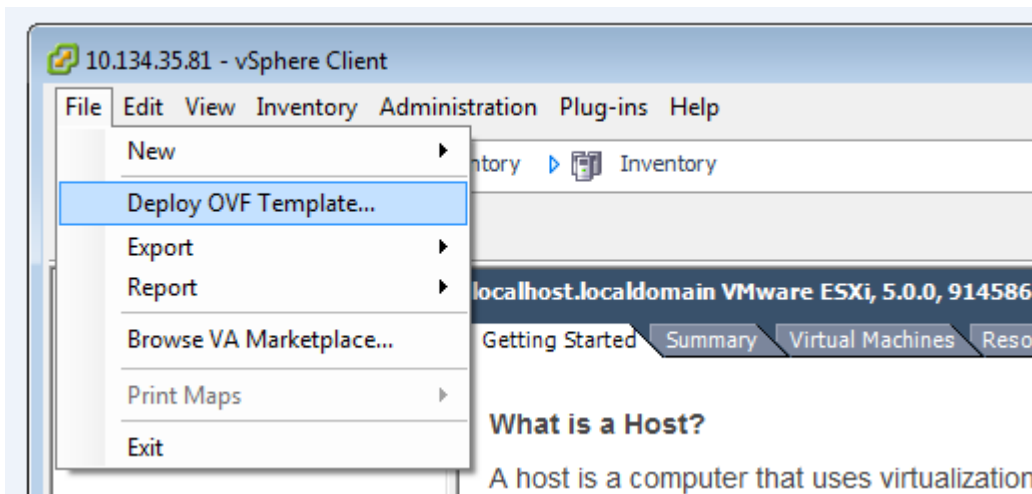
The WebLM OVA includes VMware tools. They are a suite of utilities that enhances the performance of the virtual machine's guest operating system and improves the management of the virtual machine.

Always deploy WebLM with a thick provisioned disk.

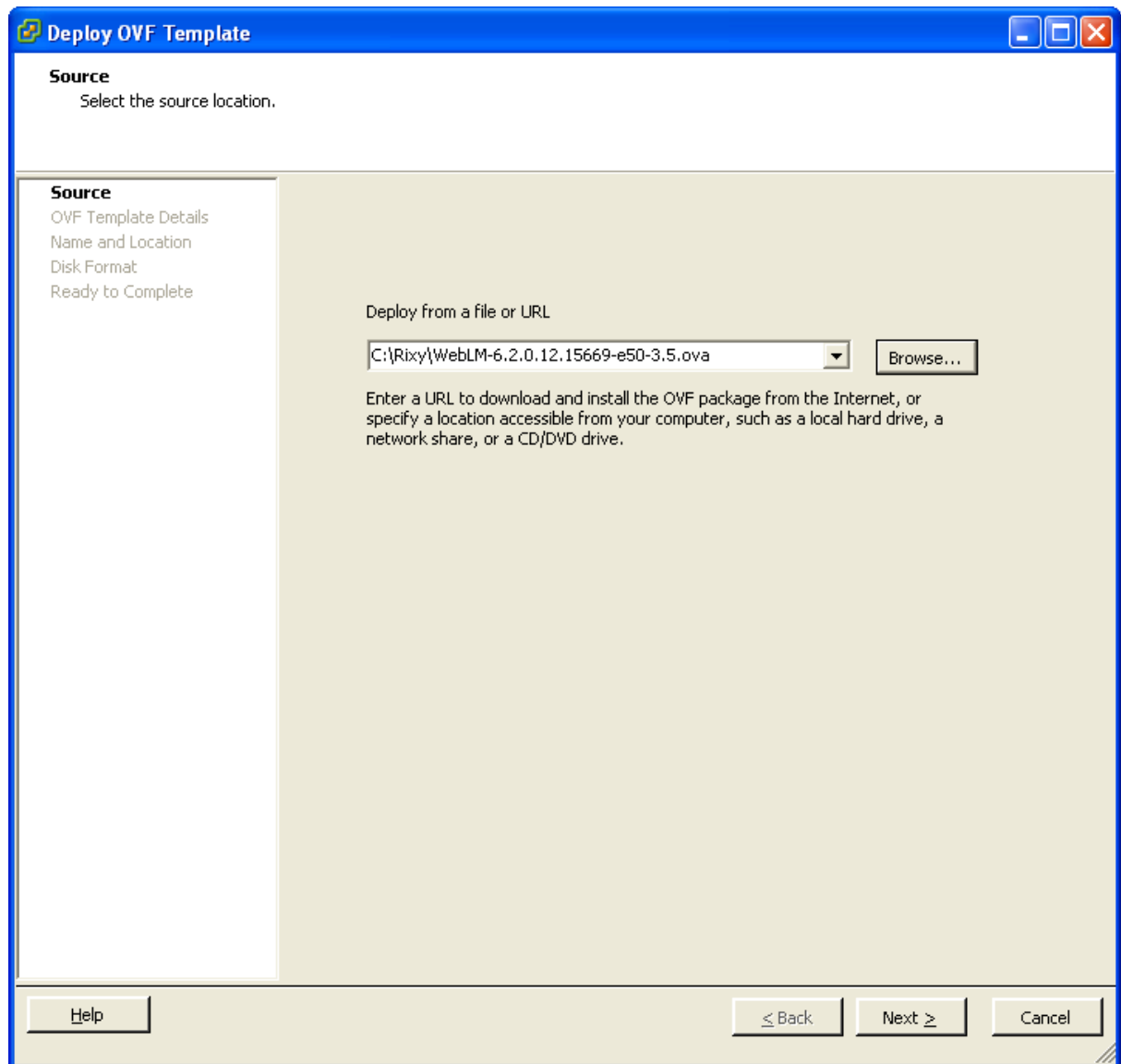
For best performance, use WebLM only on disks local to the ESXi Host, or SAN storage devices. Do not store WebLM on a NFS storage system.

Procedure

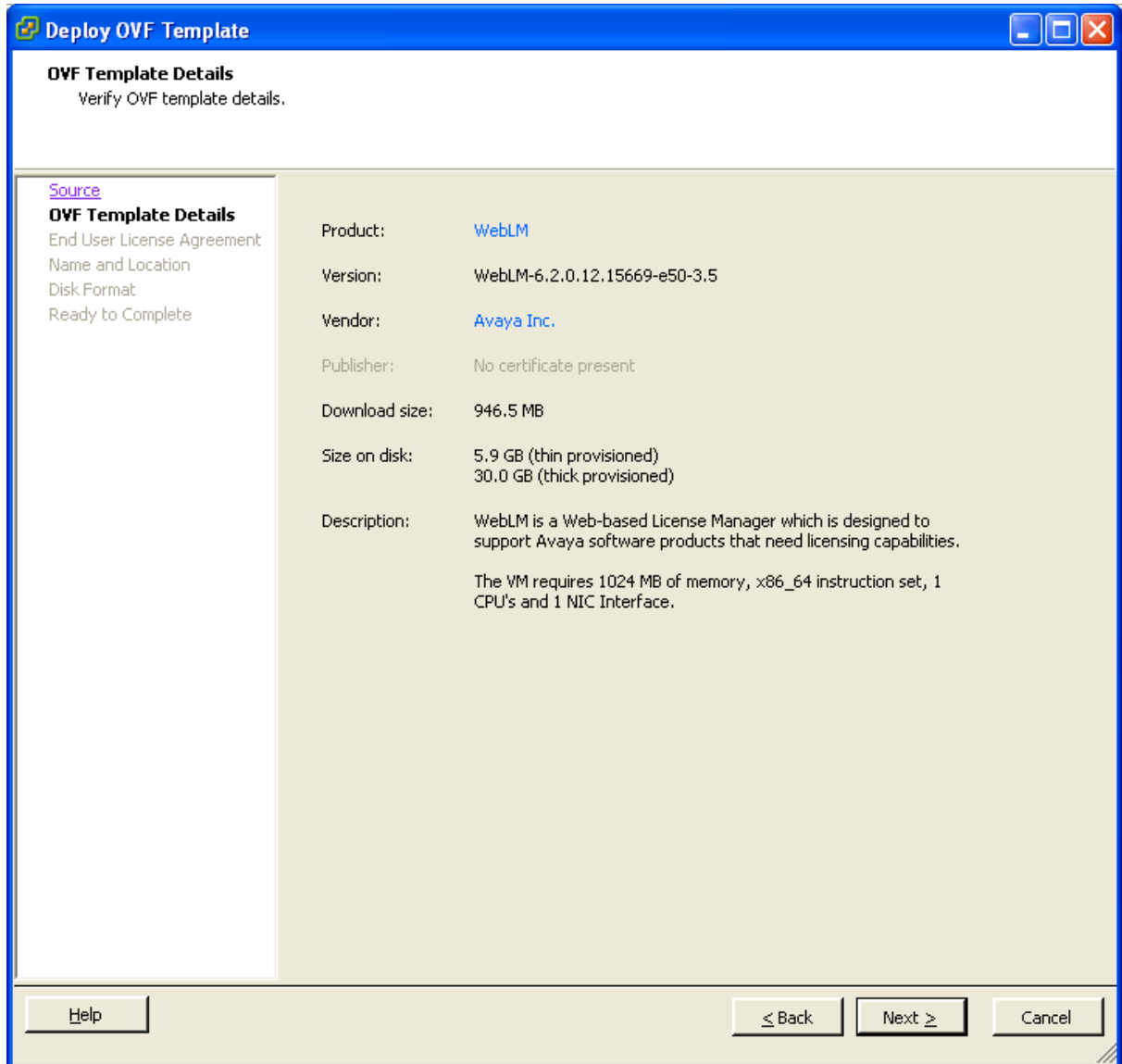
1. In your vSphere client, select the ESXi host server.
2. Select **File** > **Deploy OVF Template**.



3. On the **Source** window, click **Browse**.
4. On the **Open** message box, select the WebLM OVA file.
5. Click **Open**.



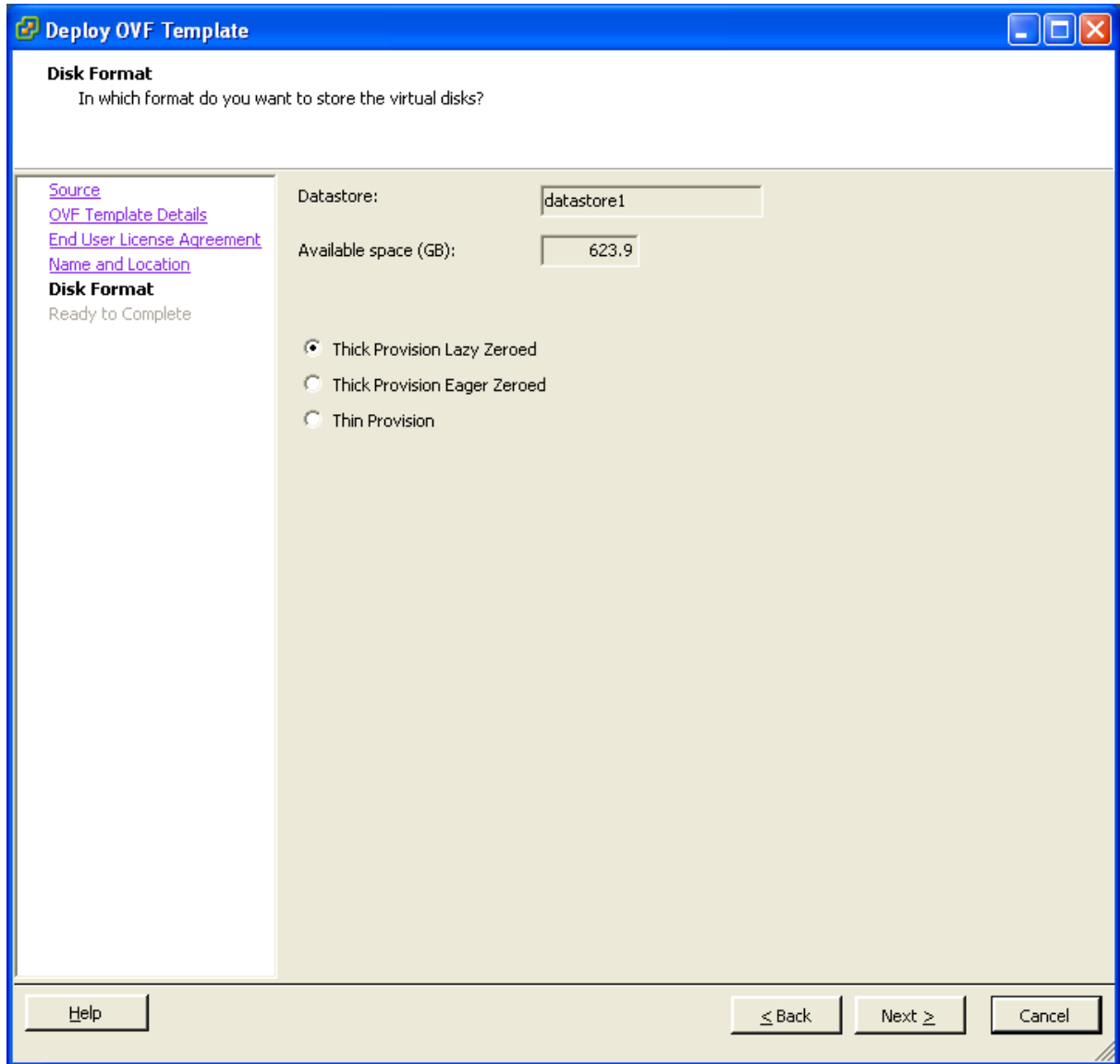
6. On the **Source** window, click **Next**.



7. On the **OVF Template Details** window, verify the details of the OVA template and click **Next**.
8. On the **End User License Agreement** window, read the license agreement, and if acceptable, click **Accept**.
9. Click **Next**.
10. On the **Name and Location** window, type the name of the new WebLM guest (virtual machine). This is not the host name of the WebLM server. This is the name of the VMware guest.

The screenshot shows a Windows-style dialog box titled "Deploy OVF Template". The window has a blue title bar with standard minimize, maximize, and close buttons. The main content area is divided into two panes. The left pane contains a list of steps: "Source", "OVF Template Details", "End User License Agreement", "Name and Location" (which is highlighted in bold), "Disk Format", and "Ready to Complete". The right pane is titled "Name and Location" and contains the instruction "Specify a name and location for the deployed template". Below this instruction is a text input field labeled "Name:" containing the text "WebLMServer1". A note below the field states: "The name can contain up to 80 characters and it must be unique within the inventory folder." At the bottom of the window, there are three buttons: "Help" on the left, and "< Back", "Next >", and "Cancel" on the right.

11. Click **Next**.
12. On the **Disk Format** window, select **Thick Provision Lazy Zeroed**.



13. Click **Next**.
14. On the **Ready to Complete** window, verify the deployment settings. If you need to modify any of the settings, click **Back**.
15. Click **Power on after deployment**.
16. Click **Finish**.
The WebLM template begins to load.
17. On the **Deployment Completed Successfully** message box, click **Close**.
18. In the vSphere client, from the inventory list in the left pane, select the new WebLM guest.
19. With the deployed WebLM virtual machine still selected, right-click and select **Open Console**.

On the WebLM console screen, as the WebLM virtual machine boots, you are prompted to configure the network settings.

20. To configure the WebLM server network settings, enter `y` at the menu.
21. At the **IP Address** prompt, enter the IP address of the WebLM virtual machine. Use IPv4 formatting.
22. At the **Netmask** prompt, enter the subnet mask IP address. Use IPv4 formatting.
23. At the **hostname** prompt, enter the host name of the WebLM virtual machine.
24. At the **domain name** prompt, enter the name of the domain containing the WebLM virtual machine.
25. At the **default gateway** prompt, enter the Default Gateway IP address. Use IPv4 formatting.
26. At the **DNS server(s)** prompt, enter the DNS server IP address. Use IPv4 formatting.
27. At the **default Search List (optional)** prompt, enter a search list if you are using one.
28. At the **NTP Server IP or FQDN** prompt, enter the IP address or FQDN of your Network Time Protocol (NTP) server.
29. At the **Time Zone Detail** prompt, select the time zone continent or ocean for WebLM from the list.
30. At the **Please select a country** prompt, select the country for WebLM from the list.
31. Review the **Network Settings** and enter `y`.

The WebLM OVA deployment continues until the installation is complete.

32. With the WebLM virtual machine still selected, right-click and select **Open Console**.
WebLM provides a restricted shell to perform CLI based operations.

Deploying the WebLM OVA using vCenter

Before you begin

- Download the WebLM OVA file from the Avaya Product Licensing and Delivery System (PLDS) website at <https://plds.avaya.com/>.
- Know the IP address and network details of the WebLM server.

About this task

Deploy the WebLM OVA file onto a VMware ESXi host server. This creates a single instance of WebLM server for use in Contact Center solutions.

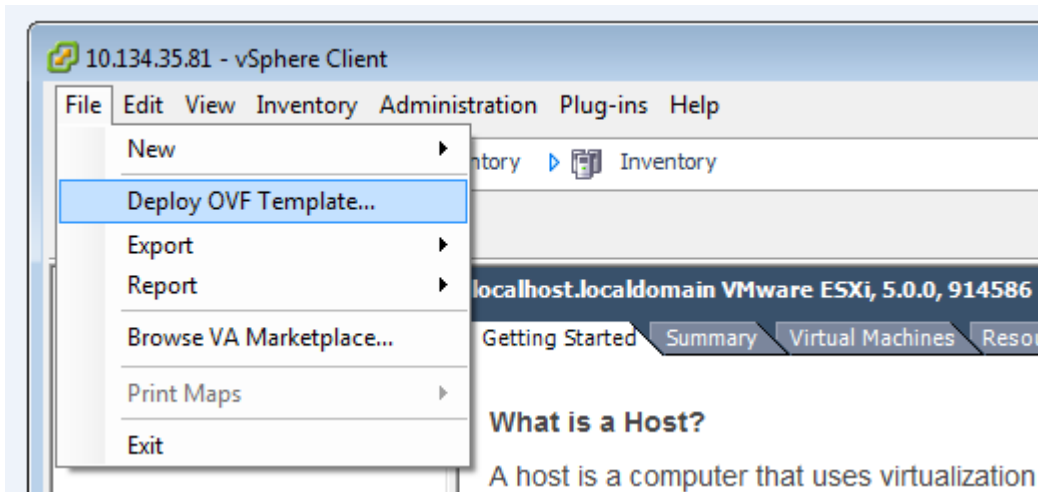
The WebLM OVA includes VMware tools. They are a suite of utilities that enhances the performance of the virtual machine's guest operating system and improves the management of the virtual machine.

Always deploy WebLM with a thick provisioned disk.

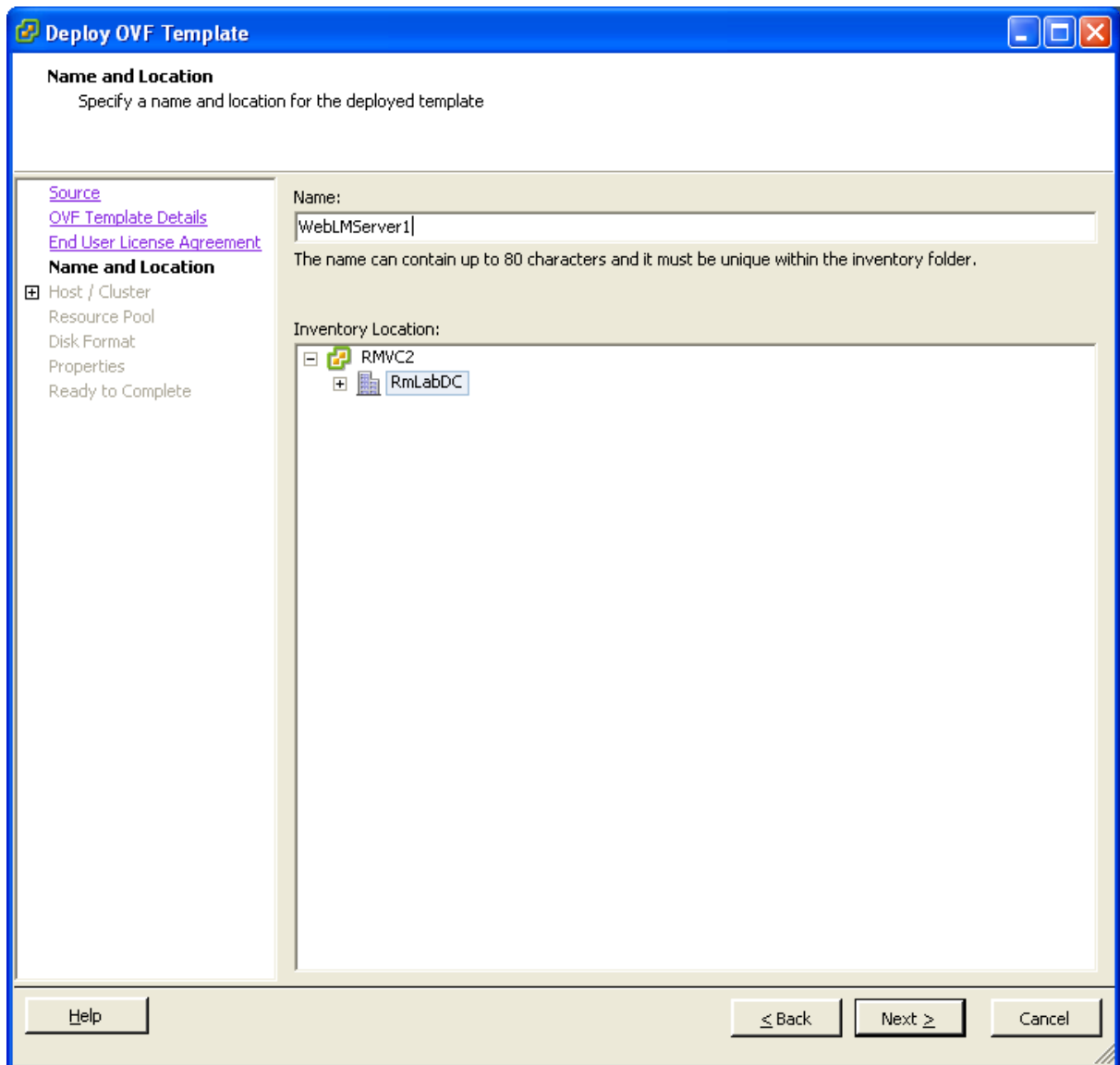
For best performance, use WebLM only on disks local to the ESXi Host, or SAN storage devices. Do not store WebLM on a NFS storage system.

Procedure

1. In your vSphere client, select **File > Deploy OVF Template**.



2. On the **Source** window, click **Browse**.
3. On the **Open** message box, select the WebLM OVA file.
4. Click **Open**.
5. On the **Source** window, click **Next**.
6. On the **OVF Template Details** window, verify the details of the OVA template and click **Next**.
7. On the **End User License Agreement** window, read the license agreement, and if acceptable, click **Accept**.
8. Click **Next**.
9. On the **Name and Location** window, in the **Name** box, type the name of the new WebLM guest (virtual machine). This is not the host name, this is the name of the VMware virtual machine.



10. Click **Next**.
11. On the Host and Cluster window, select the host server or cluster on which to deploy the WebLM OVA. If you selected a cluster, select a **Specific Host** on that cluster.
12. Click **Next** to display the **Storage** window.
13. From the **Select a destination storage for the virtual machine files** list, select a location to store the WebLM virtual machine image.
14. Click **Next**.
15. On the **Disk Format** window, select **Thick Provision Lazy Zeroed**. Thin provisioning is not supported in production environments.
16. Click **Next**.

Deploy OVF Template

Properties
Customize the software solution for this deployment.

Source
OVF Template Details
End User License Agreement
Name and Location
Host / Cluster
Storage
Disk Format
Network Mapping
Properties
Ready to Complete

Please enter the IP Address to assign to the VM:
[. . .]
Enter an IP address.

Please enter the Netmask to assign to the VM:
[255 , 255 , 255 , 0]

Please enter the IP Address of your default gateway:
[. . .]
Enter an IP address.

Please enter the IP Address of your DNS server:
[. . .]
Enter an IP address.

Please enter the Hostname [FQDN] to assign to the VM:
[]
A value must be provided.

Properties with invalid values will be left unassigned. The vApp will not be able to power on until all properties have valid values.

Help ≤ Back Next ≥ Cancel

17. On the **Network Mapping** window, configure a network interface for the WebLM virtual machine.
18. Click **Next**.
19. In the **Properties** window, in the **Please enter the IP Address to assign to the VM** box, type the IP address of the WebLM virtual machine. Use IPv4 formatting.
20. In the **Please enter the Netmask to assign to the VM** box, type the subnet mask IP address. Use IPv4 formatting.
21. In the **Please enter the IP Address of your default Gateway** box, type the Default Gateway IP address. Use IPv4 formatting.
22. In the **Please enter the IP Address of your DNS server** box, type the DNS server IP address. Use IPv4 formatting.

23. In the **Please enter the Hostname [FQDN] to assign to the VM** box, type the full host name fully qualified domain name (FQDN) of the WebLM server.
24. Click **Next**.
25. On the **Ready to Complete** window, verify the deployment settings. If you need to modify any of the settings, click **Back**.
26. Click **Power on after deployment**.
27. Click **Finish**.
The WebLM template begins to load.
28. On the **Deployment Completed Successfully** message box, click **Close**.

Obtaining the WebLM server Host ID

Before you begin

- Deploy the WebLM OVA on your VMware host server.

About this task

Obtain the WebLM server Host ID so you can use it to obtain or generate a license for use by Contact Center features.

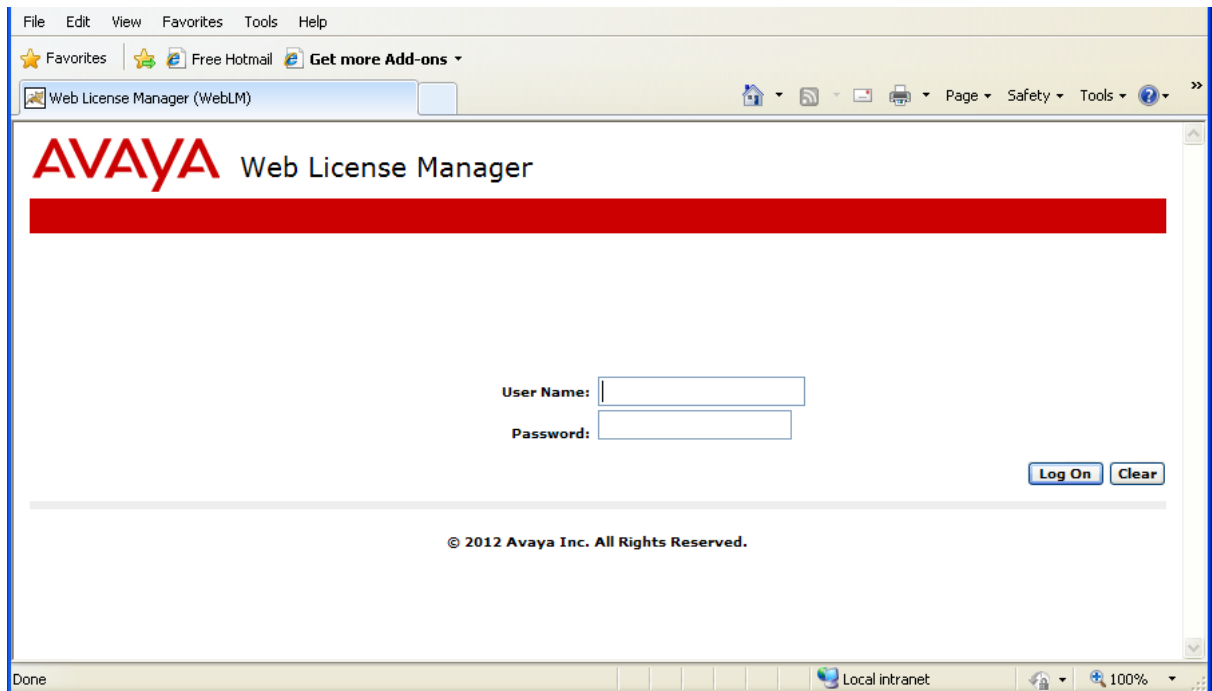
The first time you log on to the WebLM Web interface, you must change the default password.

Procedure

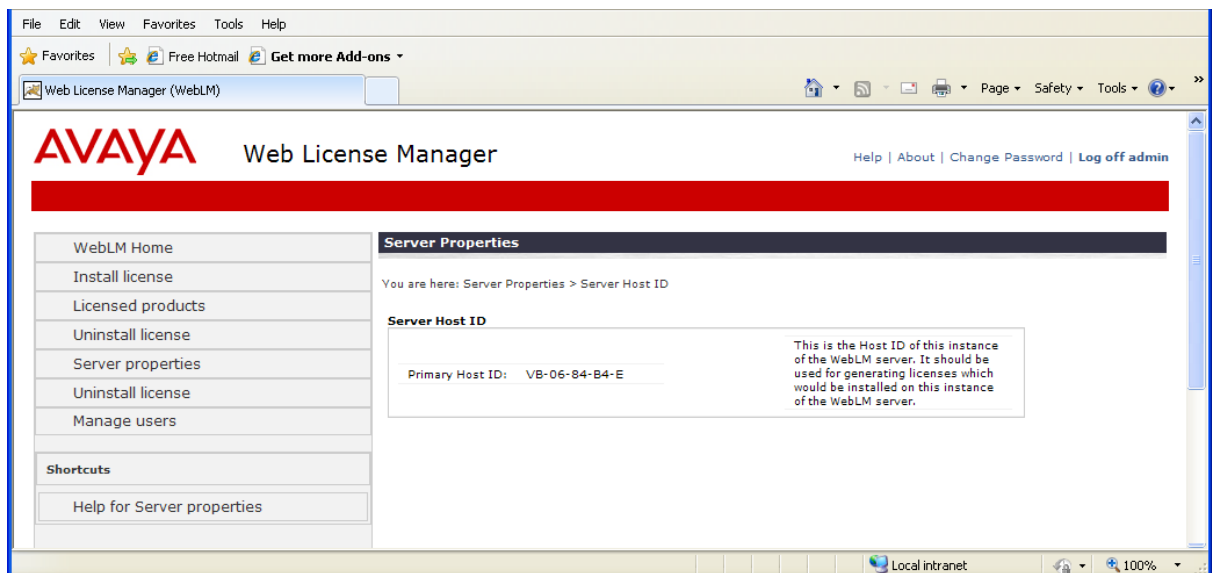
1. Open Internet Explorer and enter the following URL:

`https://<WebLMIPAddress>:52233/WebLM/index.jsp`

Where WebLMIPAddress is the IP address of the WebLM virtual machine.



2. Log on to the Web License Manager user interface using the default settings:
 The default **User Name** is admin.
 The default **Password** is weblmadmin.
3. Click **Log On**.
4. You are forced to change the password and log back on again using the new password.
5. On the left hand pane, select **Server properties**.



6. Record the Server Host ID **Primary Host ID** number.
7. Use the WebLM server Host ID to obtain Contact Center licenses from the Avaya Product Licensing and Delivery System (PLDS).

Installing the WebLM license file

Before you begin

- Use the WebLM server Host ID to obtain Contact Center licenses from the Avaya Product Licensing and Delivery System (PLDS).

About this task

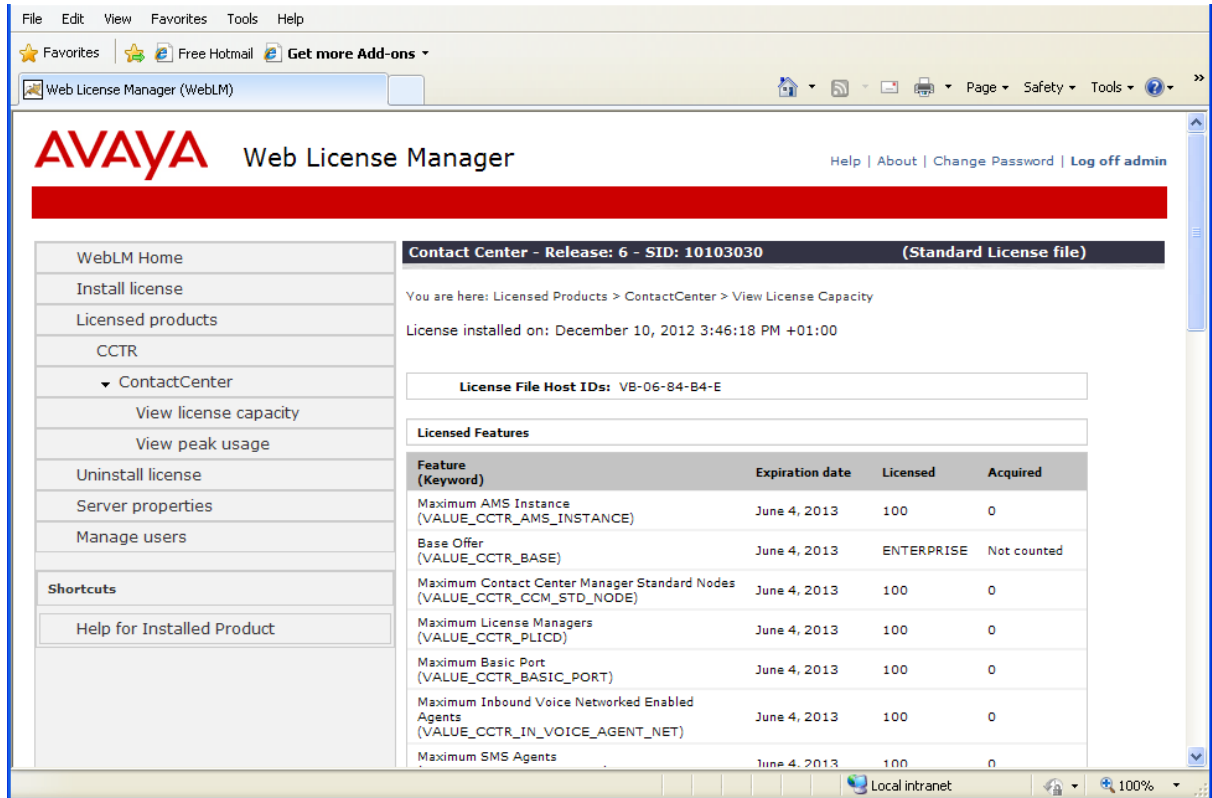
Install the WebLM license file to license Contact Center features and agents.

Procedure

1. Open Internet Explorer and enter the following URL:

https://<WebLMIPAddress>:52233/WebLM/index.jsp

Where WebLMIPAddress is the IP address of the WebLM virtual machine.
2. Log on to the Web License Manager user interface using the “admin” **User Name** and your new password.
3. Log on to the WebLM Web interface using your new password.
4. In the left hand pane, click **Install license**.
5. In the **Enter license path** box, enter the license file details. Alternatively, click **Browse** to load the license file.
6. Click **Install**.
7. You can review the Contact Center licensed details by clicking **Licensed products, CCTR, ContactCenter**.



WebLM licensing is now available for Contact Center.

Installing a WebLM patch, feature pack, or service pack

Before you begin

- Ensure that you have configured `/etc/hosts` with the WebLM IP address.
- Create a VMware snapshot backup for WebLM.
- Copy the patch file, feature pack file, or the service pack file to the WebLM virtual machine. Copy the file to the `/home/admin` folder. The default password for the root (su) user is "root01".
- Verify the MD5 checksum of the downloaded patch file.
- Go to the WebLM CLI by performing one of the following actions:
 - Open the vSphere client, and click the **Console** tab.
 - Start an SSH session on the WebLM server.

About this task

Install WebLM patches to resolve product issues or upgrade the installed software.

Before installing WebLM patches, you must first identify the installed WebLM software version. Run the `admin > swversion` command to identify the installed version.

The system displays the version details. For example,

```
***** StandAlone WebLM Software Information
***** Standalone WebLM on VMware 6.3.2.0 Build Number
6.3.2.4.6790 Patch 6.3.2.2 Build Number 6.3.4.1.21002
```

Procedure

1. Log in to the WebLM CLI as an administrator.
2. Perform a WebLM backup.
 - a. Enter `WebLMBackup <backup_location>` and provide the backup location as a parameter. The WebLM backup is stored at the location you specify as a parameter.
 - b. Copy the backup files to a remote computer or to an external storage device.

3. Grant executable permissions to the patch file. For example:

```
chmod +x WebLM_6.3.8_r4502368.bin
```

4. Install the patch by running the patch file. For example:

```
./WebLM_6.3.8_r4502368.bin
```

The patch file extracts and begins to run.

5. At the **Do you accept the Avaya Software License Terms?** prompt, read the license terms, and if the terms are acceptable, enter `Y`.

The installation continues and installs the updated software.

6. Restart the standalone WebLM virtual machine.
7. Perform a WebLM restore. Enter `WebLMRestore full <backup_location>` to restore all the WebLM files by picking up the backup file at the specified location.

Chapter 6: Avaya Media Server OVA deployment

Deploy the Avaya Media Server OVA to provide the conference services required by SIP-enabled Contact Center.

The Avaya Media Server OVA creates and configures a virtual machine (guest) containing Avaya Media Server software. The resulting virtual machine contains a Linux operating system, hard disk drive, third-party components, system configuration, firewall settings, and Avaya Media Server application software.

You can deploy the Avaya Media Server OVA on the same VMware host server as the Contact Center OVA and the Avaya WebLM OVA. Alternatively, you can deploy the Avaya Media Server OVA standalone on a separate VMware host server.

Avaya Media Server OVA

The Avaya Media Server OVA contains information about the guest server specification, guest operating system, and application software. This OVA contains the following components:

- Red Hat Enterprise Linux 6.6, 64-bit
- Avaya Media Server 7.6 software
- Contact Center Services for Avaya Media Server Release 6.4
- IP tables firewall file application
- VMware Tools. Do not update the VMware Tools software on this virtual machine unless instructed to do so by Avaya.

The Avaya Media Server OVA is not supported in High Availability solutions. Virtualized Avaya Media Server does not support High Availability.

Avaya Media Server is a software based media processing platform. Contact Center includes an enhanced version of Avaya Media Server which contains an additional component: Contact Center Services for Avaya Media Server. The Contact Center Services packaged application provides the conference services required by SIP-enabled Contact Center.

The Avaya Media Server OVA package has the following default hardware configuration:

vCPU	Minimum CPU speed	Virtual memory required	Number of NICs	Virtual disk storage required	
8	—	12GB	1	Size	80 GB
				Deploy the Avaya Media Server OVA using Thick Provision Lazy Zeroed. Avaya Media Server does not support thin provisioning	

*** Note:**

Do not change any of these Avaya Media Server OVA VMware guest settings.

In a virtualized Contact Center environment, you can use VMware to load the Avaya Media Server OVA package into a virtual machine (guest) in your contact center solution. The virtualized Contact Center server can then use the virtualized Avaya Media Server as a voice media processor.

The Avaya Media Server OVA creates two Linux accounts: root and amsuser (for Element Manager). You must use VMware console to log on to the Avaya Media Server guest as the root administrator and set an initial password, before you can gain access to the system either locally, using SSH, or using Element Manager.

Deploy the Avaya Media Server OVA using Disk Format - Thick Provision Lazy Zeroed. Avaya Media Server does not support thin provisioning.

Avaya Media Server OVA deployment procedures

About this task

This task flow shows you the sequence of procedures you perform to deploy the Avaya Media Server OVA.

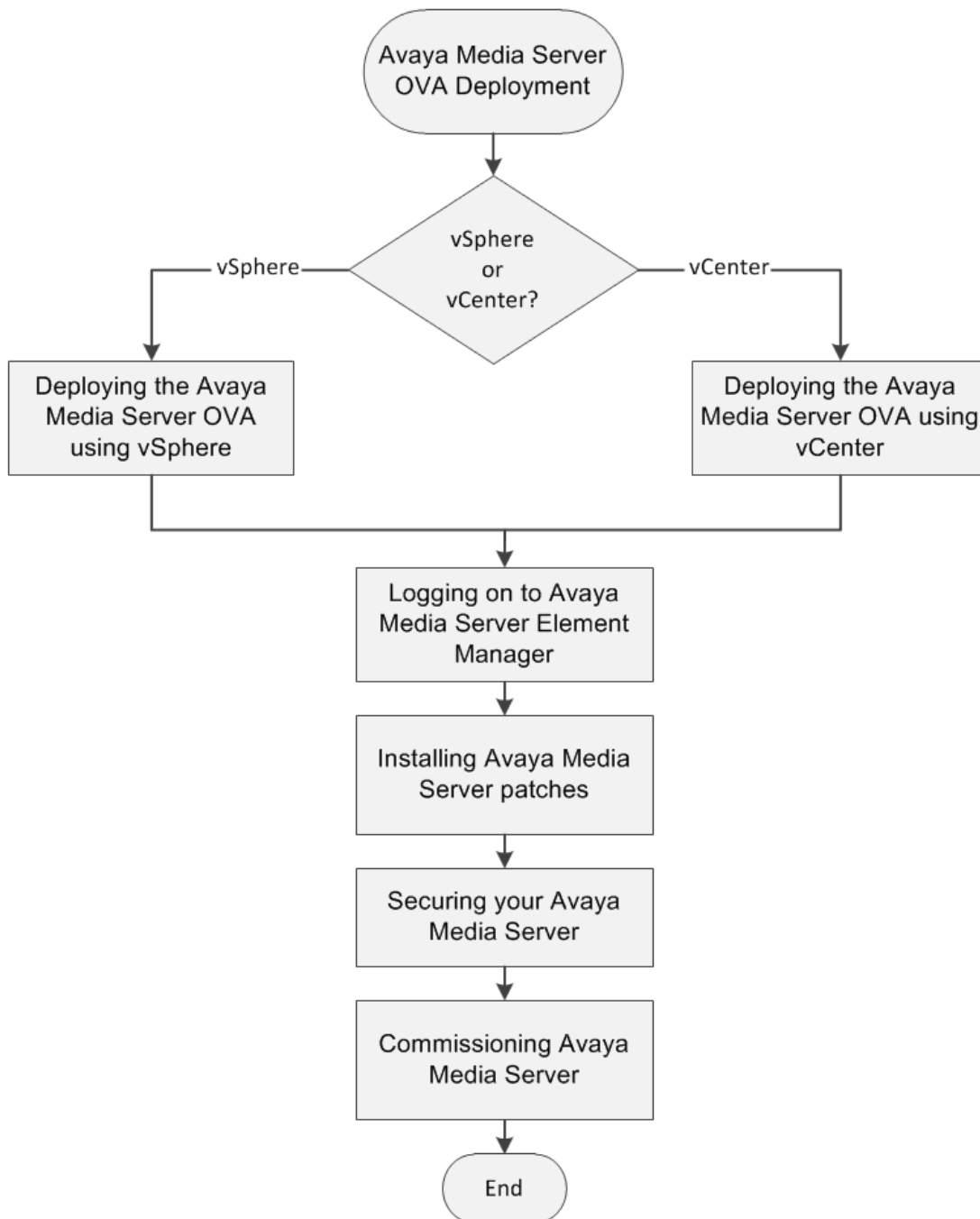


Figure 4: Avaya Media Server OVA deployment process

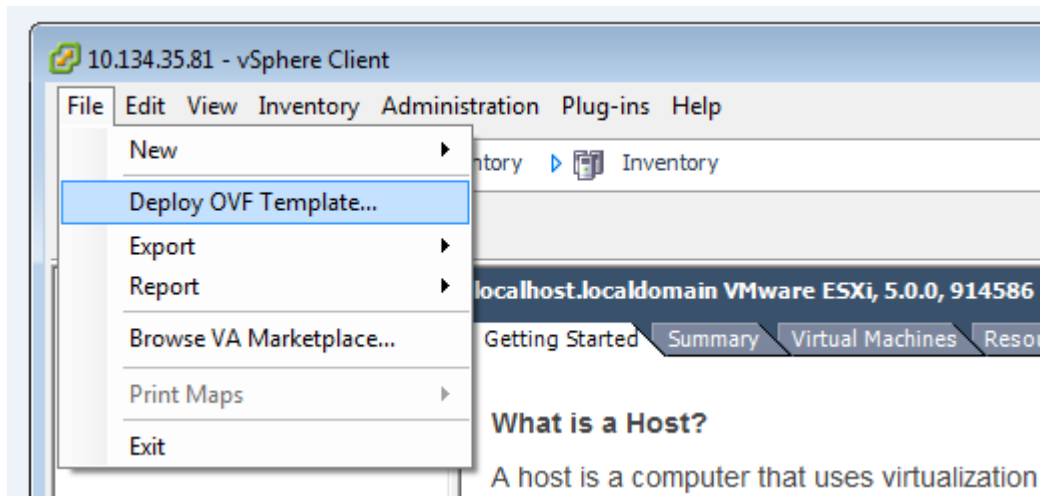
Deploying the Avaya Media Server OVA using vSphere

About this task

Deploy the Avaya Media Server OVA file onto a VMware ESXi host server. This creates a virtual machine with Avaya Media Server software for use in Contact Center solutions.

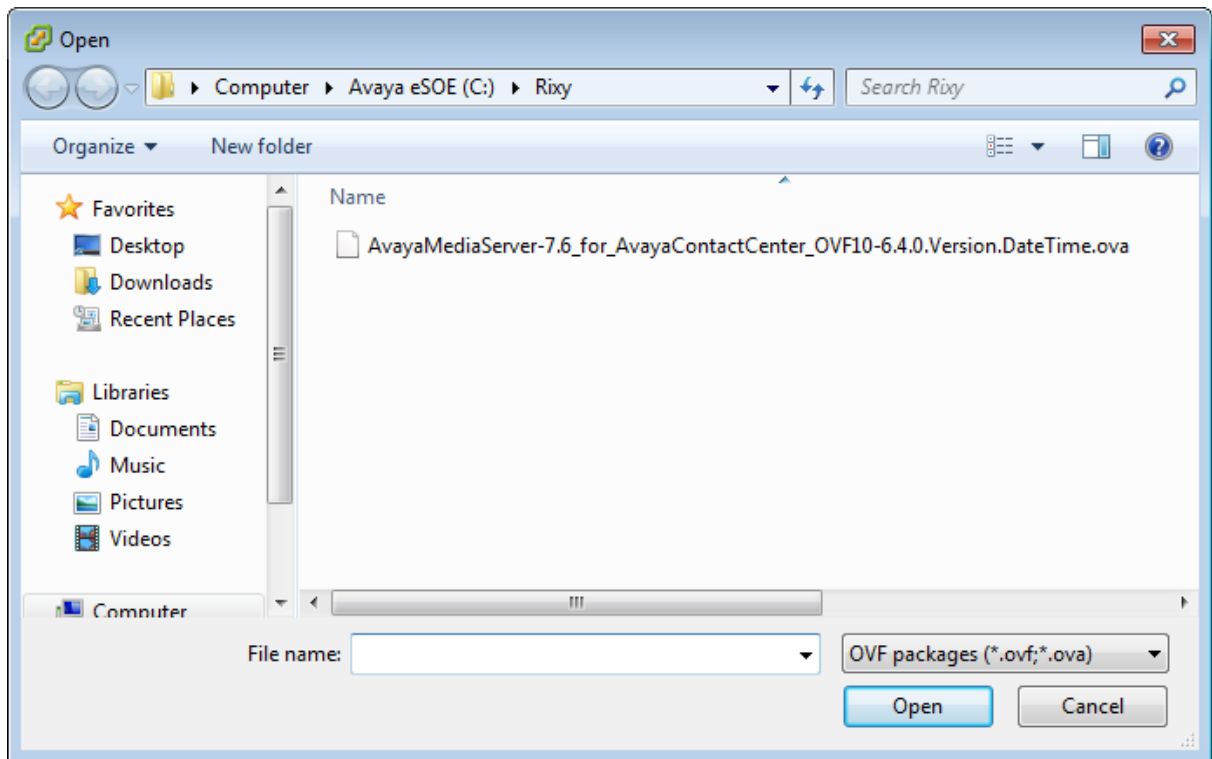
Procedure

1. In your vSphere client, select the ESXi host server.
2. Select **File > Deploy OVF Template**.



3. On the **Deploy OVF Template** window, click **Browse**.

4. On the **Open** message box, select Avaya Media Server OVA file.



5. Click **Open**.
6. On the **Deploy OVF Template** window, click **Next**.
7. On the **OVF Template Details** window, verify the details of the OVA template and click **Next**.
8. Read the **End User License Agreement** and click **Accept**.
9. Click **Next**.

10. On the **Name and Location** window, type the name of the new Avaya Media Server guest (virtual machine).

The screenshot shows a window titled "Deploy OVF Template" with standard Windows window controls (minimize, maximize, close). The window is divided into two main sections. The left section contains a vertical list of steps: "Source", "OVF Template Details", "End User License Agreement", "Name and Location" (which is highlighted in bold), "Disk Format", and "Ready to Complete". The right section is titled "Name and Location" with the instruction "Specify a name and location for the deployed template". It features a text input field labeled "Name:" containing the text "AvayaMediaServer1". Below the input field, a note states: "The name can contain up to 80 characters and it must be unique within the inventory folder." At the bottom of the window, there are three buttons: "Help" on the left, and "≤ Back", "Next ≥", and "Cancel" on the right.

11. Click **Next**.

12. On the **Disk Format** window, select **Thick Provision Lazy Zeroed**.

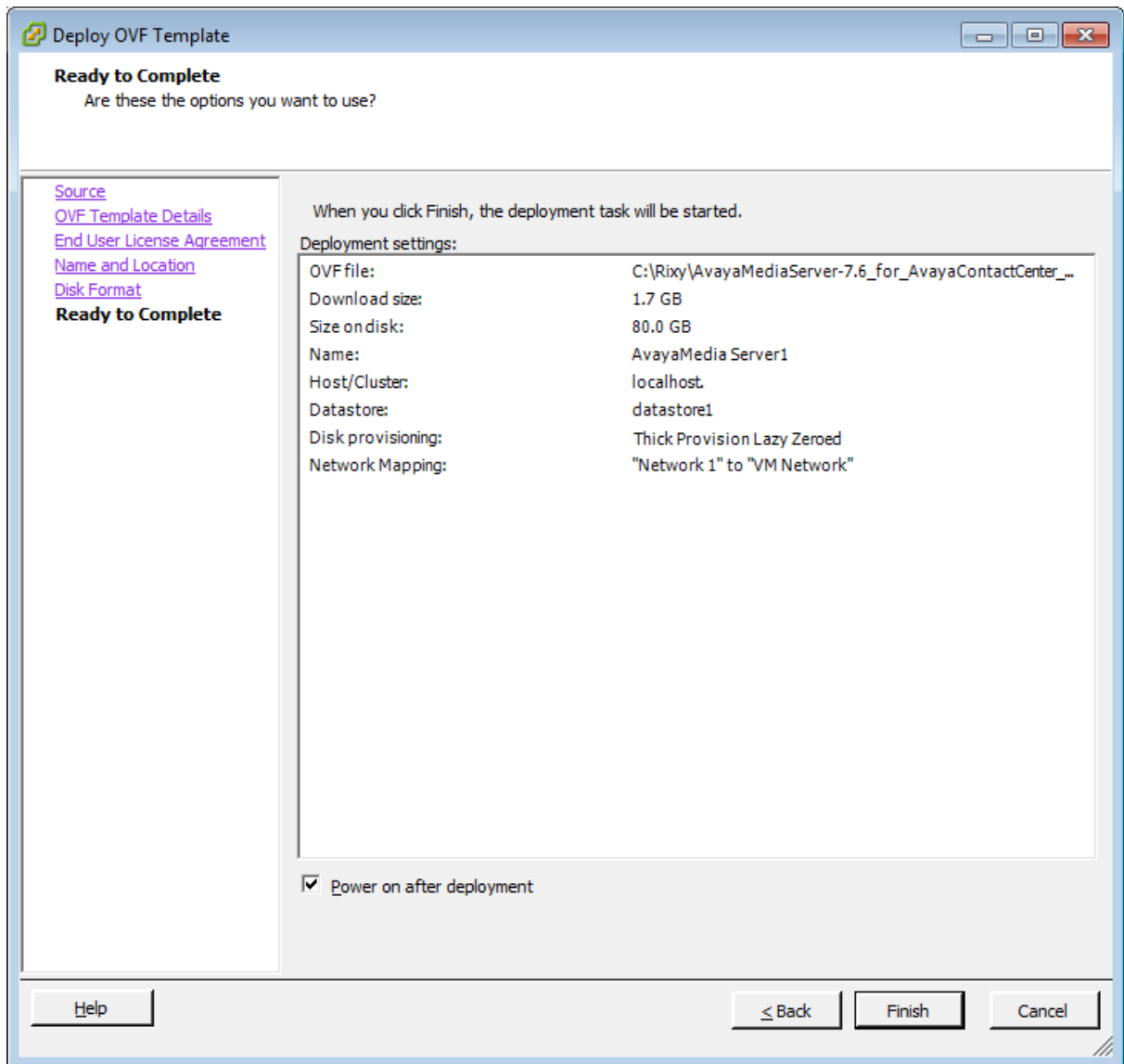
The screenshot shows the 'Deploy OVF Template' window with the 'Disk Format' tab selected. The window title is 'Deploy OVF Template'. Below the title bar, the text 'Disk Format' is displayed, followed by the question 'In which format do you want to store the virtual disks?'. On the left side, there is a navigation pane with links: 'Source', 'OVF Template Details', 'End User License Agreement', 'Name and Location', 'Disk Format' (which is highlighted), and 'Ready to Complete'. The main area of the window contains the following fields and options:

- Datastore:** A text box containing 'datastore1'.
- Available space (GB):** A text box containing '541.5'.
- Provisioning Method:** Three radio buttons are present:
 - ☒ Thick Provision Lazy Zeroed
 - ☐ Thick Provision Eager Zeroed
 - ☐ Thin Provision

At the bottom of the window, there are three buttons: 'Help', '< Back', and 'Next >', and a 'Cancel' button on the far right.

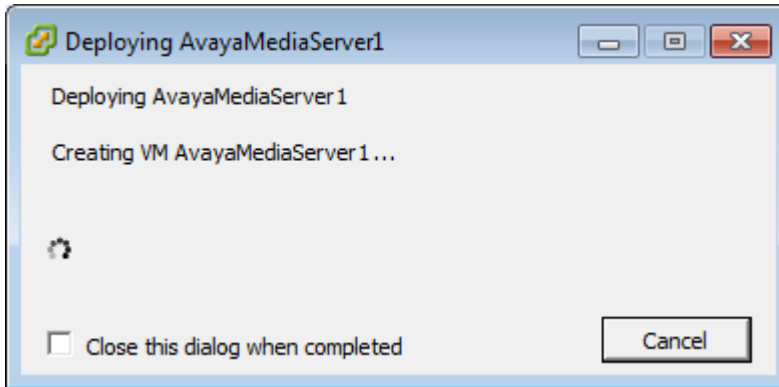
13. Click **Next**.
14. On the **Ready to Complete** window, verify the deployment settings. If you need to modify any of the settings, click **Back**.

15. Click **Power on after deployment**.

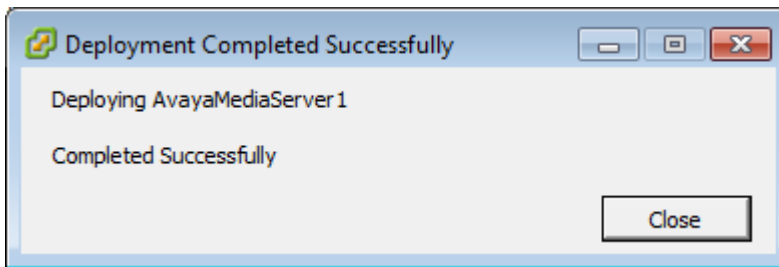


16. Click **Finish**.

The Avaya Media Server template begins to load:

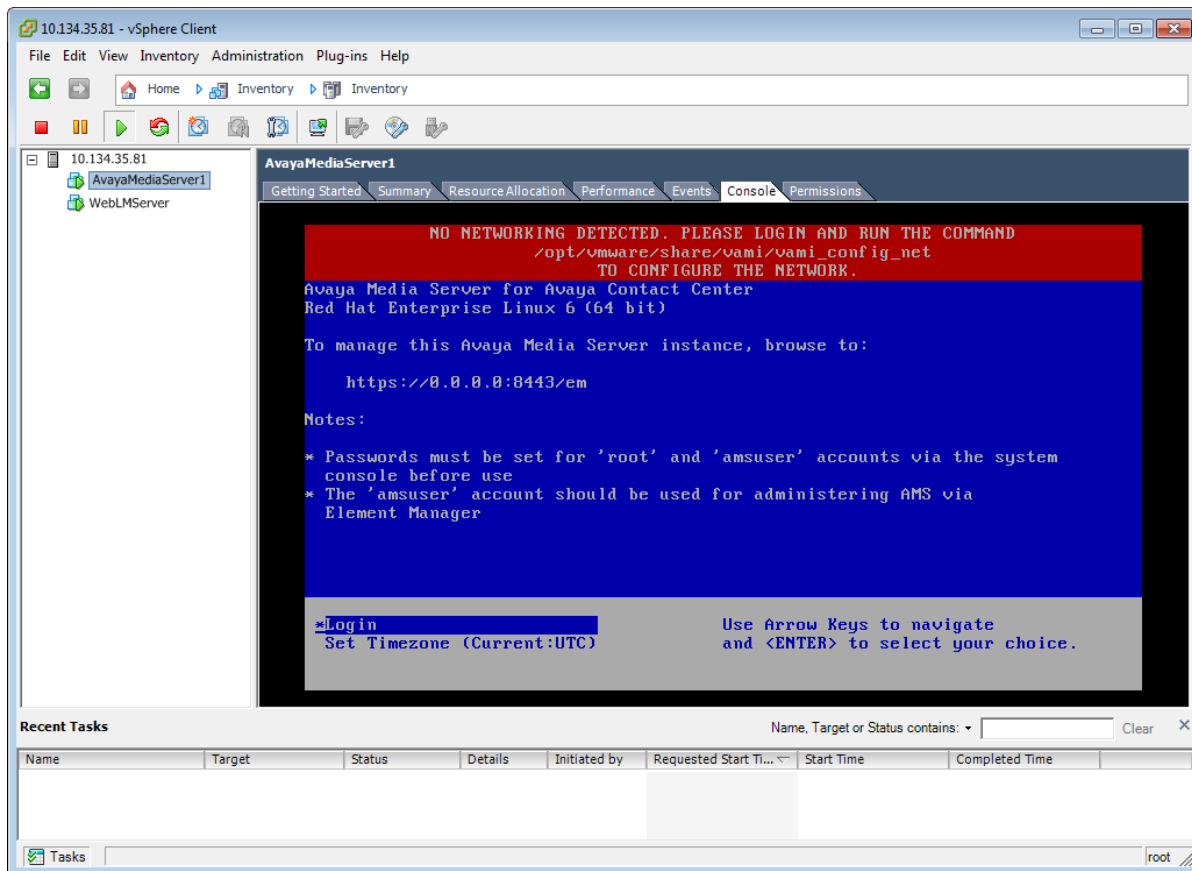


17. On the **Deployment Completed Successfully** message box, click **Close**.



18. In the vSphere client, from the inventory list in the left pane, select the new Avaya Media Server virtual machine.
19. In the right pane, select the **Console** tab for the new Avaya Media Server virtual machine.

20. On the Avaya Media Server guest console, in the virtual appliance welcome screen, use the keyboard arrow keys to select the **Login** option and press **Enter**.

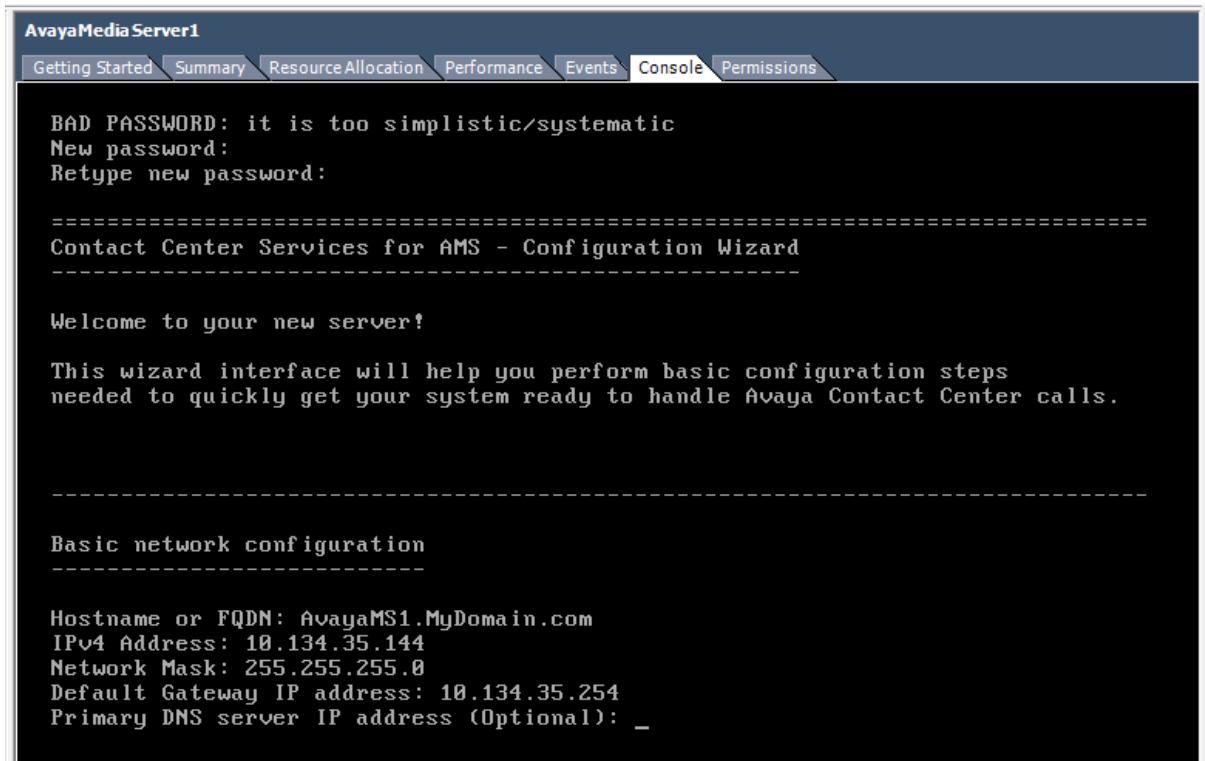


21. At the **login** prompt, enter `root`.
22. At the **New password** prompt, enter a password for the root account.
23. At the **Retype new password** prompt, reenter the password for the root account.

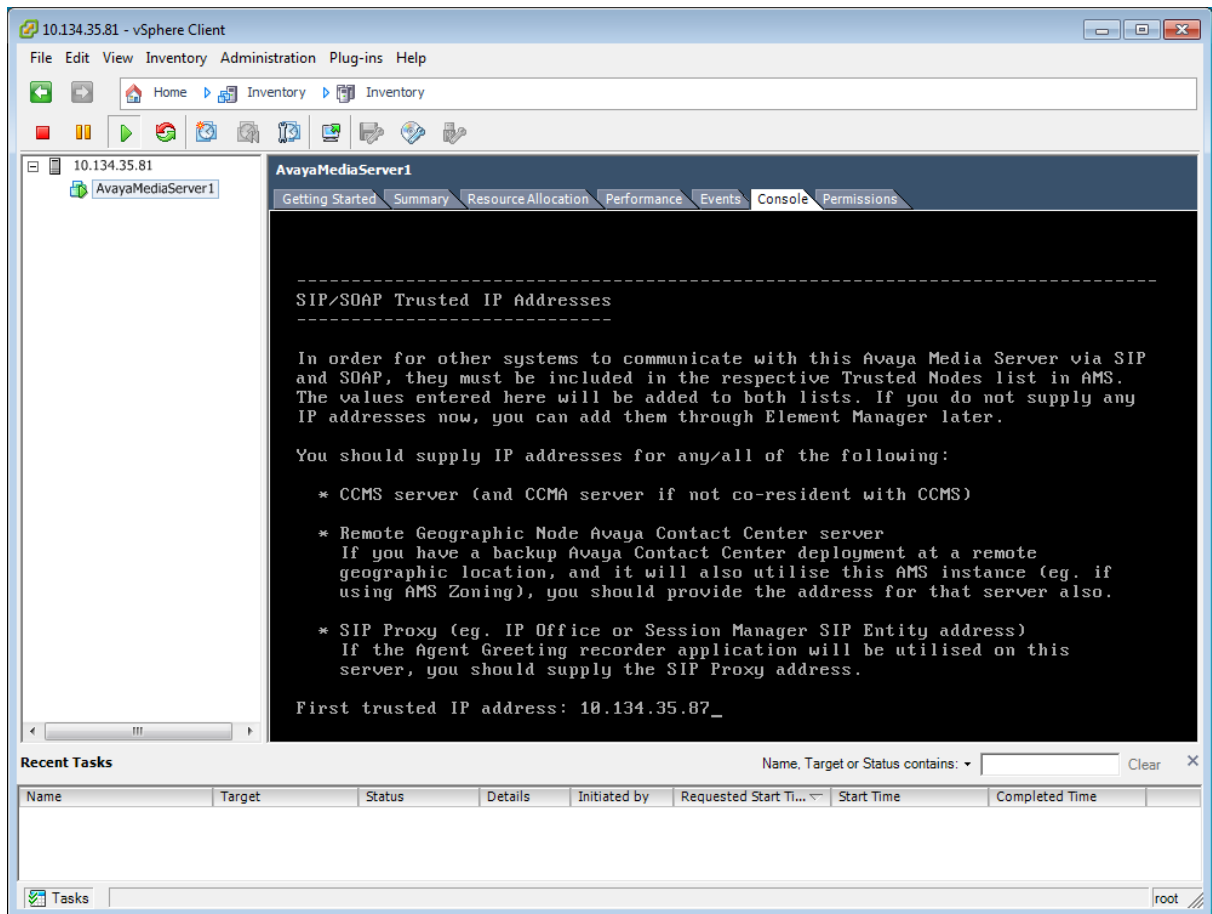
The Avaya Media Server OVA template is now deployed and the root account password is configured.

The Contact Center Server for Avaya Media Server - Configuration Wizard begins.

24. At the **Hostname or FQDN** prompt, enter the server name for the Avaya Media Server server. If you enter a FQDN, the Configuration Wizard uses the domain portion of the FQDN as the domain name. For example, if you enter `AvayaMS1.MyDomain.com`, the Configuration Wizard uses `MyDomain.com` as the local domain name.
25. At the **IPv4 Address** prompt, enter the IP address of the server.
26. At the **Network Mask** prompt, enter the Network Mask IP address.
27. At the **Default Gateway IP address** prompt, enter the default gateway IP address.



28. At the **Primary DNS server IP address (Optional)** prompt, enter the IP address of your primary DNS server.
29. At the **Additional DNS server IP address (Optional)** prompt, enter the IP address of another DNS server, if you have one.
30. At the **Network Configuration Summary** menu, to apply the changes, enter **1**.
31. At the **Primary server** prompt, enter **y**.
32. At the **Upgrading** prompt, enter **n**.
33. At the **First trusted IP address** prompt, enter the IP address of the Contact Center server.



34. At the **Next trusted IP address (Optional)** prompt, if your solution is going to use Agent Greeting, enter the SIP Entity IP address of the Avaya Aura® Session Manager. If at this stage of the deployment you do not know all of your trusted nodes, you can add trusted node IP addresses later using Element Manager.
35. The Configuration Wizard continues to prompt for another trusted IP Address until you enter none, and just press `Enter`.
36. At the **SIP Domain Name (Optional)** prompt, enter the SIP domain name. If you provide a SIP Domain Name, Avaya Media Server automatically creates a content namespace with that name. If you do not provide a SIP Domain Name here, no sample media content is provisioned on this Avaya Media Server instance.
37. At the **Default Locale** prompt, select a locale for your solution. The default is `en_us`.
38. At the **NTP Server address (Optional)** prompt, enter the IP address of your Network Time Protocol (NTP) server. If you do not know it, you can add a NTP server later by editing the `ntp.conf` file. Avaya Media Server must be synchronized in time with the Contact Center server.
39. At the **Disable root SSH access on completion of installation** prompt, for improved security, enter `y`.

40. At the **Configuration Summary** menu, to continue, enter 1.
41. In the **AMS User Account** section, at the **New password** prompt, enter a password for the Avaya Media Server “amsuser” administration account.
42. At the **Retype new password** prompt, re-enter the “amsuser” password.
43. At the **Configuration is now complete. Your system needs to reboot to complete setup** prompt, press `Enter`.
The Avaya Media Server virtual machine reboots.
44. You must complete the remaining tasks in this chapter to configure the Linux server and finish preparing the Avaya Media Server virtual machine.

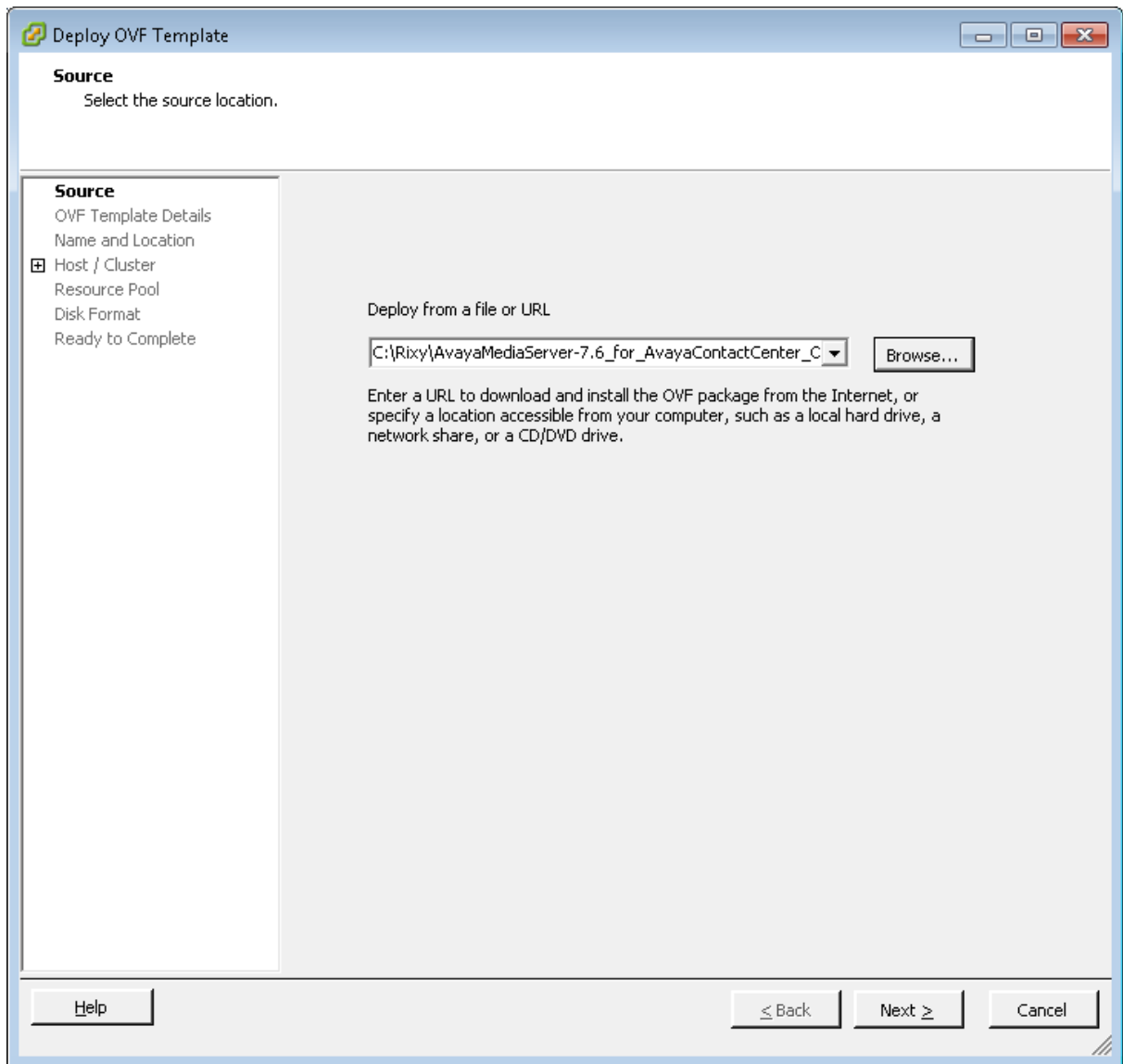
Deploying the Avaya Media Server OVA using vCenter

About this task

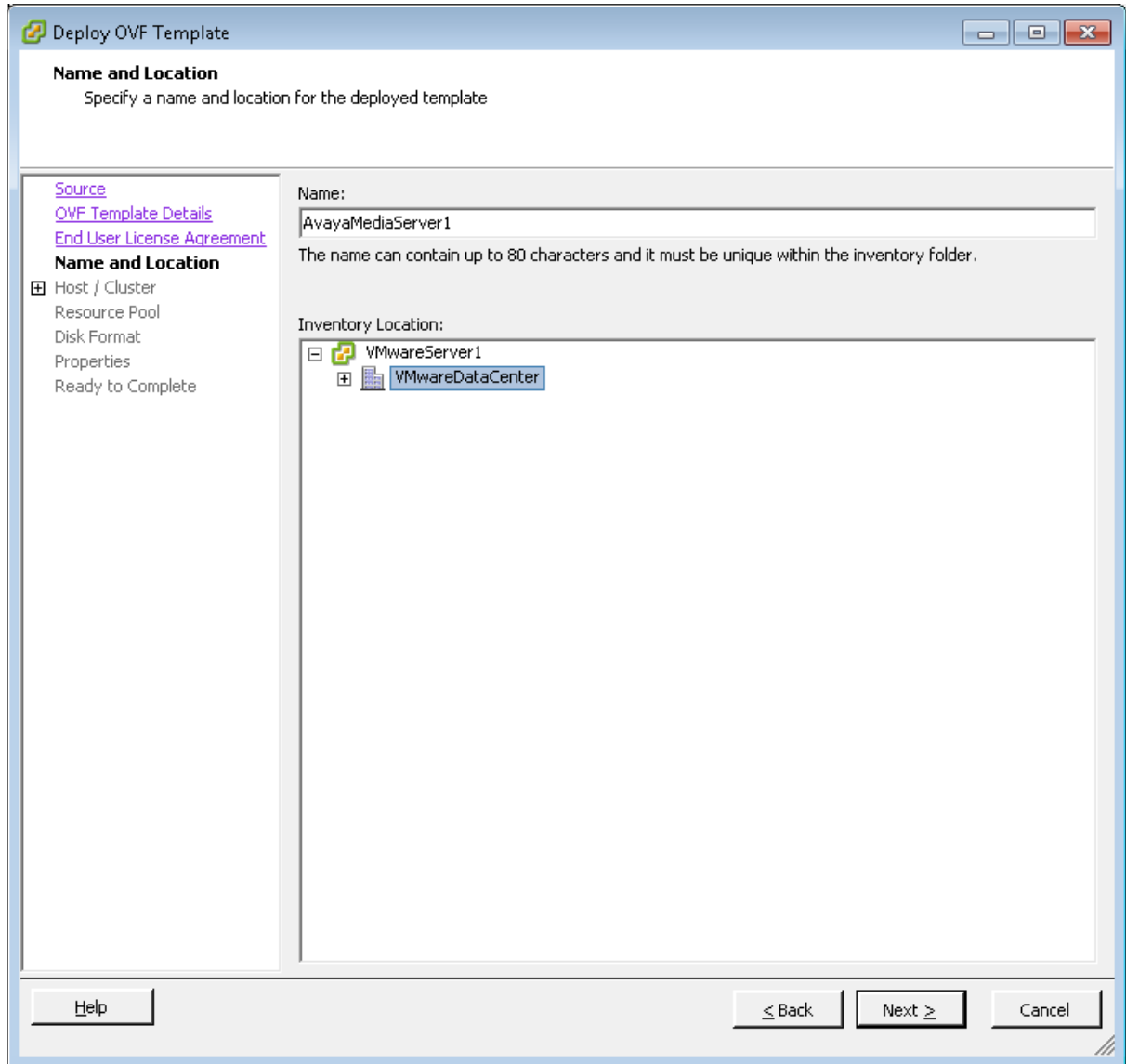
Deploy the Avaya Media Server OVA file onto a VMware ESXi host server using vCenter. This creates a virtual machine with Avaya Media Server software for use in Contact Center solutions.

Procedure

1. In your vCenter client, select the host server on which to deploy the Avaya Media Server OVA.
2. Select **File > Deploy OVF Template**.
3. On the **Source** window, click **Browse**.
4. On the **Open** message box, select the Avaya Media Server OVA file.
5. Click **Open**.



6. On the **Source** window, click **Next**.
7. On the **OVF Template Details** window, verify the details of the Avaya Media Server OVA template and click **Next**.
8. On the **End User License Agreement** window, read the license agreement, and if acceptable, click **Accept**.
9. Click **Next**.



10. On the **Name and Location** window, type the name of the new Avaya Media Server guest (virtual machine). This is not the server host name, this is the name of the VMware guest virtual machine as it appears in the VMware inventory.
11. Click **Next**.
12. On the Host and Cluster window, select the host server or cluster on which to deploy the Avaya Media Server OVA. If you selected a cluster, select a **Specific Host** on that cluster.
13. Click **Next** to display the **Storage** window.
14. From the **Select a destination storage for the virtual machine files** list, select a location to store the Avaya Media Server virtual machine image. Ensure that the storage location you select has sufficient available storage space to store a thick provisioned virtual machine image.

15. Click **Next**.
16. On the **Disk Format** window, select **Thick Provision Lazy Zeroed**. Avaya Media Server does not support thin provisioning in production environments.
17. Click **Next**.

18. On the **Properties** window, in the **Hostname** box, type the hostname of the Avaya Media Server server.
19. In the **SIP/SOAP Trusted Nodes** box, type the IP address of the Contact Center server. If your solution uses Agent Greeting recorder, you must add the IP address of the Avaya Aura®

Session Manager here. You can add multiple IP addresses by separating them with a comma. For example, 10.134.35.81, 10.134.35.82.

20. In the **SIP Domain Name** box, enter the name of the SIP domain used by Contact Center. In the Avaya Media Server Element Manager (EM), you organize media within a content namespace. If you provide a SIP Domain Name, Avaya Media Server automatically creates a content namespace with that name. If you do not provide a SIP Domain Name here, no sample media content is provisioned on this Avaya Media Server instance.
21. From the **Default Locale** list, select the default locale to be used when retrieving announcements and audio prompts from the Avaya Media Server content store. The default option is en_us.
22. In the **NTP Server Address** box, type the IP address of your Network Time Protocol (NTP) server. You use the NTP server to synchronize servers with each other and with the contact center solution. Use IPv4 formatting.
23. To disable Secure Shell (SSH) access for the root user account, select **Disable root SSH access?**.
24. In the **Default Gateway** box, type the IP address of the default gateway. Use IPv4 formatting.

Deploy OVF Template

Properties
Customize the software solution for this deployment.

[Source](#)
[OVF Template Details](#)
[End User License Agreement](#)
[Name and Location](#)
[Host / Cluster](#)
[Disk Format](#)
Properties
 Ready to Complete

Default locale value used by default for fetching of announcement and prompt audio content from the AMS Content Store
 en_us

NTP Server Address
 (Optional) IP address or hostname of Network Time Protocol server that this VM should synchronize its clock with.

Disable root SSH access?
 Should SSH access for the root user account be disabled? This is recommended for production systems as a security measure.
☐

Networking Properties

Default Gateway
 The default gateway address for this VM.

DNS
 The domain name servers for this VM (comma separated).

Network 1 IP Address
 The IP address for this interface.

Network 1 Netmask
 The netmask or prefix for this interface.

Help < Back Next > Cancel

25. In the **DNS** box, type the IP address of one or more DNS servers. Use IPv4 formatting. Separate the IP addresses with a comma.
26. In the **Network 1 IP Address** box, type the IP address of the Avaya Media Server. Use IPv4 formatting.
27. In the **Network 1 Netmask** box, type the subnet mask IP address. Use IPv4 formatting.
28. Click **Next**.
29. On the **Ready to Complete** window, verify the deployment settings. If you need to modify any of the settings, click **Back**.
30. Click **Power on after deployment**.

31. Click **Finish**.

The Avaya Media Server template begins to load.

32. On the **Deployment Completed Successfully** message box, click **Close**.
33. In the vCenter client, from the inventory list in the left pane, select the new Avaya Media Server guest.
34. Select the Avaya Media Server guest from the list of virtual machine on the target VMware host.
35. In the right pane, select the **Console** tab for the new Avaya Media Server guest, right-click the mouse and select **Open Console**.
36. On the Avaya Media Server guest console, in the virtual appliance welcome screen, use the keyboard arrow keys to select the **Login** option and press `Enter`.
37. At the prompt, enter `root`.
38. At the **New password** prompt, enter a password for the root account.
39. At the **Retype new password** prompt, re-enter the password for the root account.
40. At the **AMS User Account - New password**, enter a password for the Avaya Media Server “amsuser” user account. The “amsuser” user account is used to administer Avaya Media Server.
41. At the **Retype new password** prompt, re-enter the “amsuser” password.
42. You must complete the remaining tasks in this chapter to configure the Linux server and finish preparing the Avaya Media Server virtual machine.

Logging on to Avaya Media Server Element Manager

About this task

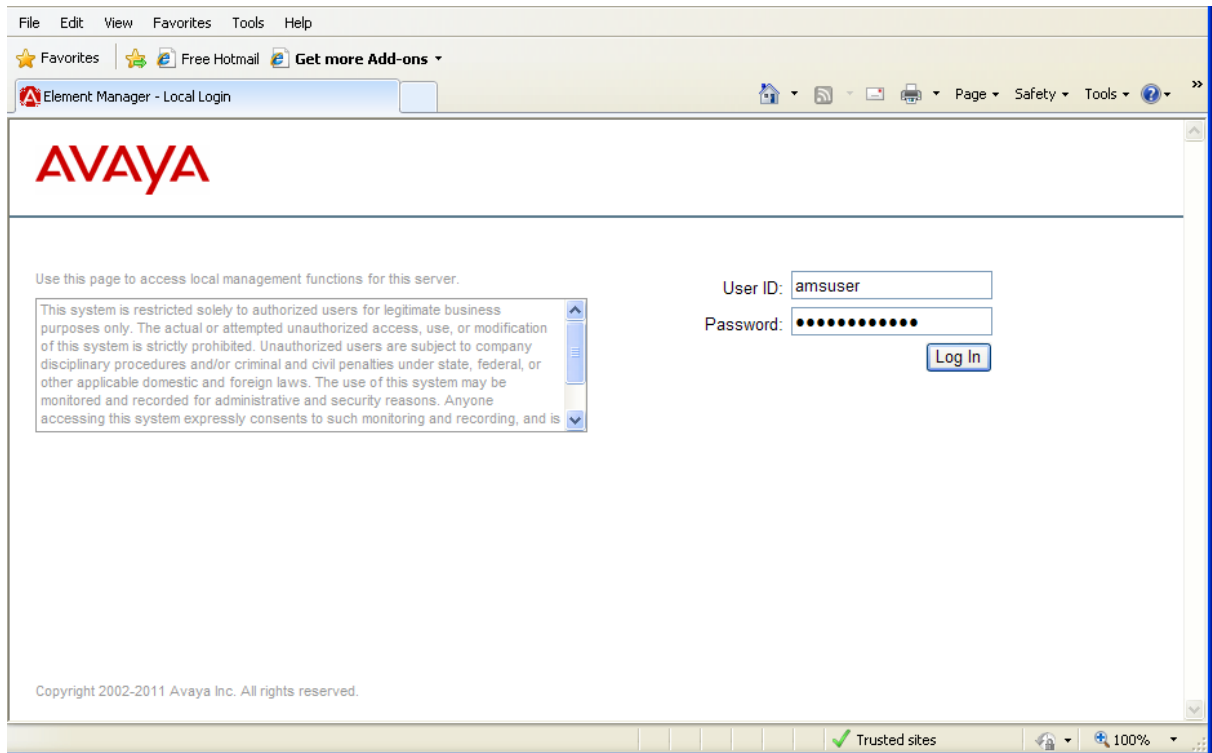
Log on to Avaya Media Server Element Manager to configure Avaya Media Server.

Element Manager (EM) is a web-based administration tool that facilitates the Operation, Administration, and Maintenance (OAM) of Avaya Media Server. A SIP-enabled Contact Center solution must contain one or more Avaya Media Server servers. Each Avaya Media Server server in the Contact Center solution must be licensed and configured to provide media services.

Procedure

1. On your client computer, start a Web browser.
2. In the address box, enter `https://SERVER_IP_ADDRESS:8443/em`. Where `SERVER_IP_ADDRESS` is the IP address of the Avaya Media Server.
3. In the **User ID** box, type the Avaya Media Server User ID log on account name. For example, type `amsuser`.

4. In the **Password** box, type the amsuser account password.
5. Click **Log In**.



Installing Avaya Media Server patches

Before you begin

- Download and review the Contact Center Release Notes. The Release Notes contain the known issues, patches, and workarounds specific to a release and patch line-up of Contact Center. For more information about the Contact Center Release Notes, see www.avaya.com/support.
- Download the most recent Avaya Media Server Quick Fix Engineering patches and store them in the QFE subdirectory on the Avaya Media Server. QFE patches are ZIP files, do not un-zip QFE patches. The Avaya Media Server patching utility uses the QFE ZIP files. For a Linux server the default QFE folder location is /opt/avaya/ma/MAS/qfe.
- Read the QFE Readme files for the most recent information and instructions.

About this task

Install a new Quick Fix Engineering patch to apply an update to the Avaya Media Server system.

*** Note:**

Follow the instructions in the Contact Center Release Notes and in each Avaya Media Server patch Readme file.

Procedure

1. Navigate to the Element Manager for the Avaya Media Server node you want to patch.
2. In the navigation pane, click **System Status > Element Status**.
3. Click **Stop** and confirm the operation on the following page.
4. Close Element Manager.
5. On the server, open a Linux terminal.
6. On the server, change to the root user by running the `su -` command.
7. Obtain the correct name of the new QFE patch by entering the following command:

```
amspatch list all
```

The name of the file is not necessarily the same as the name of the patch name.
8. Under the **QFE Name** column, note the name of the patch (patchname).
9. Install all of the patches in numerical order. To install a new patch on the system, enter the following command:

```
amspatch apply <patchname>
```
10. To install all downloaded QFE patches on the system, enter the following command:

```
amspatch apply all
```
11. When the patch application is complete, open the Element Manager navigation pane, and click **Tools > Software Inventory**.
12. Verify the patch version listed in the **Patch Level** column is correct.
13. Select **System Status > Element Status**, and click **Start**. Confirm the operation.
14. Select **System Status > Alarms** and check for service-impacting alarms.

Securing your Avaya Media Server

About this task

Apply optional security measures to your operating system to further secure your server.

! Important:

Scanning software can degrade the performance and decrease the reliability of the system. Install virus scanning software only if the system connects to an exposed network or to the Internet.

! Important:

To maintain server performance, you must schedule virus scans during maintenance periods or low usage hours only.

Procedure

1. Harden the operating system using defined site procedures.
2. Install antivirus software. If you install antivirus software, ensure that you exclude the following directories from the scans. The following are the default install locations:
 - /opt/avaya/ma/MAS/platdata
 - /opt/avaya/ma/MAS/common/log

Commissioning Avaya Media Server

About this task

Commission Avaya Media Server to provide the conference services required by SIP-enabled Avaya Aura® Contact Center. If required and licensed, commission Avaya Media Server to support Agent Greeting.

The Avaya Media Server OVA does not support High Availability.

Procedure

For information about commissioning Avaya Media Server, see *Avaya Aura® Contact Center Commissioning* (44400-312).

Chapter 7: Voice and Multimedia Contact Server OVA deployment

Deploy the Voice and Multimedia Contact Server OVA to provide context-sensitive and skill-based routing for customer voice and multimedia contacts.

The Voice and Multimedia Contact Server OVA creates and configures a virtual machine (guest) containing SIP-enabled Avaya Aura® Contact Center software. The resulting virtual machine contains a Microsoft Windows operating system, hard disk drive partitions, third-party components, system configuration, and Voice and Multimedia Contact Server application software.

A SIP-enabled Voice and Multimedia Contact Server includes the following server software:

- Contact Center Manager Server (CCMS)
- Contact Center Manager Server Utility
- Contact Center License Manager
- Contact Center Manager Administration (CCMA)
- Communication Control Toolkit (CCT)
- Contact Center Multimedia (CCMM)

Each SIP-enabled Voice and Multimedia Contact Server requires one or more Avaya Media Servers. Each Voice and Multimedia Contact Server Virtual Appliance also requires an additional, separate, Avaya WebLM licensing manager server.

Note:

The Voice and Multimedia Contact Server OVA uses a default administration account to deploy and run Avaya Aura® Contact Center software. This Avaya Aura® Contact Center administration account has full administrative privileges. You must upgrade and patch Avaya Aura® Contact Center software using this administration account. You can rename this account after deploying Avaya Aura® Contact Center, but you must not delete the account. If you delete the administration account used to deploy Avaya Aura® Contact Center, Avaya Aura® Contact Center stops working.

Voice and Multimedia Contact Server OVA

The Voice and Multimedia Contact Server OVA contains information about the guest server specification, guest operating system, and application software. This OVA contains the following components:

- Microsoft Windows 2008 Release 2, Service Pack 1, Standard Edition, 64-bit operating system
- Avaya Aura® Contact Center application software
- VMware Tools. Do not update the VMware Tools software on this virtual machine unless instructed to do so by Avaya

Install this server to provide context-sensitive and skill-based routing for customer voice and multimedia contacts. This server provides routed contact support for voice calls, email messages, instant messages (IMs), Web communications, voice mail messages, scanned documents, fax messages, and SMS text messages. This server provides extensive tools for agent management, real-time and historical reporting, and graphical tools to create contact flows and treatment rules. Use this server for license management, Open Interfaces Web Service, and third-party application interfaces integration.

The Avaya Aura® Contact Center Voice and Multimedia Contact Server OVA package has the following hardware characteristics:

vCPU	Minimum CPU speed	Virtual memory reservation	Number of NICs	Virtual disk storage reservation		
4	—	16GB	1	Drive	Letter	Size (GB)
				OS	C:	80
				AACC software	D:	120
				CCMS/CCTDB	F:	210
				CCMM DB	H:	300
						710 GB total
				HD drive speed	10000 rpm minimum	
				Deploy the Voice and Multimedia Contact Server OVA using Thick Provision Lazy Zeroed. Voice and Multimedia Contact Server does not support thin provisioning.		

*** Note:**

Do not change any of these Avaya Aura® Contact Center OVA VMware guest settings.

Each Voice and Multimedia Contact Server requires one or more Avaya Media Server. You must install and configure one or more Linux-based Avaya Media Servers in the contact center solution.

The Voice and Multimedia Contact Server supports the following Avaya Media Server options:

- Use the Avaya Aura® Contact Center DVD to install Avaya Media Server software on a physical Linux server.

- Use the Avaya Aura® Contact Center DVD to install Avaya Media Server software on a Linux virtual machine (guest).
- Deploy the Avaya Media Server OVA package to create a virtualized Avaya Media Server virtual machine (guest).

Each Voice and Multimedia Contact Server Virtual Appliance also requires an additional, separate, WebLM licensing manager server.

Deploy the Voice and Multimedia Contact Server OVA using Disk Format - Thick Provision Lazy Zeroed. Voice and Multimedia Contact Server does not support thin provisioning.

Voice and Multimedia Contact Server OVA deployment procedures

About this task

This task flow shows you the sequence of procedures you perform to deploy the Voice and Multimedia Contact Server OVA.

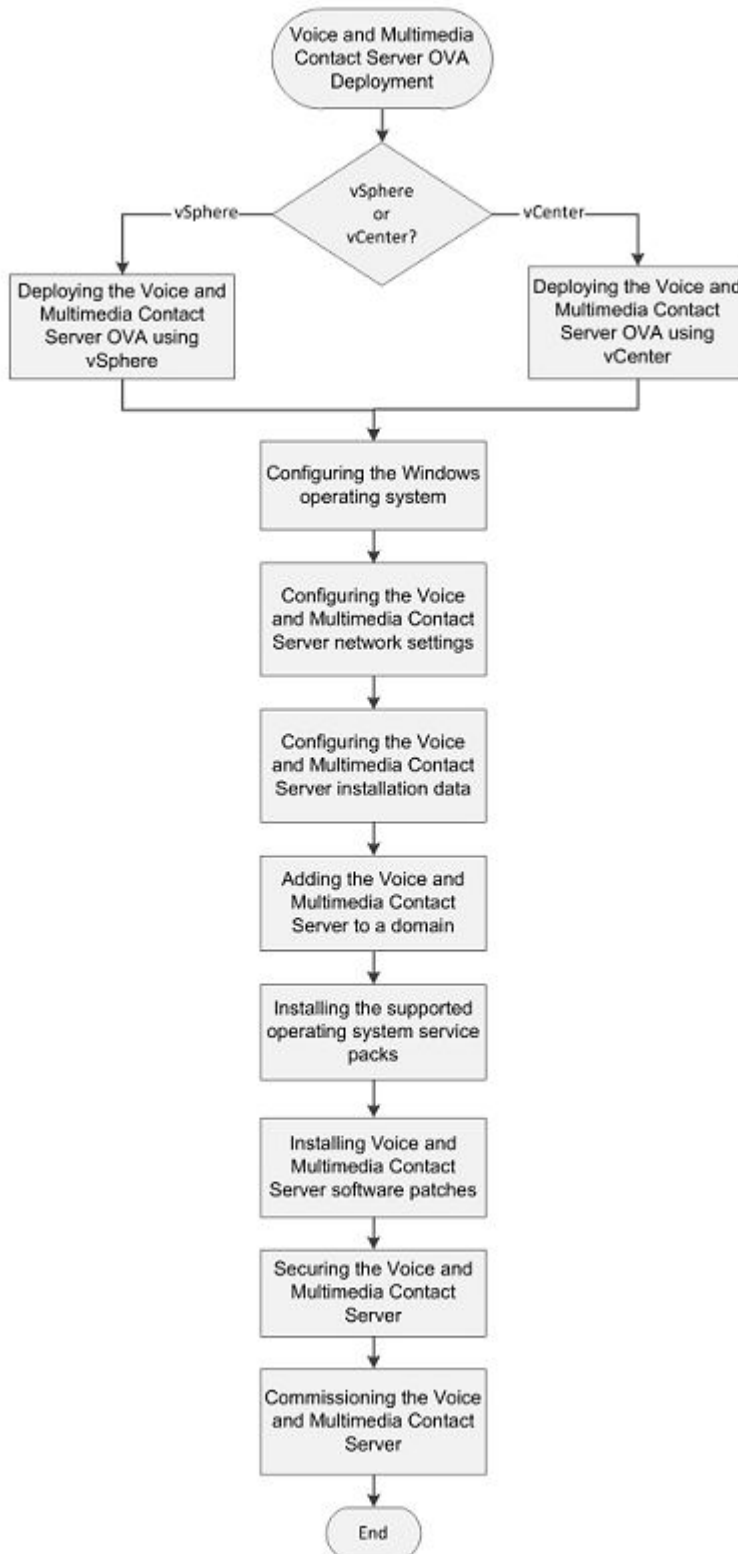


Figure 5: Voice and Multimedia Contact Server OVA deployment process

Deploying the Voice and Multimedia Contact Server OVA using vSphere

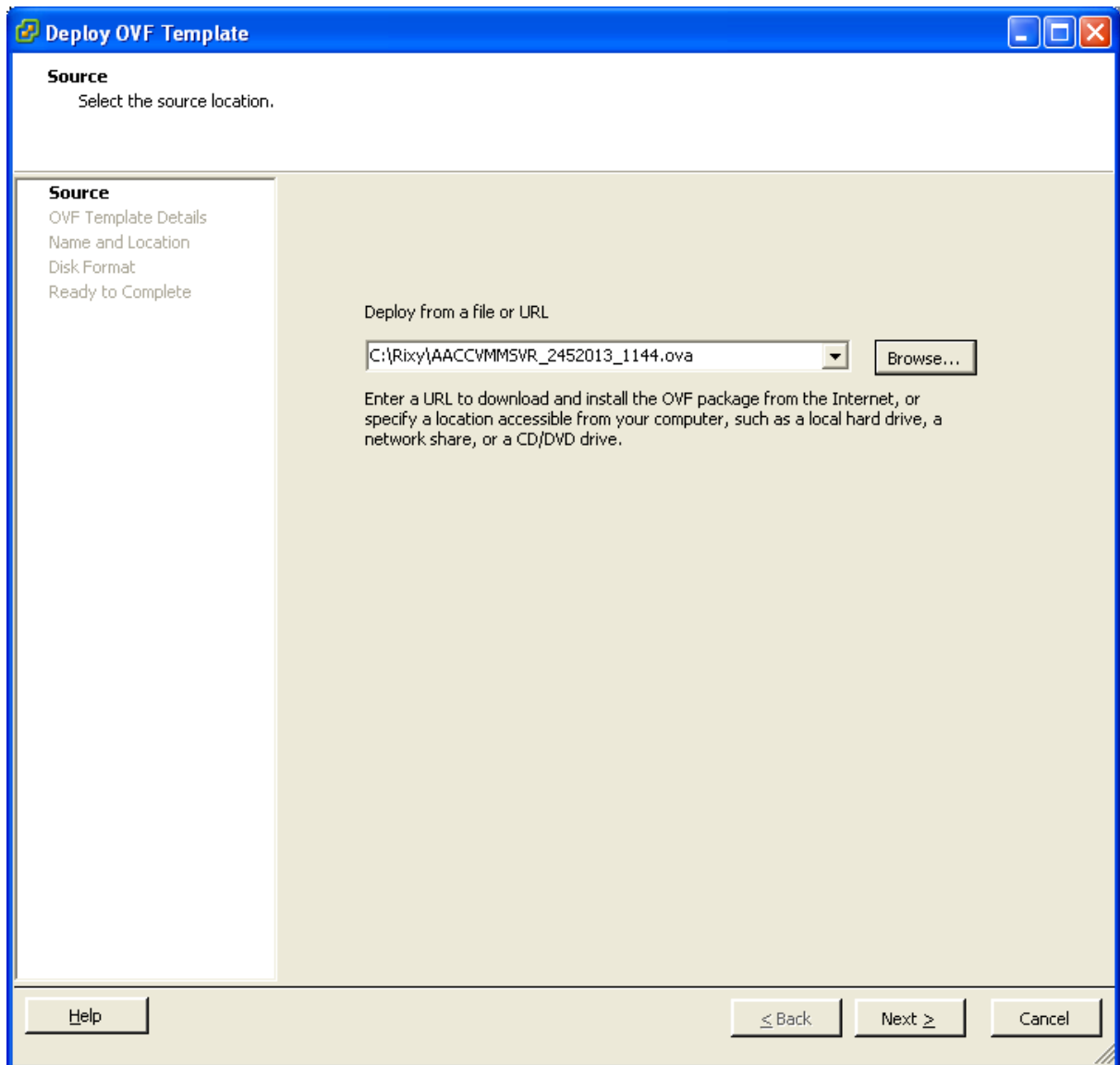
About this task

Deploy the Voice and Multimedia Contact Server OVA to create a virtual machine that provides context-sensitive and skill-based routing for customer voice and multimedia contacts.

If multiple virtual machine networks are configured on the host on which you are deploying the Voice and Multimedia Contact Server OVA, the wizard prompts you to associate networks specified in the OVA with networks available on the host.

Procedure

1. In the vSphere client, select the host ESXi server to host the Voice and Multimedia Contact Server OVA.
2. Select **File > Deploy OVF Template**.
3. Click **Browse** and provide the Voice and Multimedia Contact Server OVA file location.



4. Click **Next** to display the **OVF Template Details** window.
5. Verify the details of the OVA template and click **Next**.
6. Read the **End User License Agreement** and click **Accept**.
7. Click **Next**.

Deploy OVF Template

Name and Location
Specify a name and location for the deployed template

[Source](#)
[OVF Template Details](#)
[End User License Agreement](#)
Name and Location
Disk Format
Ready to Complete

Name:
Avaya Aura Contact Center 6.4

The name can contain up to 80 characters and it must be unique within the inventory folder.

Help < Back Next > Cancel

8. In the **Name** box, enter the name of the new virtual machine. This is not the host name of the Voice and Multimedia Contact Server; this is the name of the virtual machine as displayed in vSphere.
9. Click **Next** to display the **Disk Format** window.

Deploy OVF Template

Disk Format
In which format do you want to store the virtual disks?

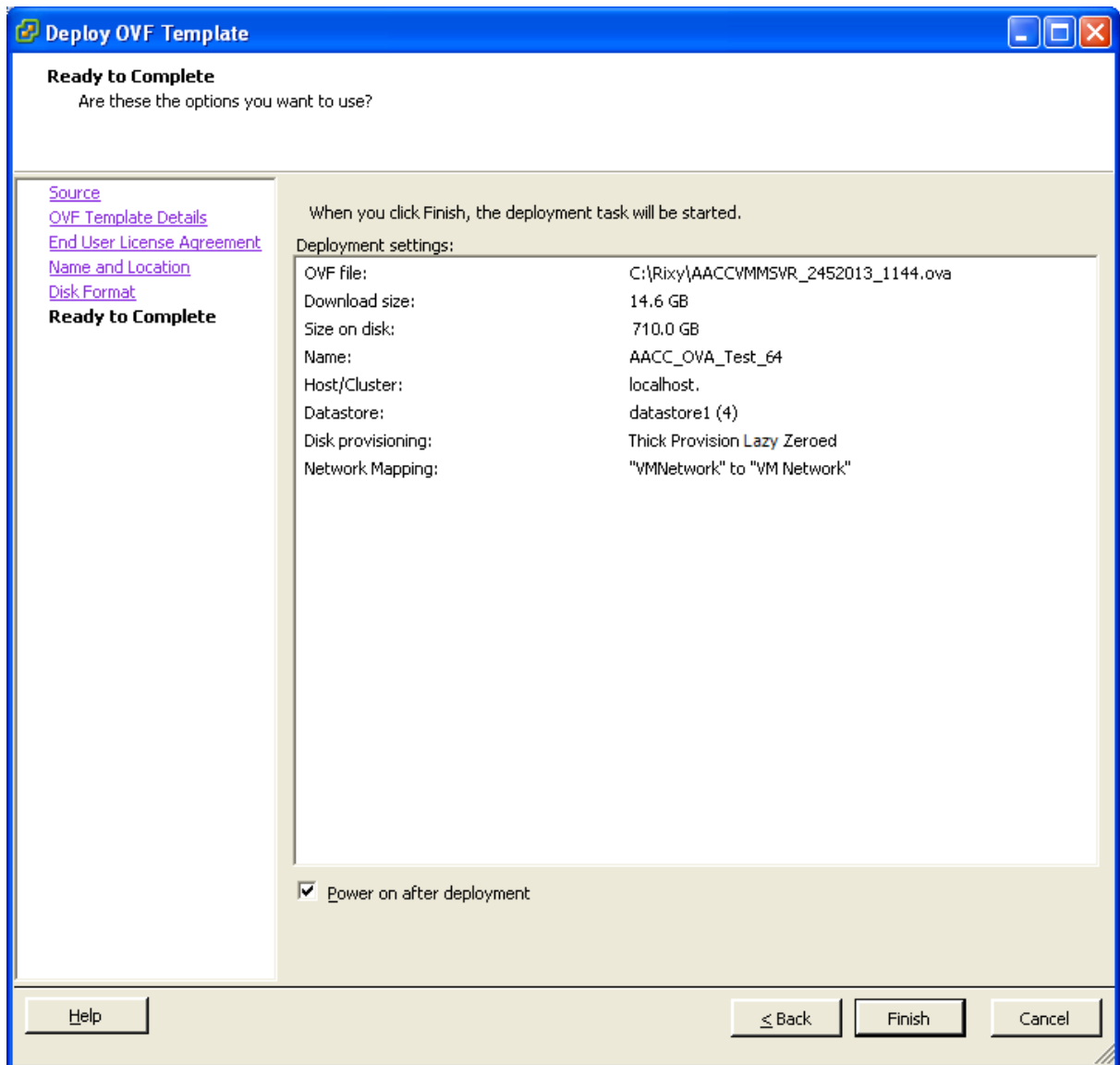
[Source](#)
[OVF Template Details](#)
[End User License Agreement](#)
[Name and Location](#)
Disk Format
Ready to Complete

Datastore:

Available space (GB):

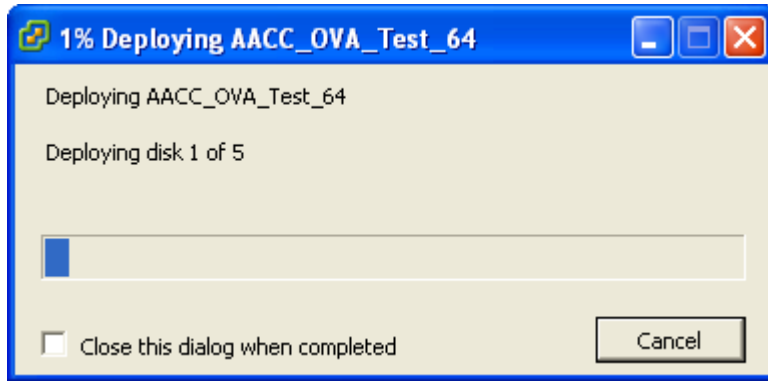
☒ Thick Provision Lazy Zeroed
☐ Thick Provision Eager Zeroed
☐ Thin Provision

10. Select **Thick Provision Lazy Zeroed** and click **Next**.

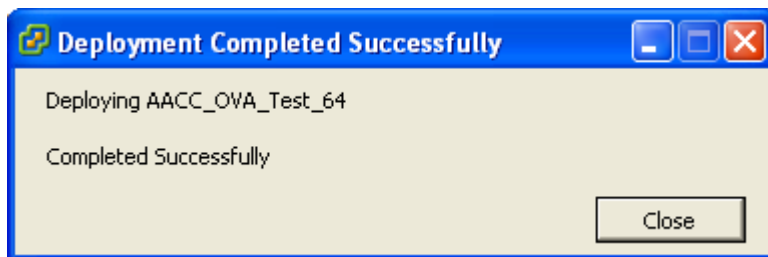


11. On the **Ready to Complete** window, verify the deployment settings. If you need to modify any of the settings, click **Back**.
12. Click **Power on after deployment**.
13. Click **Finish**.

The Voice and Multimedia Contact Server OVA begins to deploy:



14. When the Voice and Multimedia Contact Server OVA is deployed, the **Deployment Completed Successfully** message box appears:



15. Click **Close**

The Voice and Multimedia Contact Server virtual machine begins to power up.

Deploying the Voice and Multimedia Contact Server OVA using vCenter

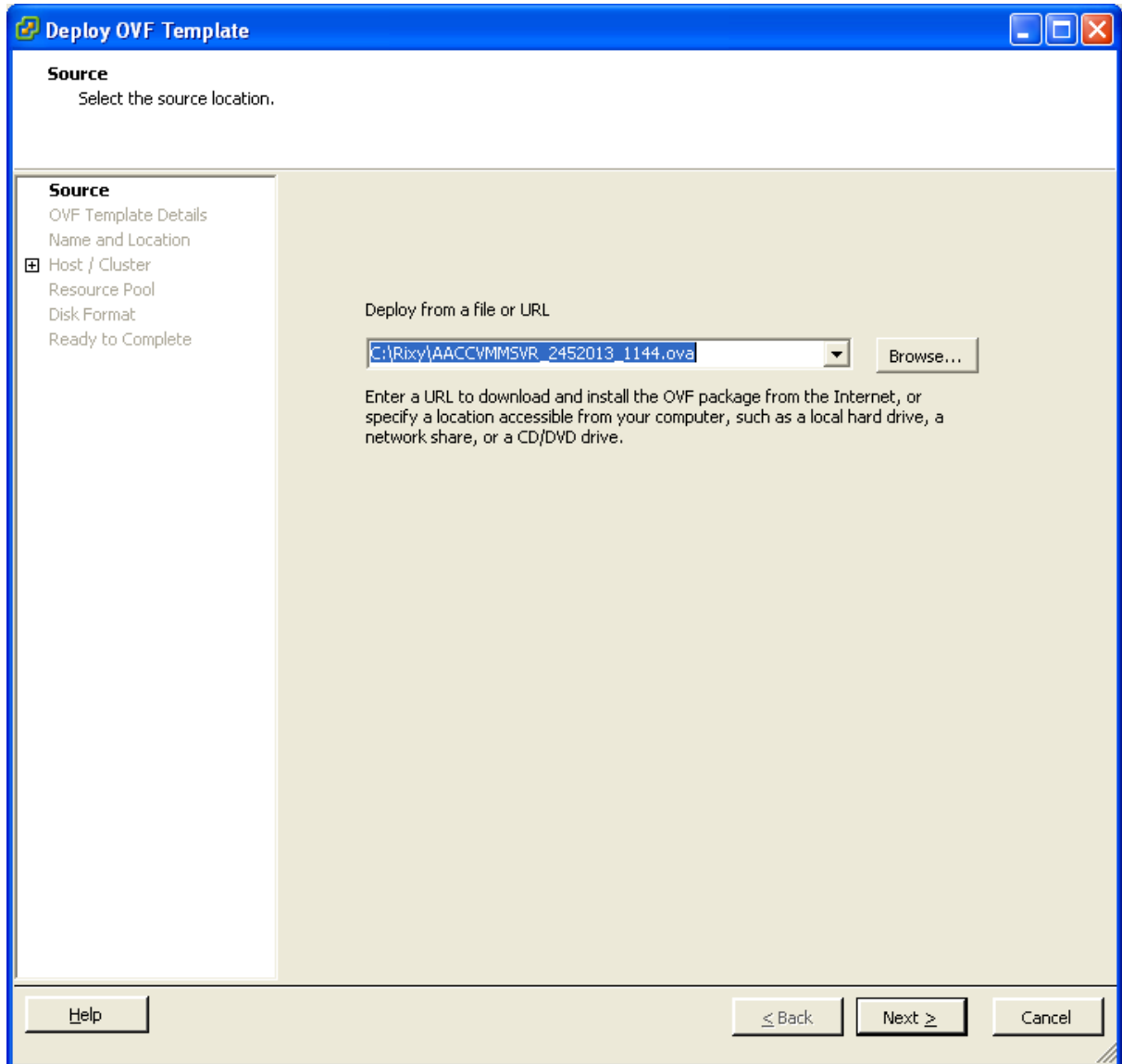
About this task

Deploy the Voice and Multimedia Contact Server OVA to create a virtual machine that provides context-sensitive and skill-based routing for customer voice and multimedia contacts.

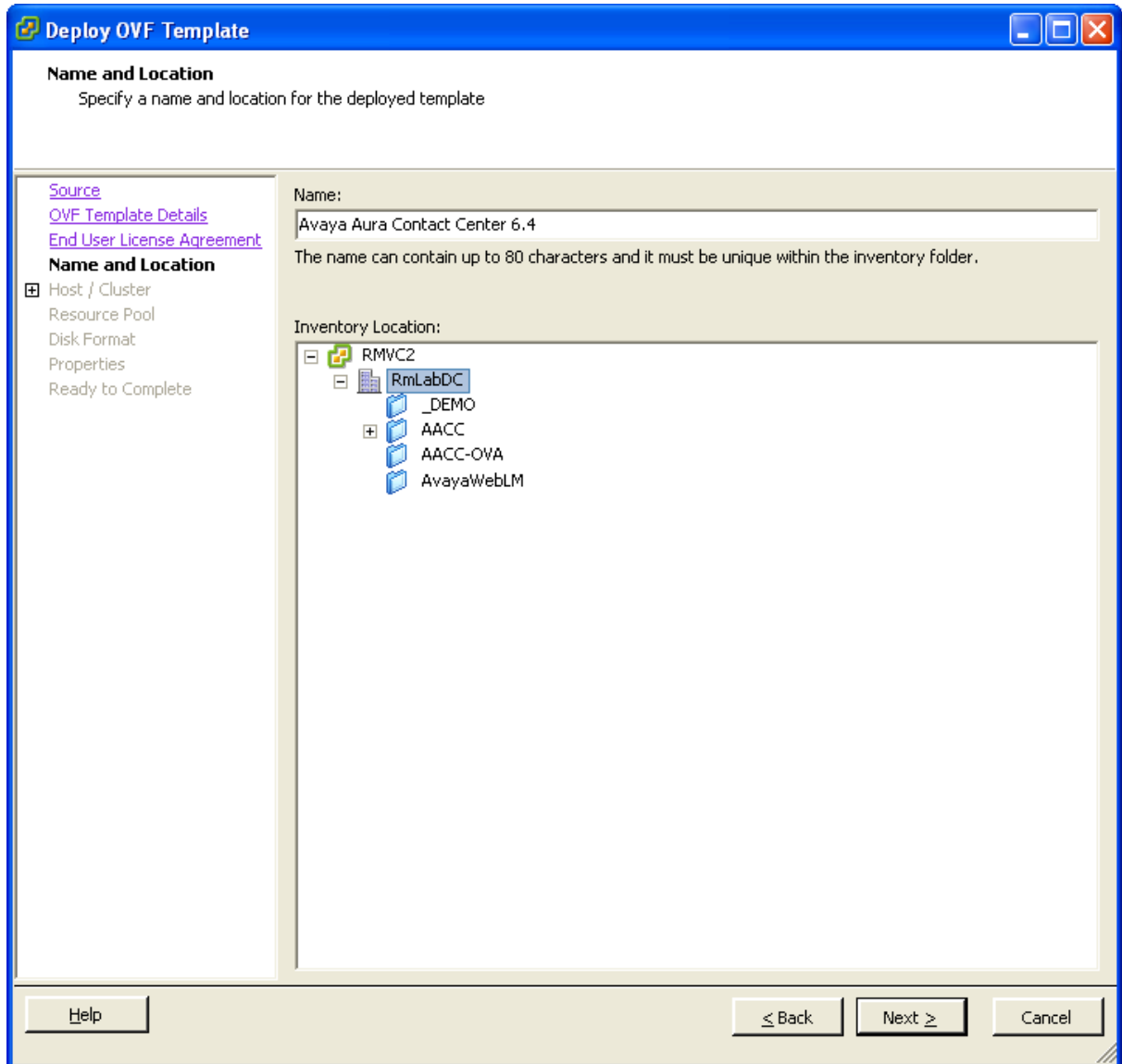
If multiple virtual machine networks are configured on the host on which you are deploying the Voice and Multimedia Contact Server OVA, the OVF wizard prompts you to associate networks specified in the OVA with networks available on the host.

Procedure

1. In the vSphere client, select **File > Deploy OVF Template**.
2. Click **Browse** and provide the Voice and Multimedia Contact Server OVA file location.

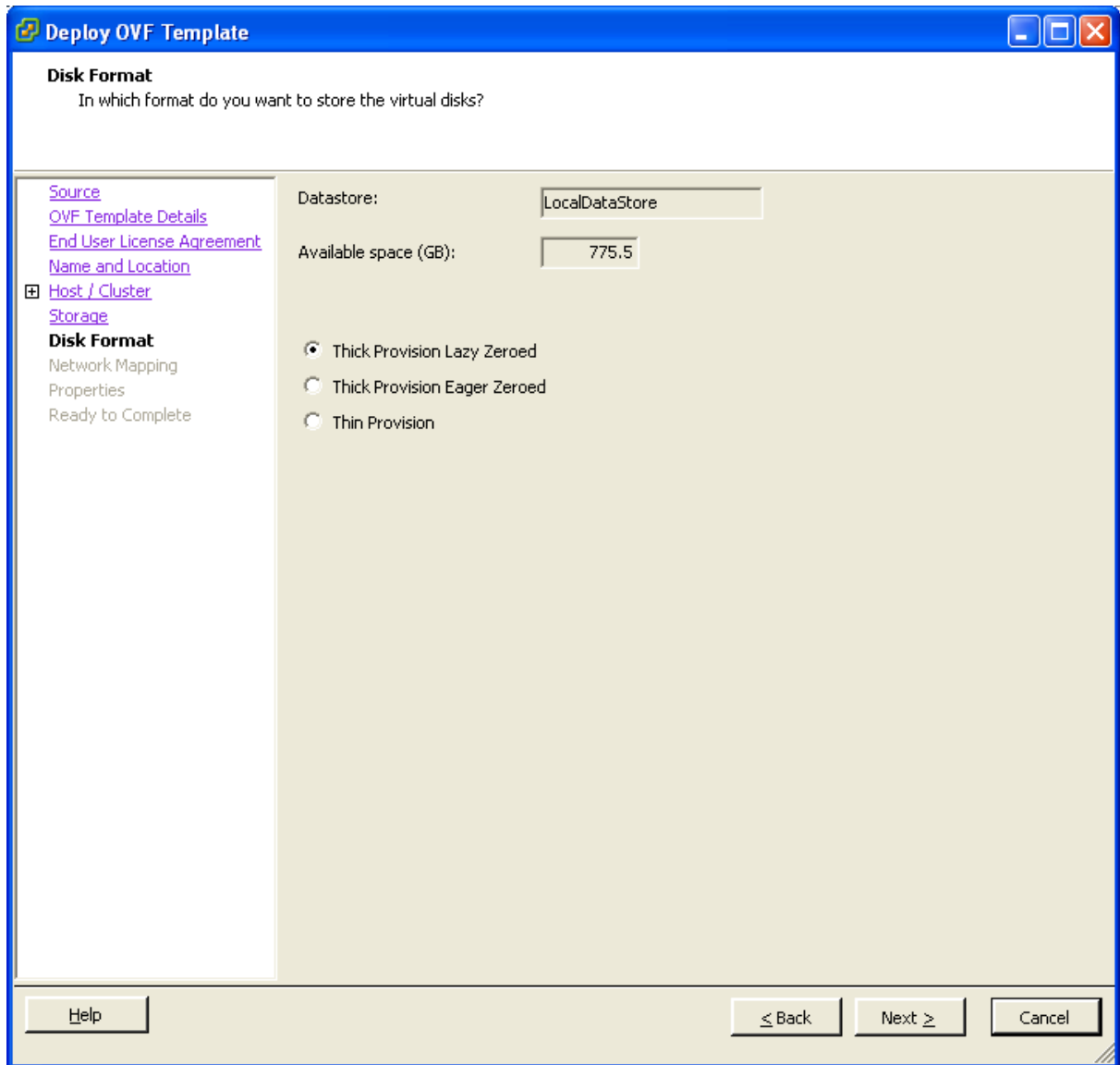


3. Click **Next** to display the **OVF Template Details** window.
4. Verify the details of the OVA template and click **Next**.
5. Read the **End User License Agreement** and click **Accept**.
6. Click **Next**.



7. In the **Name** box, enter the name of the new virtual machine. This is not the host name of the Voice and Multimedia Contact Server; this is the name of the virtual machine as displayed in vCenter.
8. Click **Next**.
9. On the Host and Cluster window, select the host server or cluster on which to deploy the Voice and Multimedia Contact Server OVA. If you selected a cluster, select a **Specific Host** on that cluster.
10. Click **Next** to display the **Storage** window.
11. From the **Select a destination storage for the virtual machine files** list, select a location to store the Voice and Multimedia Contact Server virtual machine image.

12. Ensure that the storage location you select has sufficient available storage space to store a thick provisioned Voice and Multimedia Contact Server virtual machine image. Ensure that the **Compatibility** box does not contain an **Insufficient disk space for thick provisioning** warning.
13. Click **Next** to display the **Disk Format** window.



14. Select **Thick Provision Lazy Zeroed** and click **Next**. Thin provisioning is not supported in production environments.
15. On the **Network Mapping** window, configure a network interface for the Voice and Multimedia Contact Server virtual machine.
16. Click **Next** to display the **Properties** window.

Deploy OVF Template

Properties
Customize the software solution for this deployment.

[Source](#)
[OVF Template Details](#)
[End User License Agreement](#)
[Name and Location](#)
Host / Cluster
[Storage](#)
[Disk Format](#)
[Network Mapping](#)
Properties
Ready to Complete

Hostname
AACC Hostname

Enter a string value with 1 to 64 characters.

IP Address
AACC IP Address

Enter an IP address.

Subnet Mask
Subnet Mask

Enter an IP address.

Default Gateway

Enter an IP address.

DNS IP Address

Enter an IP address.

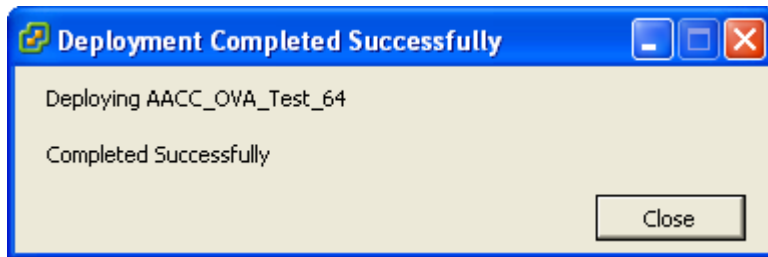
Properties with invalid values will be left unassigned. The vApp will not be able to power on until all properties have valid values.

[Help](#) [≤ Back](#) [Next ≥](#) [Cancel](#)

17. On the **Properties** window, in the **Hostname** box, type the host name for the Voice and Multimedia Contact Server.
18. In the **IP address** box, type the IP address for the server.
19. In the **Subnet Mask** box, type the subnet mask IP address for the server.
20. In the **Default Gateway** box, type the default gateway IP address for the server.
21. In the **DNS IP address** box, type the IP address for the Domain Name System (DNS) server used by Voice and Multimedia Contact Server.
22. Click **Next**.
23. On the **Ready to Complete** window, verify the deployment settings. If you need to modify any of the settings, click **Back**.
24. Click **Power on after deployment**.
25. Click **Finish**.

The Voice and Multimedia Contact Server OVA begins to deploy.

26. When the Voice and Multimedia Contact Server OVA is deployed, the **Deployment Completed Successfully** message box appears:



27. Click **Close**

The Voice and Multimedia Contact Server virtual machine begins to power up.

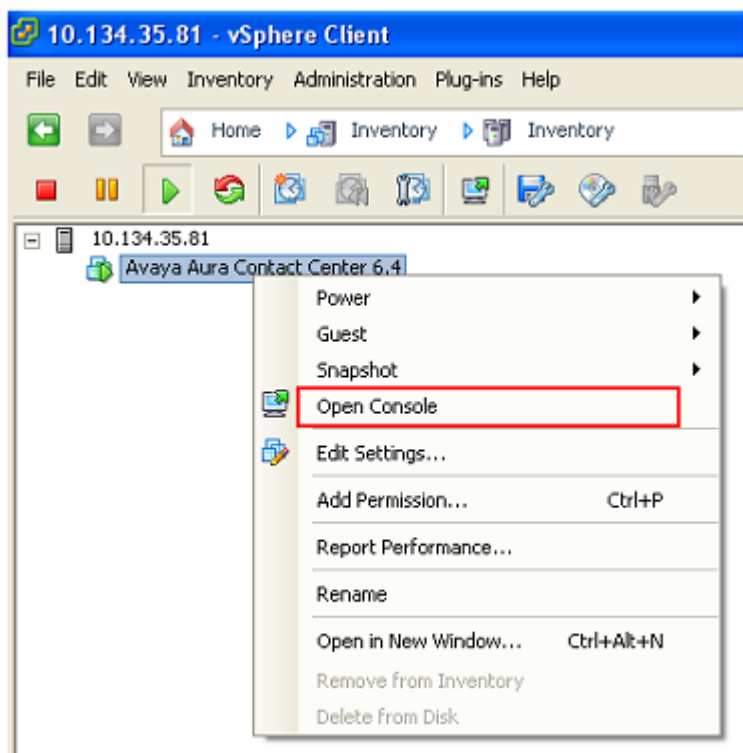
Configuring the Windows operating system

About this task

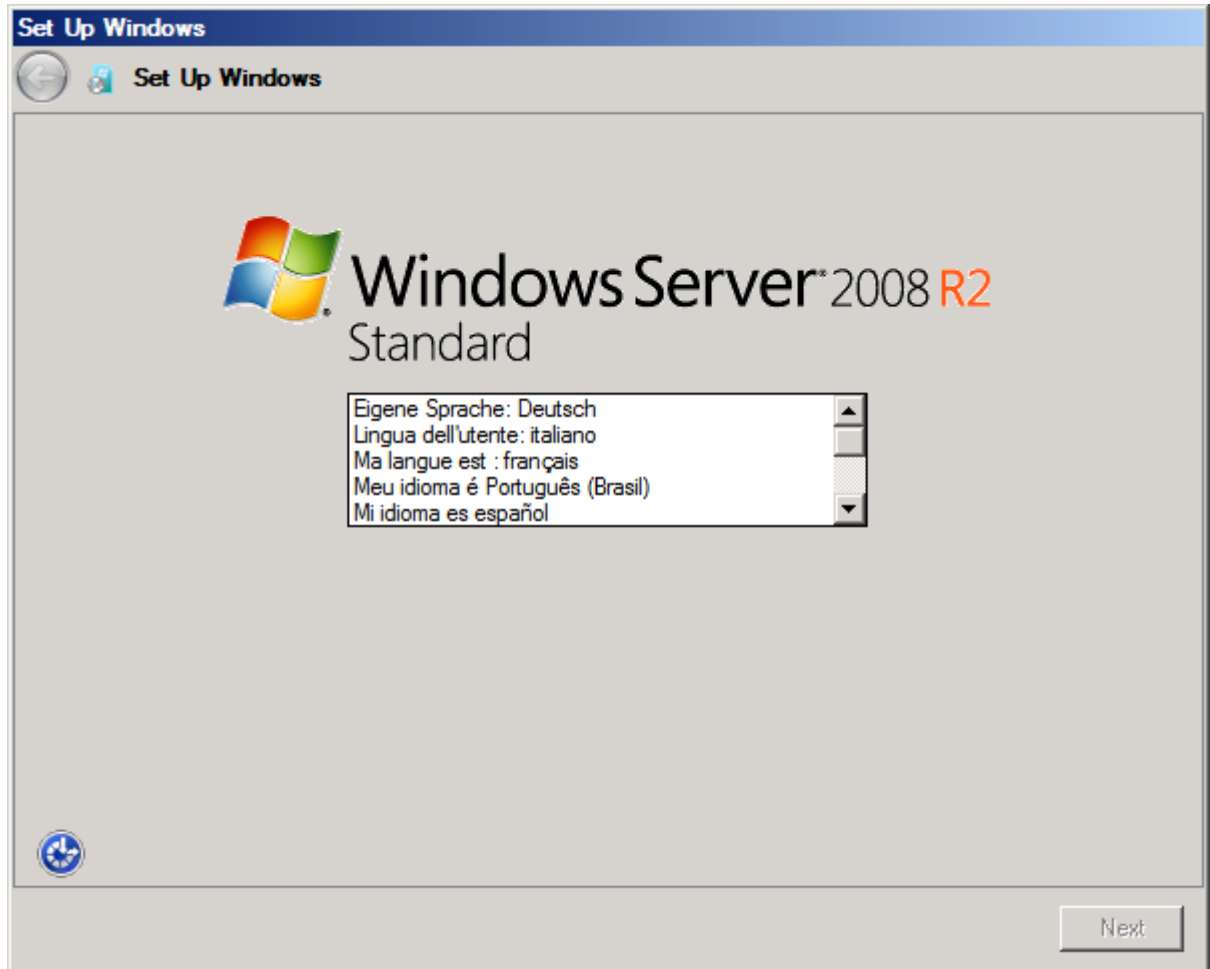
Configure the Voice and Multimedia Contact Server Windows operating system. Configure the locale settings, enter the license keys for the operating system, and configure the password for the Administrator account.

Procedure

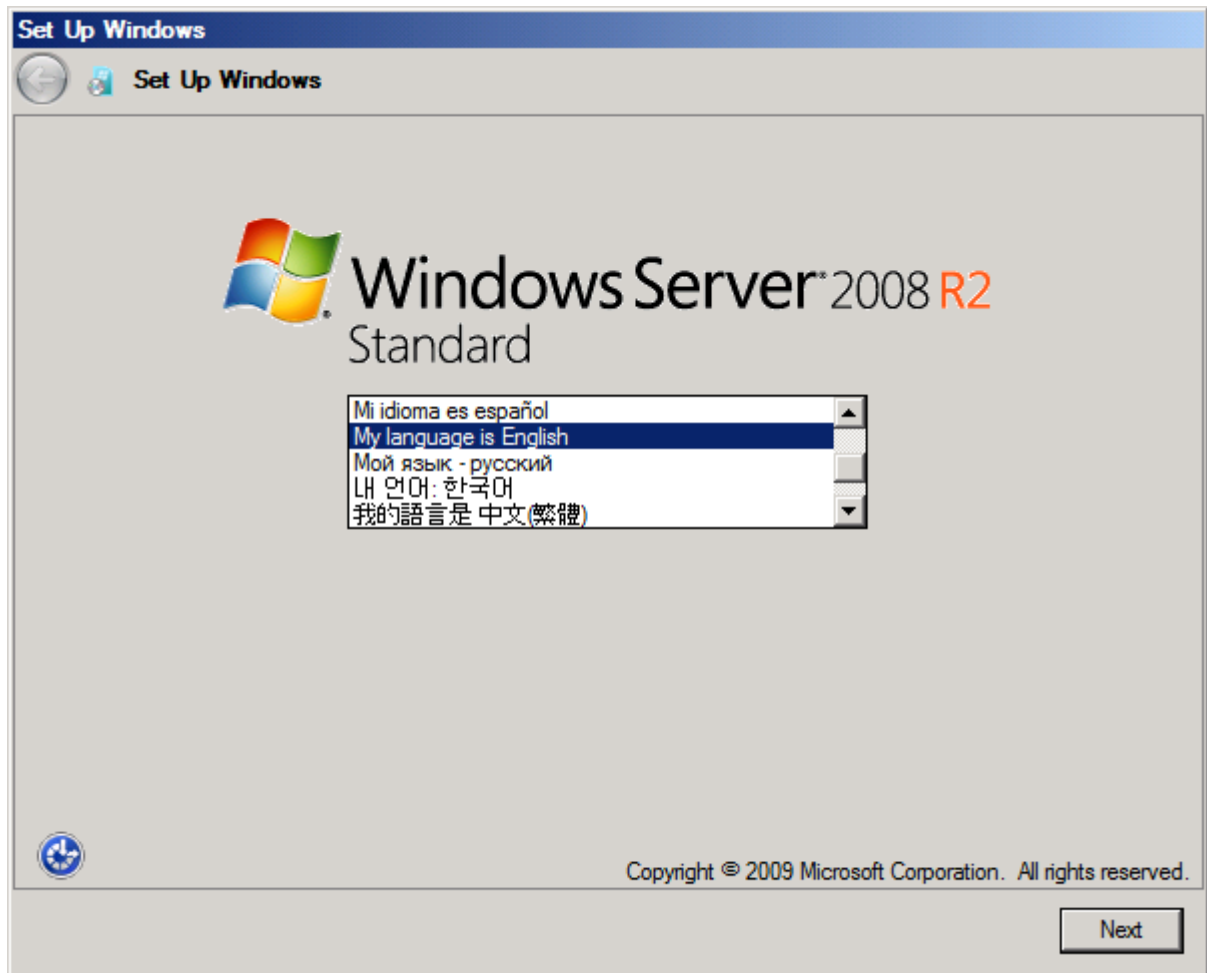
1. Select the Voice and Multimedia Contact Server guest from the list of virtual machines on the target VMware host.
2. With the Voice and Multimedia Contact Server guest still selected, right-click the mouse and select **Open Console**.



The Voice and Multimedia Contact Server guest console appears displaying the **Set Up Windows** screen.



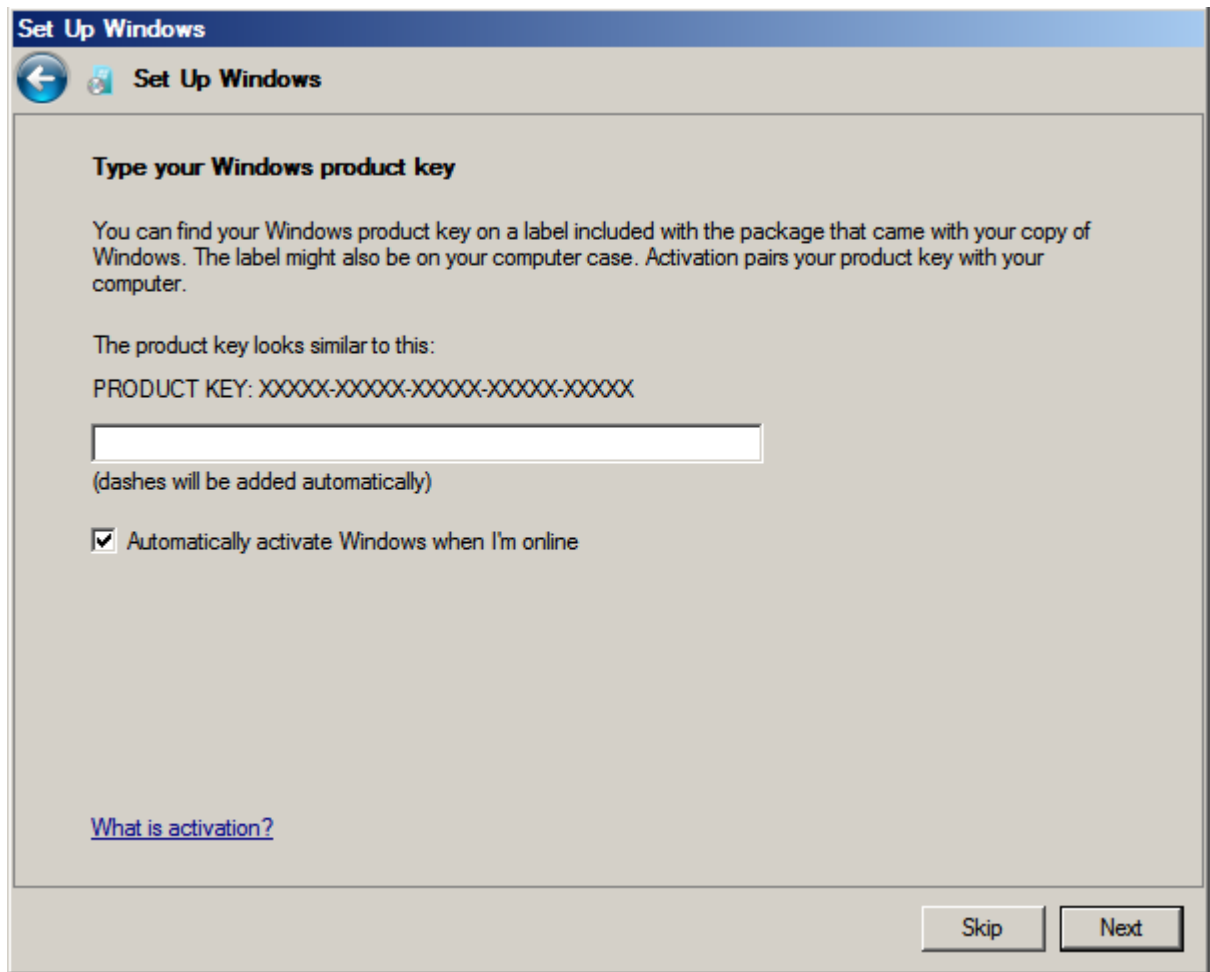
3. From the list of languages, select your language. For example, scroll down and select **My language is English**.



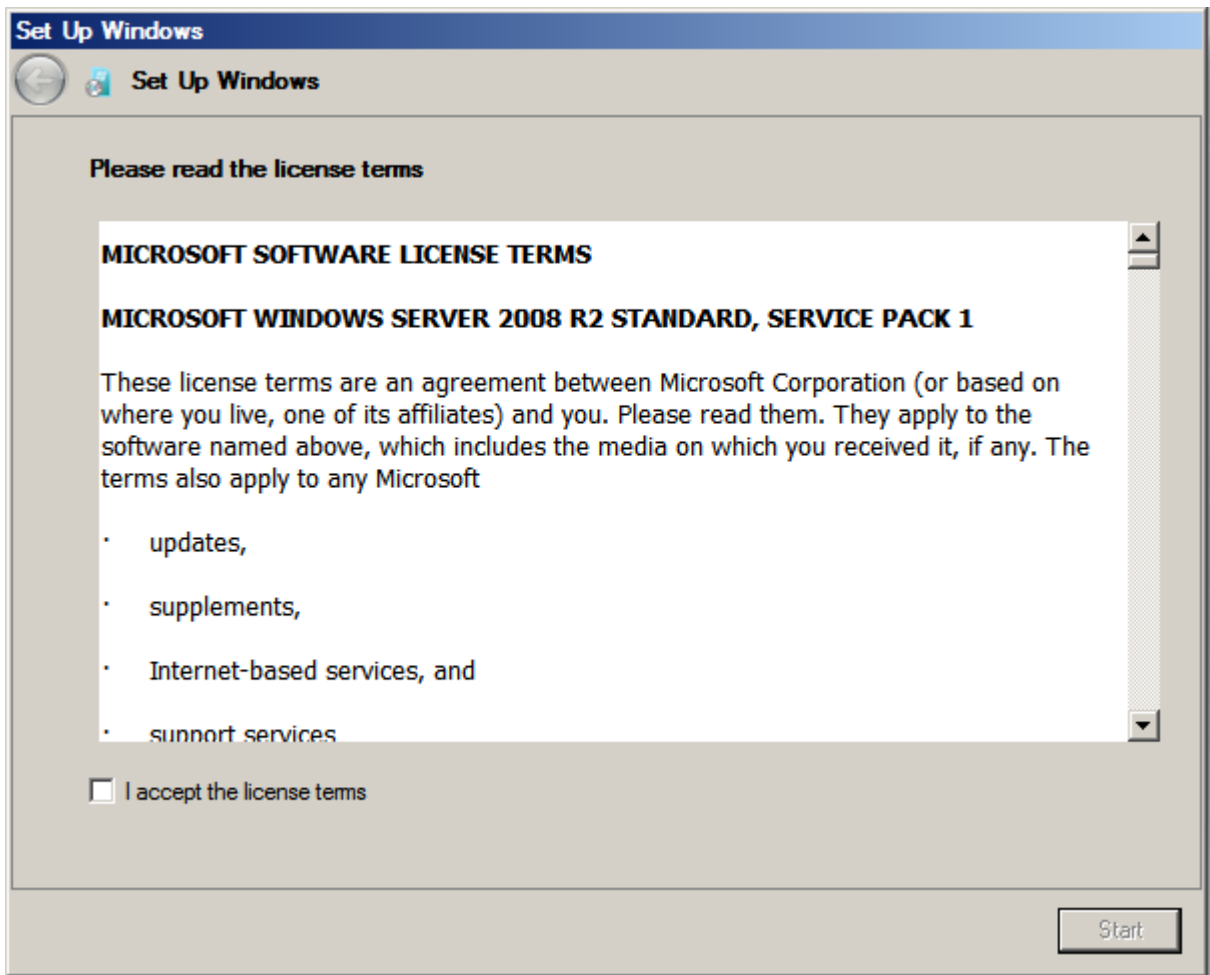
4. Click **Next**.



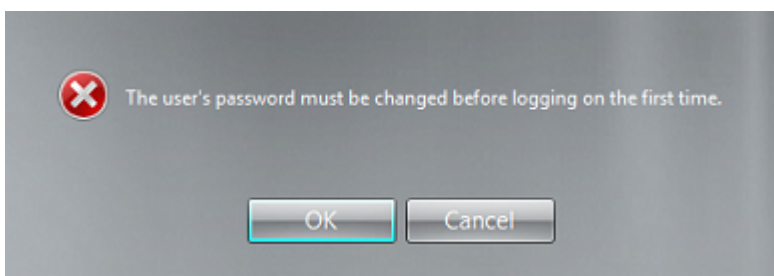
5. In the **Set Up Windows** screen, from the **Country or region** list, select the country or region of the Voice and Multimedia Contact Server. For example, select **United States**.
6. From the **Time and currency** list, select the time location and currency. For example, select **English (United States)**.
7. From the **Keyboard layout** list, select the keyboard layout. For example, select **US**.
8. Click **Next**.



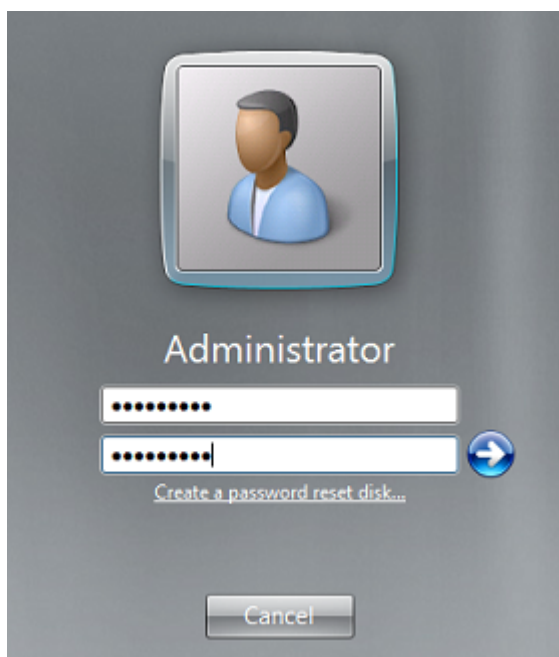
9. In the **PRODUCT KEY** box, enter your license key for the Windows operating system.
10. Select the check box to activate the Windows operating system from the internet.
11. Click **Next**.



12. On the license agreement screen, read the license agreement, and if acceptable select **I accept the license terms**.
13. Click **Start**.



14. After the server starts, click **OK** to change the Administrator password.



15. In the first box, enter a password for the Administrator Windows account.
16. In the second box, reenter the password for the Administrator Windows account.
17. Press **Enter**, to apply the password.
18. Click **OK**, to continue configuring the operating system.

Configuring the Voice and Multimedia Contact Server network settings

Before you begin

- Deploy the Voice and Multimedia Contact Server OVA.
- Know the IP address and networking details for the Voice and Multimedia Contact Server virtual machine.

About this task

Configure the Voice and Multimedia Contact Server network settings using the custom deployment wizard.

If you are using vCenter, the Network Configuration data fields are pre-populated.

Procedure

1. In the vSphere client, from the inventory list in the left pane, select the new Voice and Multimedia Contact Server guest.

2. With the Voice and Multimedia Contact Server guest still selected, right-click and select **Open Console**.

The Voice and Multimedia Contact Server console appears. The Network Configuration utility automatically appears:

Avaya Contact Center

Network Configuration

Enter the required configuration data.

Network Configuration

Computer information

Computer Name

IP settings

IP address

Subnet mask

Default gateway

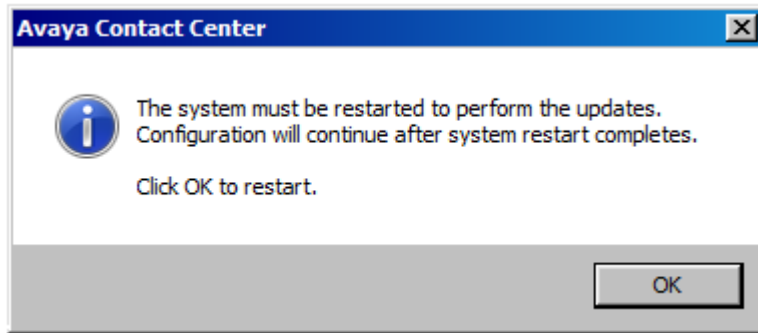
DNS server information

Preferred DNS server (IP address)

Click Apply to perform the network configuration.

Apply

3. On the **Network Configuration** screen, in the **Computer Name** box, type the host name for the Voice and Multimedia Contact Server.
4. In the **IP address** box, type the IP address for the server.
5. In the **Subnet mask** box, type the subnet mask IP address for the server.
6. In the **Default gateway** box, type the default gateway IP address for the server.
7. In the **Preferred DNS server (IP address)** box, type the IP address of the DNS server used by the Voice and Multimedia Contact Server.
8. Click **Apply**.



9. Click **OK** to restart the server.

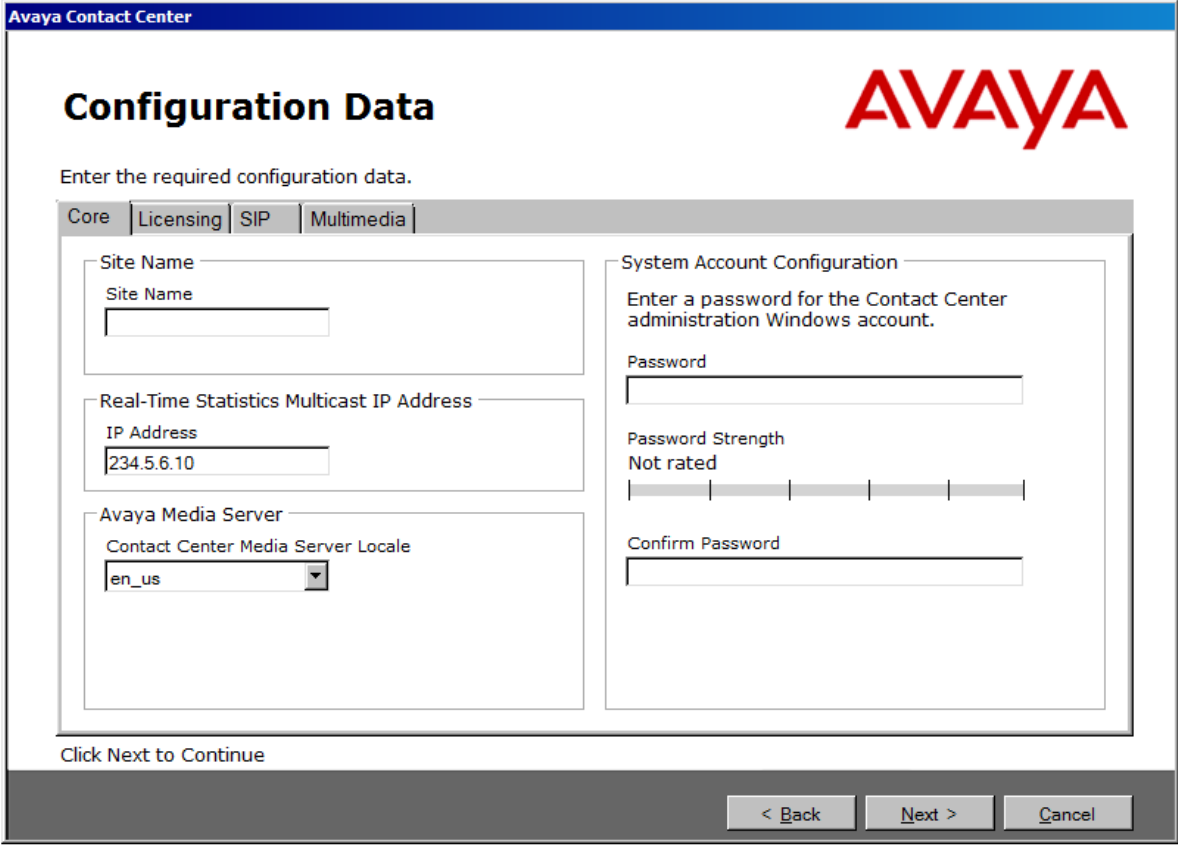
Configuring the Voice and Multimedia Contact Server installation data

About this task

Configure the Voice and Multimedia Contact Server installation data.

Procedure

1. Select the Voice and Multimedia Contact Server guest from the list of virtual machines on the target VMware host.
2. With the Voice and Multimedia Contact Server guest still selected, right-click the mouse and select **Open Console**.
3. In the Voice and Multimedia Contact Server console, log on to the Voice and Multimedia Contact Server using the Administrator account details.
4. The Avaya Aura® Contact Center **Welcome** screen appears.
5. Click **Next**.
6. On the **End-User License Agreement** screen, click **I Accept the Terms of the End-User License Agreement**.
7. Click **Next**.
8. On the **Configuration Data** screen, select the **Core** tab.

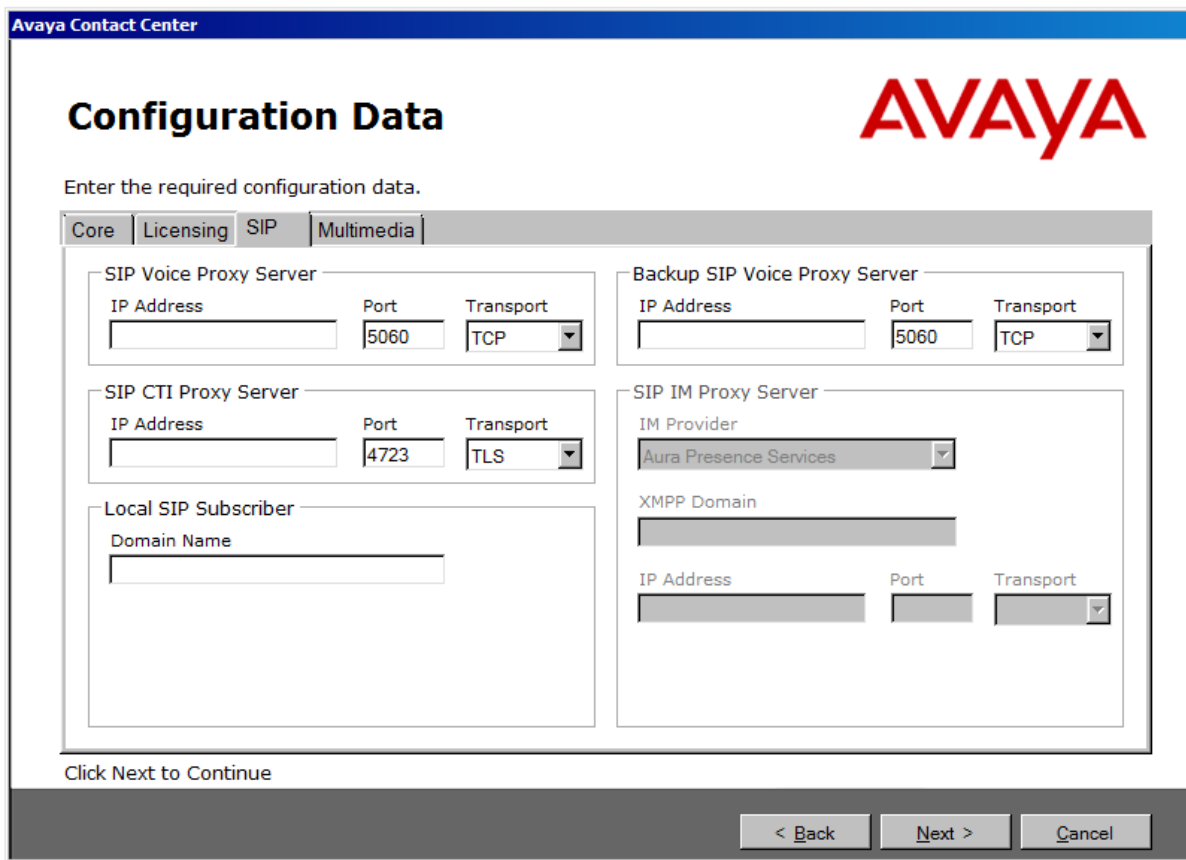


The image shows the 'Avaya Contact Center Configuration Data' window. It has a blue header bar with the text 'Avaya Contact Center'. Below the header, the title 'Configuration Data' is displayed in large black font, with the 'AVAYA' logo in red to its right. A subtitle 'Enter the required configuration data.' is centered below the title. There are four tabs: 'Core', 'Licensing', 'SIP', and 'Multimedia'. The 'Core' tab is selected. The window is divided into two main sections. The left section contains three sub-sections: 'Site Name' with a text box, 'Real-Time Statistics Multicast IP Address' with a text box containing '234.5.6.10', and 'Avaya Media Server' with a dropdown menu showing 'en_us'. The right section is titled 'System Account Configuration' and contains instructions to 'Enter a password for the Contact Center administration Windows account.' It includes a 'Password' text box, a 'Password Strength' indicator showing 'Not rated' with a progress bar, and a 'Confirm Password' text box. At the bottom left, it says 'Click Next to Continue'. At the bottom right, there are three buttons: '< Back', 'Next >', and 'Cancel'.

9. In the **Site Name** box, type the site name for the Contact Center server. The site name must not contain spaces or non-alphabetical characters except hyphen (-) and underscore (_). The first character must be a letter. The site name must be unique and can consist of 6 to 15 characters.
10. In the **Real-Time Statistics Multicast IP Address** section, **IP address** box, type the Real-time Statistics Multicast IP Address of the server to associate with sending real-time data. The IP address must be from 224.0.1.0 to 239.255.255.255. The default is 234.5.6.10.
11. In the **Avaya Media Server** section, from the **Contact Center Media Server Locale** list, select the Avaya Media Server locale. The default is en_us.
12. In the **System Account Configuration** section, in the **Password** box, type a password for the CCMA administration account. The password is not checked against the server security policy for minimum password requirements. Avaya recommends that you enter a password that conforms to your corporate password policy.
13. In the **Confirm Password** box, type the password.
14. Select the **Licensing** tab.

The image shows the 'Avaya Contact Center' configuration window. The title bar is blue with the text 'Avaya Contact Center'. The main window has a white background with the 'AVAYA' logo in red on the top right. Below the logo, the text 'Configuration Data' is displayed in a large, bold, black font. Underneath, it says 'Enter the required configuration data.' There are four tabs: 'Core', 'Licensing', 'SIP', and 'Multimedia'. The 'Licensing' tab is selected. The 'Licensing' section is divided into two main areas. On the left, under 'Remote Avaya WebLM Server', there are two input fields: 'IP Address' and 'Port'. The 'Port' field contains the value '52233'. On the right, under 'License Manager Packages', there is a 'Licensing Package' dropdown menu with 'Nodal Enterprise' selected. Below this is a section titled 'Optional Packages' with a list of checkboxes: 'Networking', 'Instant Messaging', 'Web Based Statistics', 'Multiplicity', 'Open Queue', 'Open Interfaces Open Queue', 'Open Interfaces Universal Networking', 'Agent Greeting', and 'Offsite Agent'. At the bottom of the window, there is a dark gray bar with the text 'Click Next to Continue' on the left and three buttons: '< Back', 'Next >', and 'Cancel'.

15. In the **Remote Avaya WebLM Server** section, in the **IP address** box, type the IP address of the remote Avaya WebLM server.
16. In the **Remote Avaya WebLM Server** section, in the **Port** box, type the port number for the remote Avaya WebLM server. The default port number is 52233.
17. From the **Licensing Package** list, select **Nodal Enterprise**.
18. Select **Optional Packages - Open Queue**.
19. Select **Optional Packages - Multiplicity** if required.
20. From the list of **Optional Packages**, enable the licensed features that you have purchased.
21. Select the **SIP** tab.



The image shows the 'Configuration Data' window for the Avaya Contact Center. The window has a blue header with the 'Avaya Contact Center' text and the Avaya logo. Below the header, there is a tabbed interface with four tabs: 'Core', 'Licensing', 'SIP', and 'Multimedia'. The 'SIP' tab is currently selected. The main area of the window is divided into several sections for configuring SIP-related services. The 'SIP Voice Proxy Server' section includes fields for 'IP Address', 'Port' (set to 5060), and 'Transport' (set to TCP). The 'Backup SIP Voice Proxy Server' section has similar fields. The 'SIP CTI Proxy Server' section includes fields for 'IP Address', 'Port' (set to 4723), and 'Transport' (set to TLS). The 'SIP IM Proxy Server' section includes a dropdown for 'IM Provider' (set to 'Aura Presence Services'), a text field for 'XMPP Domain', and fields for 'IP Address', 'Port', and 'Transport'. The 'Local SIP Subscriber' section includes a text field for 'Domain Name'. At the bottom of the window, there is a 'Click Next to Continue' button and a navigation bar with '< Back', 'Next >', and 'Cancel' buttons.

22. In the **SIP Voice Proxy Server** section, in the **IP Address** box, type the IP address for the Avaya Aura® Session Manager.
23. In the **SIP Voice Proxy Server** section, in the **Port** box, type the server listening port number. The default port is 5060.
24. In the **SIP Voice Proxy Server** section, from the **Transport** list, select the SIP Network Transport communication protocol. The default is TCP.
25. In the **SIP CTI Proxy Server** section, in the **IP Address** box, type the IP address for the Avaya Aura® Application Enablement Services server.
26. In the **SIP CTI Proxy Server** section, in the **Port** box, type the SIP CTI Proxy Server port number. The default SIP CTI Proxy Server port is 4723.
27. In the **SIP CTI Proxy Server** section, from the **Transport** list, select the SIP Network Transport CTI communication protocol. The default Avaya Aura® Application Enablement Services communication protocol is TLS.
28. In the **Local SIP Subscriber** section, in the **Domain Name** box, type the SIP domain name for the SIP-enabled contact center. Typically the Avaya Aura® Contact Center SIP Domain Name matches your Active Directory domain name. If the Avaya Aura® Contact Center SIP Domain Name does not match the Active Directory domain name then it must match the

Session Manager contact center SIP domain name. The Local SIP Subscriber Domain Name must be different to the XMPP Domain name.

29. In the **SIP IM Proxy Server** section, from the **IM Provider** list, select the name of the instant messaging provider. Select either Aura Presence Services or Microsoft OCS / Lync. The **IM Provider** question is enabled if you select the **Instant Messaging** optional license package on the **Licensing** tab.
30. In the **SIP IM Proxy Server** section, if using an Avaya Aura® Presence Services server, in the **XMPP Domain** box, type the domain name of the Extensible Messaging and Presence Protocol (XMPP) server. The XMPP Domain name must be different to the Local SIP Subscriber Domain Name.
31. In the **SIP IM Proxy Server** section, in the **IP Address** box, type the IP address of the SIP IM Proxy Server.
32. In the **SIP IM Proxy Server** section, in the **Port** box, type the port number for the IM Proxy Server. The default port number for Avaya Aura® Presence Services is 5222. The default port number for Microsoft OCS and Microsoft Lync, is 5060.
33. In the **SIP IM Proxy Server** section, from the **Transport** list, select the SIP IM Proxy Server transport protocol.
34. Select the **Multimedia** tab.

The screenshot shows the 'Avaya Contact Center' window with the 'Configuration Data' section. The 'Multimedia' tab is selected. The window contains two main sections: 'Incoming Mail Server' and 'Outgoing Mail Server'. Each section has a 'Host Name' text box and a 'Protocol' dropdown menu. In the 'Incoming Mail Server' section, the 'Protocol' dropdown is set to 'POP3'. In the 'Outgoing Mail Server' section, the 'Protocol' dropdown is set to 'SMTP'. At the bottom of the window, there is a 'Click Next to Continue' instruction and three buttons: '< Back', 'Next >', and 'Cancel'.

35. In the **Incoming Mail Server** section, in the **Host Name** box, type the name of the server on which email messages are received in your network.
36. From the **Protocol** list, select the communication protocol for the inbound email server.
37. In the **Outgoing Mail Server** section, in the **Host Name** box, type the name of the server from on which email messages are sent. Your inbound and outbound mail servers can have the same name.
38. From the **Protocol** list, select the communication protocol for the outbound email server.
39. Click **Next**.
40. On the **Ready to Configure** screen, confirm your inputs, and click **Configure**.
The configuration utility begins to configure the Avaya Aura® Contact Center components.
41. When the Voice and Multimedia Contact Server configuration details are applied, the **Configuration Complete** screen appears.
42. Click **Finish**.
43. On the **Avaya Contact Center** message box, click **OK** to restart Avaya Aura® Contact Center.

Adding the Voice and Multimedia Contact Server to a domain

Before you begin

- Ensure that you have domain administrator privileges, or ask the Domain Administrator to assign you a domain user account for remote access.
- On the server, configure a preferred Domain Name System (DNS) server on the Network Interface Card (NIC).

About this task

Add the Voice and Multimedia Contact Server to an existing domain.

Ask your System Administrator to add a Domain Name System (DNS) static entry for this server. Each Contact Center server in a domain requires a DNS static entry.

Procedure

1. Log on to the Voice and Multimedia Contact Server.
2. Click **Start > Administrative Tools > Server Manager**.
3. Beside **Computer Information**, click **Change System Properties**.
4. In the **System Properties** dialog box, click the **Computer Name** tab.
5. Click **Change**.

6. In the **Computer Name/Domain Changes** dialog box, click the **Domain** option.
7. Type the domain name (you must provide the fully qualified domain name, which includes the prefix and suffix).
8. Click **OK**.
9. Type the domain administrator **User name** and **Password**.
10. Click **OK**.
11. Restart the server when you are prompted to do so.

Installing the supported operating system service packs

Before you begin

- Access the Avaya hotfixes list on the Web site www.avaya.com/support.
- Review the specifications on operating system service updates in *Avaya Aura® Contact Center Fundamentals and Planning* (44400-211).

About this task

Avaya recommends that you install the most recent supported operating system service packs. You must download the supported operating system service pack from the Avaya hotfixes list to ensure your Contact Center server software functions correctly with the supported operating system patches.

Procedure

1. Review the Contact Center Service Packs Compatibility and Security Hotfixes Applicability List to determine the most recent Avaya Aura® Contact Center supported patches or service packs.
2. Download the appropriate Microsoft Windows Server 2008 patches for the Avaya Aura® Contact Center software installed on this server.
3. Install the most recent Windows Server 2008 service pack that is validated with Avaya Aura® Contact Center by following the Microsoft Installation instructions.

Installing Voice and Multimedia Contact Server software patches

Before you begin

- Download the most recent Voice and Multimedia Contact Server patches to the virtual machine.

About this task

Install the most recent Voice and Multimedia Contact Server software patches to ensure that you have the most current application updates.

Procedure

1. On the Voice and Multimedia Contact Server, click **Start > All Programs > Avaya > Contact Center > Common Utilities > Contact Center Patch Manager**.
2. Click **Install**.
3. Click **Browse** and navigate to the folder where you downloaded the patches.
4. Click **Scan for Updates**.

The Contact Center Updates section displays the available patches.

5. Select the appropriate patches.
6. Click **Install Selected Updates**.

The Update Manager installs the service pack and displays a confirmation message.

7. Click **Close**.
8. Verify that the newly installed service pack appears under **Installed Updates**.

Securing the Voice and Multimedia Contact Server

About this task

Apply optional security measures to the operating system to further secure your Voice and Multimedia Contact Server.

Important:

Scanning software can degrade the performance and decrease the reliability of the system. Install virus scanning software only if the system connects to an exposed network or to the Internet.

Important:

To maintain server performance, you must schedule virus scans during maintenance periods or low usage hours only.

Procedure

1. Harden the operating system using defined site procedures.
2. Install antivirus software. If you install antivirus software, Avaya recommends that you exclude some contact center files and folders from real-time and scheduled scans. For more information, and for a list of files and folders to exclude, see *Avaya Aura® Contact Center Fundamentals and Planning* (44400-211).

Commissioning the Voice and Multimedia Contact Server

About this task

Commission the Voice and Multimedia Contact Server to provide context-sensitive and skill-based routing for customer contacts.

The Voice and Multimedia Contact Server OVA does not support High Availability.

Procedure

1. For information about commissioning the installed Voice and Multimedia Contact Server software, see *Avaya Aura® Contact Center Commissioning* (44400-312).
2. Follow the instructions in *Avaya Aura® Contact Center Server Administration* (44400-610) and *Avaya Aura® Contact Center Manager Administration – Client Administration* (44400-611) to complete configuring the solution. For example, configure skillsets, features, supervisors, and agents.

Appendix A: VMware Best Practices for performance

The following sections describe some of the Best Practices for VMware performance and features.

BIOS settings

For details on BIOS settings to improve the environment for latency-sensitive workloads for an application, see the Best Practices for Performance Tuning of Latency-Sensitive Workloads in vSphere VMs technical white paper at <http://www.vmware.com>.

The following are the best performance BIOS settings for a few specific servers from the VMware-certified server list. In general, turn off power-saving server options for optimal performance. Consult the manufacturer technical data for your particular server.

Intel Virtualization Technology support

Intel CPUs require EM64T and Virtualization Technology (VT) support in the chip and in the BIOS to run 64-bit virtual machines.

All Intel Xeon processors feature:

- Intel Virtualization Technology
- Intel Extended Memory 64 Technology
- Execute Disable Bit

Ensure that VT is enabled in the host system BIOS. The feature might be called VT, Vanderpool Technology, Virtualization Technology, VMX, or Virtual Machine Extensions.

 Note:

The VT setting is locked (either on or off) at boot time. After enabling VT in the system BIOS, save your changes to the BIOS settings and exit. The host server reboots, and the BIOS changes takes effect.

Other suggested BIOS settings

Servers with Intel Nehalem class and newer Intel Xeon CPUs also offer two power management options: C-states and Intel Turbo Boost.

- Disabling C-states lowers latencies to activate the CPUs from halt or idle states to full power on.
- Intel Turbo Boost steps up the internal frequency of the processor if the workload requires more power. The default for this option is enabled. Do not change the default.

These settings depend on the OEM make and model of the server. The BIOS parameter terminology for current Dell and HP servers are described in the following sections. Other server make and models can have other terminology but equivalent BIOS controls.

Dell PowerEdge Servers — BIOS settings

When the Dell server starts, you select F2 to display the system setup options. The following are the recommended BIOS settings for the Dell PowerEdge servers:

- Set the Power Management Mode to **Maximum Performance**.
- Set the CPU Power and Performance Management Mode to **Maximum Performance**.
- Under Processor Settings, set **Turbo Mode** to **enable**.
- Under Processor Settings, set **C States** to **disabled**.

HP ProLiant Servers — BIOS settings

The following are the recommended BIOS settings for the HP ProLiant servers:

- Set the Power Regulator Mode to **Static High Mode**.
- Disable **Processor C-State Support**.
- Disable **Processor C1E Support**.
- Disable **QPI Power Management**.
- Enable **Intel Turbo Boost**.

VMware networking best practices

There are many different ways of configuring networking in a VMware environment. Review the VMware networking best practices documentation before deploying Avaya applications on an ESXi host. This section is not a substitute for the VMware documentation. For improved performance and best practice, Contact Center uses Network Adapter type VMXNET 3.

The following are some suggested networking best practices:

- Separate network services to achieve greater security and performance. Create a vSphere *Standard Switch* with dedicated NICs for each service. Separate VMware Management, iSCSI (SAN traffic), and VM networks to separate physical NICs. If separate switches are not possible, consider port groups with different VLAN IDs.
- All physical NICs that are connected to the same vSphere *Standard Switch* must be connected to the same physical network.
- Configure all VMkernel vNICs to the same MTU (IP Maximum Transmission Unit).
- Configure Contact Center to use Network Adapter type VMXNET 3.

For more information about VMware networking best practices, refer to the VMware documentation.

VMware Tools

VMware Tools are included as part of the application OVA. The tools are a suite of utilities that enhances the performance of the guest operating system on the virtual machine and improves the management of the virtual machine.

The tools provide:

- VMware Network acceleration
- Host to Guest time synchronization
- Disk sizing
- Startup/Shutdown

 Note:

Do not upgrade the VMware tools software which is packaged with each OVA unless instructed to do so by Avaya.

Network Time Protocol and time configuration

For accurate time keeping, use the Network Time Protocol (NTP) as a time source instead of the ESXi hypervisor.

The NTP servers can be local to the LAN or over the Internet. If the NTP servers are on the Internet, the corporate firewall must open UDP port 123 so that NTP service can communicate with the external NTP servers.

Troubleshooting VMware

Virtualization platform performance issues can result with Contact Center performance problems. The virtualization platform includes the host and the running virtual machines on the host. Contact Center performance problems can include but are not limited to high CPU usage, link instability, defaulted or abandoned calls.

You must logically and systematically investigate any Contact Center performance issues to rule out virtualization performance problems. All deviations from the published specifications must be investigated and resolved before the Contact Center software investigation is initiated. For more information, refer to the VMware vSphere documentation.

To support troubleshooting VMware resourcing issues, collect information about the following VMware Key Performance Indicators (KPIs).

VMware vSphere Host KPIs:

- Physical CPU
 - PCPU - Physical CPU usage.
 - CPU load average - Average CPU load average of host.
- Physical Memory
 - SWAP/MB - Memory swap usage statistics.

VMware vSphere Virtual Machine (VM) KPIs:

- vCPU
 - CPU RDY - Time VM was ready to run, but was not provided CPU resource.
 - CPU WAIT - Percentage of time spent in the blocked or busy wait state.
 - AMIN - Reservation allocated.
 - ASHRS - CPU shares allocated.
 - CPU CSTP - Amount of time a Symmetric Multi-Processing (SMP) VM was ready to run, but was delayed due to co-vCPU scheduling contention.
- Disk I/O
 - GAVG - Average guest operating system read latency per read operation.
 - DAVG/rd - Average device read latency per read operation.
 - DAVG/wr - Average device write latency per write operation.
 - RESETS/s - Number of commands reset per second.
 - ABRTS/s - Number of disk commands abandoned per second.
- Network
 - %DRPTX - Percentage of packets dropped when transmitting.
 - %DRPRX - Percentage of packets dropped when receiving.

- Memory
 - MCTLSZ - Amount of physical memory reclaimed memory balloon statistics.

Glossary

Application	An application is one or more software programs that run on a computer. For example, Avaya Aura® Contact Center software is a suite of software applications.
MAC	Media Access Control address. A unique identifier assigned to network interfaces for communication on the physical network segment.
OVA	Open Virtualization Application. An OVA is the virtual machine description, disk images, and a manifest zipped into a single file. The OVA follows the Distributed Management Task Force (DMTF) specification.
PLDS	Product Licensing and Download System. The Avaya PLDS provides product licensing and electronic software download distribution.
Reservation	A reservation is the amount of physical RAM, CPU cycles, or memory that are reserved for a virtual machine.
VM	Virtual Machine. Replica of a physical server from an operational perspective. A VM is a software implementation of a machine (for example, a computer) that runs programs similar to a physical machine.

Index

A

antivirus	93
Avaya Media Server	41
Avaya Media Server installing patches	60
Avaya Media Server OVA	44 , 53
Avaya Media Server software installation	
secure your server	61
Avaya WebLM OVA	24

B

Best Practices	95
BIOS	95
BIOS settings	96

C

checklist	20 , 21
commissioning	62 , 94

D

deploying the OVA	67 , 72
deployment process	19
domain	84

E

Element Manager	59
-----------------------	--------------------

H

hardware-assisted virtualization	14
host considerations vmware	14

I

installing Avaya Media Server patches	60
Intel	95
intended audience	6
Introduction	6

L

Licensing	14
-----------------	--------------------

N

network	84
NTP	97

O

operating system patches	92
operating system service packs	92
OVA deployment	67 , 72
Overview	10

P

patch	39
purpose	6

R

related documentation	6
-----------------------------	-------------------

S

secure	
Avaya Media Server	61
security	93
server preparation	
adding a server to a domain	91
snapshot considerations	16
support	9

V

vCenter	32 , 53
videos	8
Virtualization	98
Virtualization considerations	11
VMware	12
VMware Feature Support	13
vmware host	14
VMware Tools	97
VMXNET	96
Voice and Multimedia Contact Server	63 , 64 , 86
vSphere	27 , 44

W

WebLM	24
WebLM license file	38
WebLM OVA	27 , 32
WebLM server Host ID	36