SOLUTION GUIDE

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Polycom® RealPresence® Platform, Virtual Edition

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About This Guide

The Polycom RealPresence Platform, Virtual Edition Solution Guide uses a number of conventions that help you to understand information and perform tasks.

Conventions Used in this Guide

This guide contains terms, graphical elements, and a few typographic conventions. Familiarizing yourself with these terms, elements, and conventions will help you successfully perform tasks.

Information Elements

This guide may include any of the following icons to alert you to important information.

Icons Used in this Guide

Name	*Icon*	*Description*
Note		The Note icon highlights information of interest or important information needed to be successful in accomplishing a procedure or to understand a concept.
Administrator Tip		The Administrator Tip icon highlights techniques, shortcuts, or productivity related tips.
Caution		The Caution icon highlights information you need to know to avoid a hazard that could potentially impact device performance, application functionality, or successful feature configuration.
Warning		The Warning icon highlights an action you must perform (or avoid) to prevent issues that may cause you to lose information or your configuration setup, and/or affect phone or network performance.
Web Info		The Web Info icon highlights supplementary information available online such as documents or downloads on support.polycom.com or other locations.
Timesaver		The Timesaver icon highlights a faster or alternative method for accomplishing a method or operation.
Power Tip		The Power Tip icon highlights faster, alternative procedures for advanced administrators already familiar with the techniques being discussed.
Troubleshooting		The Troubleshooting icon highlights information that may help you solve a relevant problem or to refer you to other relevant troubleshooting resources.
Settings		The Settings icon highlights settings you may need to choose for a specific behavior, to enable a specific feature, or to access customization options.

Typographic Conventions

A few typographic conventions, listed next, are used in this guide to distinguish types of in-text information.

Typographic Conventions

Convention	*Description*
Bold	Highlights interface items such as menus, soft keys, file names, and directories. Also used to represent menu selections and text entry to the phone.
Italics	Used to emphasize text, to show example values or inputs, and to show titles of reference documents available from the Polycom Support Web site and other reference sites.
Blue Text	Used for cross references to other sections within this document and for hyperlinks to external sites and documents.
`Courier`	Used for code fragments and parameter names.

Part I: RealPresence Platform, Virtual Edition Solution Installation

Part I gives you instructions on installing each of the RealPresence Platform, Virtual Edition components and consists of the following chapters:

Polycom RealPresence Platform, Virtual Edition Solution Architecture

Install Polycom RealPresence DMA, Virtual Edition in a Virtual Environment

Install Polycom RealPresence Resource Manager, Virtual Edition in a Virtual Environment

Install Polycom RealPresence Collaboration Server, Virtual Edition in a Virtual Environment

Install Polycom RealPresence Access Director, Virtual Edition in a Virtual Environment

Polycom RealPresence Platform, Virtual Edition Solution Architecture

Polycom is the global leader in standards-based unified communications (UC) solutions for telepresence, video, and voice, powered by the Polycom RealPresence Platform. The RealPresence Platform interoperates with the broadest range of business, mobile, and social applications and devices.

Polycom's vision is to make video collaboration ubiquitous. Our goal is to make it possible for everyone to use video as their preferred way to collaborate—easily, reliably, and securely—regardless of network, carrier, protocol, application, or device.

RealPresence Platform, Virtual Edition Overview

Virtualized datacenters are about radically improving the performance of servers by breaking the bond between one server and one application. Polycom RealPresence Platform, Virtual Edition unlocks the performance of multi-party video collaboration from a purpose-built hardware platform, thus enabling dynamic and flexible expansion with a high return on investment (ROI). Virtualization has helped companies worldwide transform their IT infrastructure to achieve huge savings in time, money, and energy while improving flexibility, efficiency, and disaster recovery.

Document Overview

This document is designed so that an IT professional can install and configure the Polycom RealPresence Platform, Virtual Edition in less than a day. By the time you finish this solution guide, you should walk away with solid understanding of how to install and administer the RealPresence Platform, Virtual Edition video solution in your environment.

In addition to the step-by-step installation and configuration instructions, this solution guide provides summaries and details of configuration settings when appropriate to help you understand the entire process.

This solution guide is a supplement to—and not a replacement for—the existing product documentation, where you can find detailed information on each server in RealPresence Platform, Virtual Edition.

Assumptions

This document is written for a technical audience. You must know the following:

- Basic computer and network system administration skills
- Understanding of LDAP and access to Active Directory server
- Basic understanding and access to a VMware environment

Access to the Software

You can download the installation files for each component of RealPresence Platform, Virtual Edition at support.polycom.com.

RealPresence Platform, Virtual Edition Infrastructure Components

Polycom RealPresence Platform, Virtual Edition is designed to provide customers the choice of running the RealPresence Platform appliances as virtualized software within their datacenter infrastructure in conjunction with appliance based infrastructure, enabling customers to run video collaboration within their standardized servers and VM environments.

RealPresence DMA, Virtual Edition 6.0.2

The Polycom Virtualization Management is anchored by Polycom RealPresence DMA, Virtual Edition, a network-based virtualization application for managing and distributing calls across collaboration networks. Using a highly reliable and scalable processing architecture, the RealPresence DMA, Virtual Edition unifies collaboration networks, services, and devices by providing call signaling for both H.323 and SIP in a single platform along with virtualizing bridging resources for a seamless user experience.

Another core advantage of the RealPresence DMA, Virtual Edition is its powerful call-processing capability to provide universal conferencing and seamless connectivity without complex reconfiguration of UC environments. The RealPresence DMA, Virtual Edition integrates seamlessly with Connect to millions of existing standards-based UC solutions including Microsoft, Cisco, Avaya, IBM, Siemens, or a mix of these environments without the need for any gateways. This helps reduce costs and extends the value and reach of existing UC investments.

RealPresence Resource Manager, Virtual Edition 8.0.1

Polycom Video Resource Management solutions are critical to effectively manage thousands of mobile, desktop, and group telepresence systems. Administrators can centrally provision, monitor, and manage the entire video collaboration network with Polycom RealPresence Resource Manager, Virtual Edition.

Through dynamic provisioning, it automatically configures and maintains thousands of video clients at pre-determined software baselines. This eliminates having a variety of software releases in the field, fixing end-user configuration mismatches, being uncertain about the quality of video being provided, and other typical management issues.

The RealPresence Resource Manager, Virtual Edition includes scheduling options via Web GUI or APIs, built-in reports, application dashboards and drill-down tabs ensure you can instantly access troubleshooting and operational metrics. It also provides directories and presence engines that simplify dialing and APIs so you can integrate Video Resource Management solutions into your key applications and systems.

RealPresence Collaboration Server, Virtual Edition 8.2

RealPresence Collaboration Server, Virtual Edition is the newest addition to the RealPresence Collaboration Server, Virtual Edition series and delivers a multiprotocol, software-based MCU that runs on an industry-standard (x86-type) server. It is the industry's first and only SVC solution uniquely interoperable with AVC systems, enabling video collaboration with over two million legacy systems in the global installed base.

The RealPresence Collaboration Server, Virtual Edition supports open standards-based SVC, delivering 3X HD multi-party video capacity compared to existing products for greater scalability, dramatically lower TCO, and superior performance. The open-standards based SVC solution is backwards- and forwards-compatible and results in a 3X HD multipoint video capacity increase for greater scalability and dramatically lower TCO. The solution is ideal for mid-sized enterprises as well as larger organizations with branch offices and represents a significant step forward in delivering virtualized video collaboration from the datacenter for even greater flexibility and ROI.

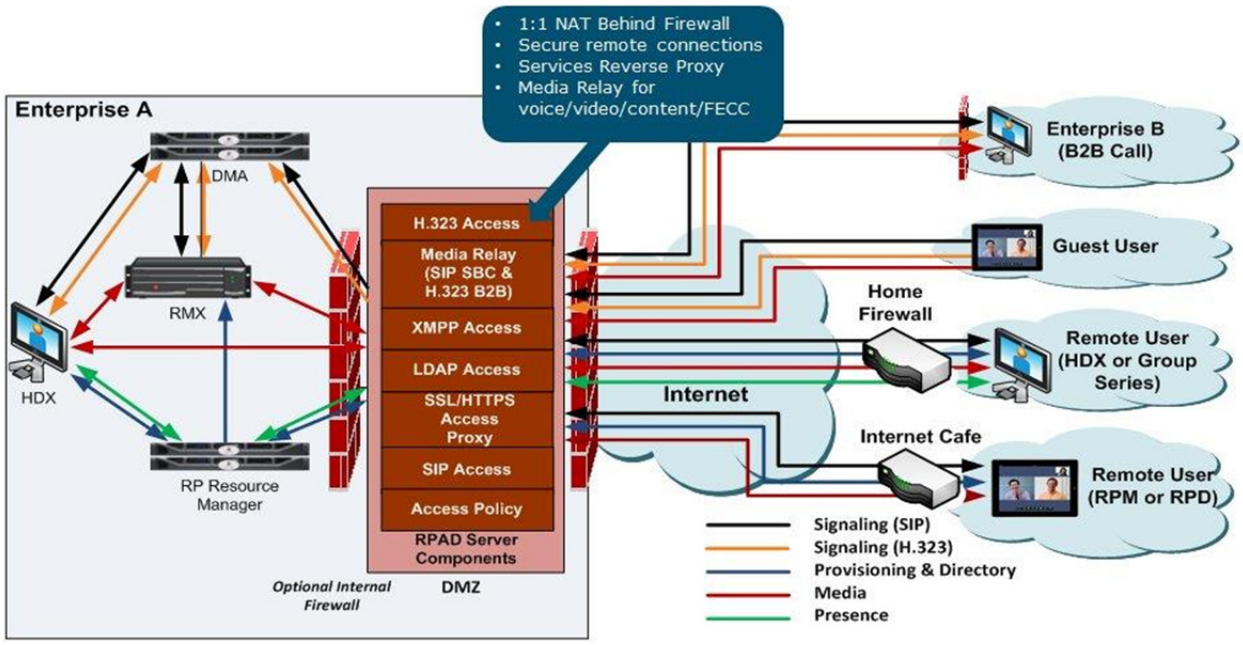
RealPresence Access Director, Virtual Edition 3.0

Polycom Firewall Traversal and Security solutions make it easier for users inside or outside the firewall to collaborate via video safely with anyone in the organization, whether they are in a secure environment at the office or an unsecure environment at home or on the go in a hotel. This brings highly scalable video conferencing to applications such as B2B, B2C, and intra-company collaboration.

For example, remote users can securely and transparently access video services and collaborate with colleagues, customers, and partners from virtually anywhere, with the same functionality they get in the office. Also, customers, partners, and vendors can join a video meeting as a guest user or over a federated network. By providing a seamless video collaboration experience, Polycom lets organizations focus on what really matters—connecting people, networks, and companies.

RealPresence Access Director, Virtual Edition supports both SIP and H.323 capabilities and supports up to a thousand simultaneous video calls securely without requiring additional client hardware or software. It provides secure scalability for mobile deployments and tightly integrates with RealPresence Resource Manager, Virtual Edition and RealPresence DMA, Virtual Edition for ease of deployment, management, and use.

Figure 1: Product architecture overview



Software Requirements

The following software is required to install and configure the RealPresence Platform, Virtual Edition components:

- VMware vSphere 5.0 or 5.1 client installed where you can access the ESXi host
- Microsoft Internet Explorer® v10
- Adobe® Flash® 9.0.124 or newer

Table 1: Hardware Requirements for Production Systems

Product	*VM Instance*
RealPresence Access Director, Virtual Edition	16 Virtual Cores 16 GB RAM 150 GB Accessible Storage
RealPresence Resource Manager, Virtual Edition	16 Virtual Cores 16 GB RAM 200 GB Accessible Storage
Polycom RealPresence DMA, Virtual Edition	16 Virtual Cores 16 GB RAM 100 GB Accessible Storage
RealPresence Collaboration Server, Virtual Edition (Polycom RMX)	24 or 32 Virtual Cores 16 GB RAM 100 GB Accessible Storage

Table 2: Hardware Requirements for Lab Systems

Product	*VM Instance*
RealPresence Access Director, Virtual Edition	4 Virtual Cores 8 GB RAM 50 GB Accessible Storage
RealPresence Resource Manager, Virtual Edition	4 Virtual Cores 8 GB RAM 30 GB Accessible Storage
Polycom RealPresence DMA, Virtual Edition	4 Virtual Cores 8 GB RAM 30 GB Accessible Storage
RealPresence Collaboration Server, Virtual Edition (Polycom RMX)	32 Virtual Core 16 GB RAM 30 GB Accessible Storage

Installation Prerequisites

RealPresence Resource Manager, Virtual Edition and RealPresence Collaboration Server, Virtual Edition both require a license before they can be used.

Install Polycom RealPresence DMA, Virtual Edition in a Virtual Environment

This chapter describes the steps required to perform the initial installation and setup of a Polycom RealPresence Distributed Media Application (DMA, Virtual Edition), Virtual Edition system in a virtual environment. At the end of this procedure, you will have successfully created an instance of the RealPresence DMA, Virtual Edition system on a virtual machine (VM) and be ready to finish configuring the system.

Overview of the Installation Process

The installation and initial setup of the RealPresence DMA, Virtual Edition in a virtual environment involves several steps. First you'll create an instance of the RealPresence DMA, Virtual Edition, then login to the console to change the password and configure a static IP. Finally, you'll restart the RealPresence DMA, Virtual Edition and access the systems Web user interface using the new static IP address.

The installation and initial setup of RealPresence DMA, Virtual Edition involves the following:

- Install the OVA file to create a RealPresence DMA, Virtual Edition system instance in a new VM
- Change the Linux shell default password
- Change the network configuration using the console options
- Restart the RealPresence DMA, Virtual Edition and access the new IP address using a web browser

OVA Package

The RealPresence DMA, Virtual Edition system software for a virtual environment is packaged as an Open Virtualization Archive (OVA) file.

The OVA file contains:

- The RealPresence DMA, Virtual Edition application
- The CentOS 6.4 operating system
- Information about its virtual machine environment
- The most recent version of VMware Tools
- The RealPresence DMA, Virtual Edition End User License Agreement (EULA)

Deploying the RealPresence DMA, Virtual Edition system OVA package creates an instance of the RealPresence DMA, Virtual Edition system on a virtual machine on a VMware® ESXi host server.

Installation Prerequisites

The following items and tasks are required before you begin installation of RealPresence DMA, Virtual Edition:

- Complete the RealPresence DMA, Virtual Edition First-Time Setup Worksheet (see Appendix A)
- Setup DNS Host A Record for the RealPresence DMA, Virtual Edition
- VMware 5.1 client and server environment

Capacity Planning Guidance

The following table describes the minimum and recommended server hardware profiles for each virtual machine (VM) with an instance of the RealPresence DMA, Virtual Edition system. It also shows the typical performance capacity of RealPresence DMA, Virtual Edition.

Table 3: Server Hardware Profiles

Component	*Minimum Profile (Lab System)*	*Recommended Profile (Production System)*
CPU	1-physical-core Westmere, 2.4 GHz or greater CPU clock	8-physical-core Westmere 2.4 GHz or greater CPU clock (e.g., 8x Intel Xeon E5620 @ 2.4 GHz)
Memory	2 GB	8 GB
Disk	32 GB	146 GB
Performance	5 concurrent calls 15 registrations	1200 concurrent calls 12000 registrations

Note: Hardware vs VMware

Due to differences in hardware and VM environments, the performance information is provided for guidance purposes and does not represent a guarantee by Polycom.

Documentation Resources

In addition to this guide, the following documents provide details about the RealPresence DMA, Virtual Edition system. To access these documents, go to support.polycom.com.

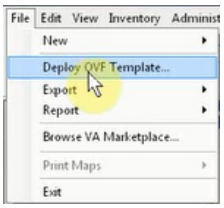
- Polycom RealPresence DMA, Virtual Edition 6.0.2.1 Release Notes
- Polycom RealPresence DMA, Virtual Edition Getting Started Guide

VMware support and reference documentation may be found at:
https://www.VMware.com/support/pubs/vsphere-esxi-vcenter-server-pubs.html.

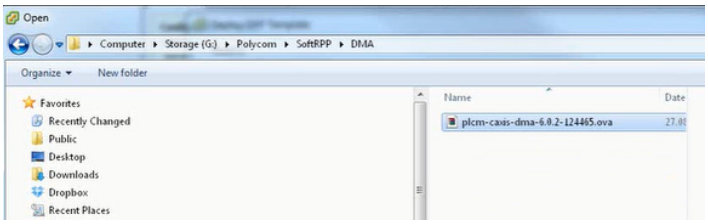
Installation and Setup

To install the RealPresence DMA, Virtual Edition OVA file on a virtual host:

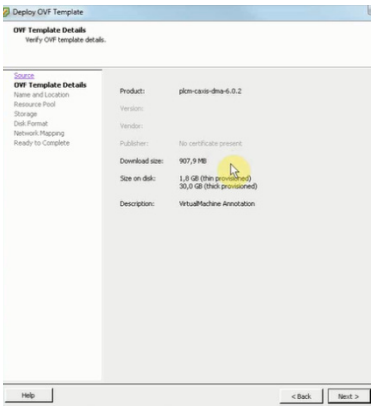
1. From the vSphere client, log into the vCenter Server or one of the ESXi hosts.
2. Select File > Deploy OVF Template.



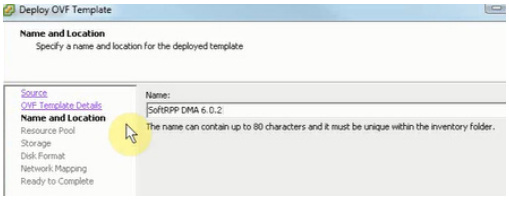
3. The Deploy OVF Template wizard appears and prompts you to select the source location.
4. Browse to or enter the location of the OVA file you downloaded and click **Next**.



5. Next, the OVF Template Details are displayed. Note the version and the disk size specifications and click **Next**.

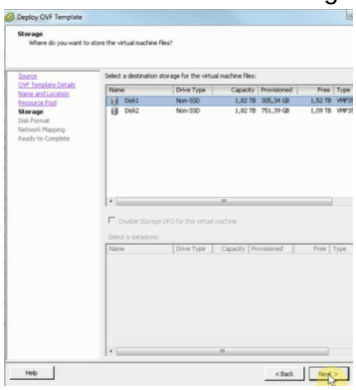


6. Specify an arbitrary name for the virtual machine. For example, SoftRPP DMA 6.0.2

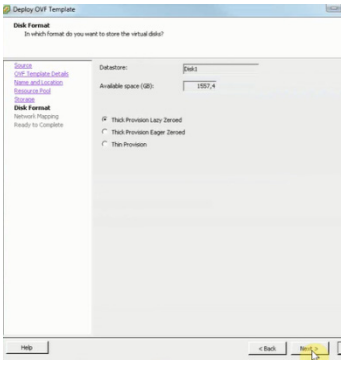


7 Select the Resource Pool you are using to host the virtual machine

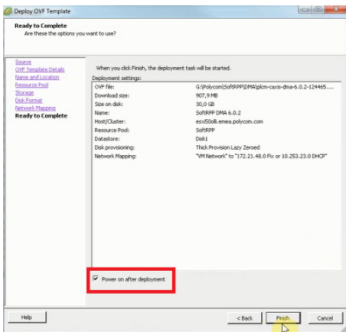
8 Select the destination storage disk that will host the virtual machine and click **Next**



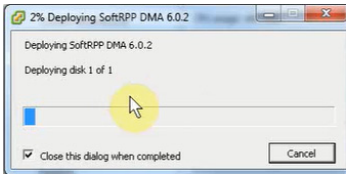
9 Now the Disk Format step appears. Keep the default **Thick Provisioned Lazy Zeroed** and click **Next**



10 Finally the Ready to Complete step appears. Just confirm the settings are correct and enable the **Power on after Deployment** checkbox, then click **Finish**.



11 This is the last step in the installation and can take some time to complete depending on your network connection back to the VMware environment. Once this process is complete, a RealPresence DMA, Virtual Edition instance is created and starts up.

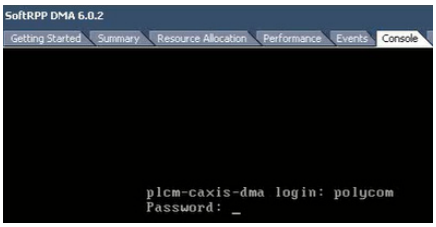


Configure a Static IP Address

Once the installation is complete, you can use the VSphere client to login to the console window of the RealPresence DMA, Virtual Edition to configure the static IP address, DNS server and assign a host name. If DHCP service is available on the RealPresence DMA, Virtual Edition's network, the system will use the DHCP provided IP address. For the purpose of this document, you'll assume DHCP is not available and so the directions will include configuring the static IP using the console window utility. In either case, you should use the utility to set a static IP address.

To use the network utility to assign an IP address:

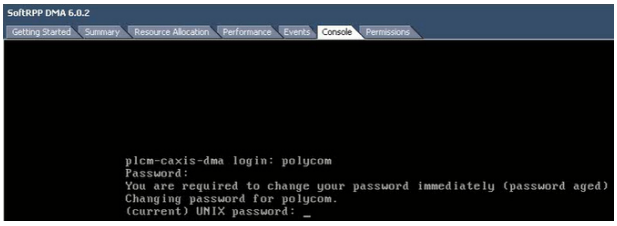
1. In the VSphere client, select the RealPresence DMA, Virtual Edition you installed and click **Launch Virtual Machine Console**.
2. Click the mouse in the console window and press **Enter** if necessary to see the login prompt.
3. Once the login prompt appears, log in with user ID **polycom** and password **polycom**



4. A restricted shell running the network setup utility appears that enables you to change the default password and assign an IP address. Follow the prompts to configure and assign the IP address specified on the First-Time Setup Worksheet.
5. Set the new password.

Note: Passwords

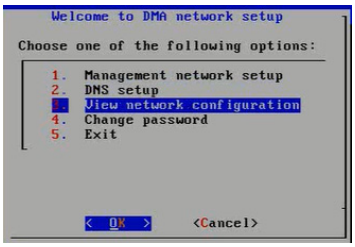
The new password must meet the following criteria: At least eight (8) characters with at least one lower case letter, one upper case letter, one special character, one number and must not contain a word in the English dictionary.



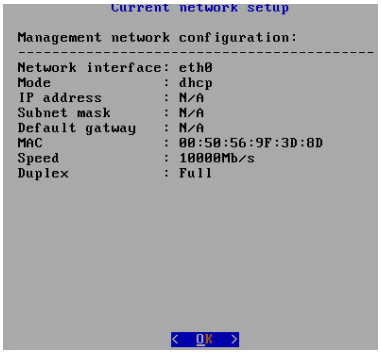
User Tip: Navigating the Utility

To navigate the utility, use up and down arrows to change fields and use the Tab key to change menu options. Press Enter to select an option.

6 Verify the default network configuration by selecting **View network configuration**.



7 If DHCP service is available, the RealPresence DMA, Virtual Edition will use the DHCP provided IP. The following screenshot was from a system installed on a network without DHCP and has no default IP address. In either case, select **OK** and you'll configure the static IP address in the next steps.

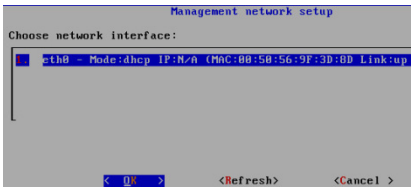


8 Set the new IP address by selecting **Option 1**, **Management network setup**.

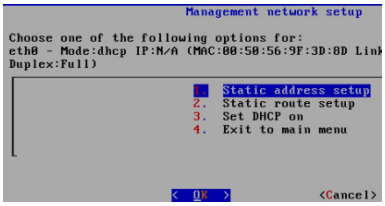
Note: Required IP addresses

RealPresence DMA, Virtual Edition only requires one IP address instead of two as required by the appliance version.

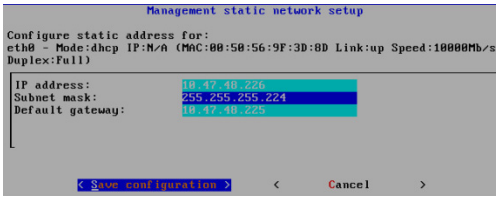
9 Select **OK** to accept the default NIC card.



10 In the **Management network setup** dialog box, select **Option1: Static address setup.**



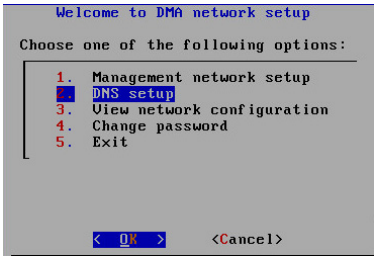
11 Enter the **IP address**, **Subnet mask** and **Default gateway** and select **Save Configuration.**



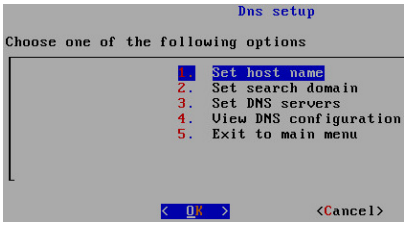
12 Select **OK** to restart the network service.

13 Select **OK** to confirm the **current network setup.**

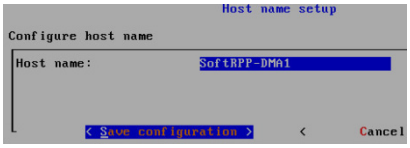
14 Modify the default DNS Settings by selecting **DNS Setup.**



15 Select **Set Host Name**.

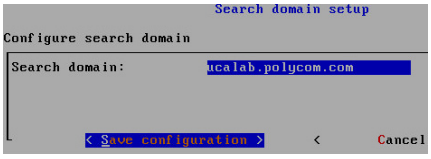


16 Specify the **Host name**, SoftRPP-DMA1 in this example, and select **Save Configuration**.



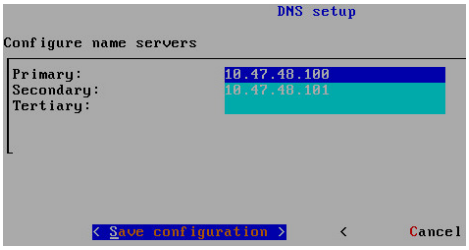
17 Select **Option2, Set search domain** and select **OK**.

18 Fill in the **Search domain value** and select **Save configuration**.

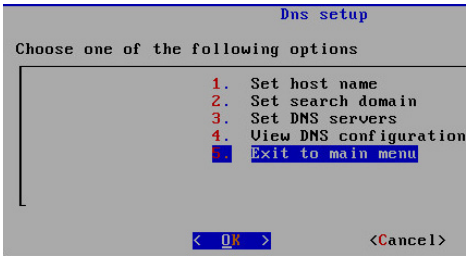


19 Select **Option3, Set DNS servers** and select **OK**.

20 Fill in the name server values and select **Save configuration**.



21 Select **Exit to main menu** to finish with the Network setup menu dialog.



The system reboots.

22 Press **CTRL + ALT** to release the cursor from the console. Then close the console window as further configuration will be done through the browser.

Connect to the RealPresence DMA, Virtual Edition System's Web Interface

In this step, you'll confirm that static IP address was configured correctly and verify that you can login to the web interface. Each component of the Polycom RealPresence Platform provides a Web interface for administering the system and making configuration changes.

To connect to the RealPresence DMA, Virtual Edition Web interface:

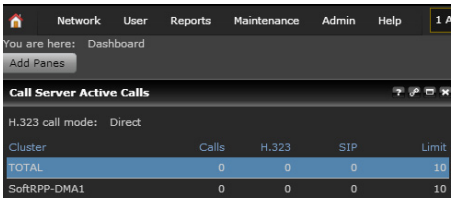
1 Point your browser to the IP address assigned (disregard any security certificate warnings).

https://<ipaddress>

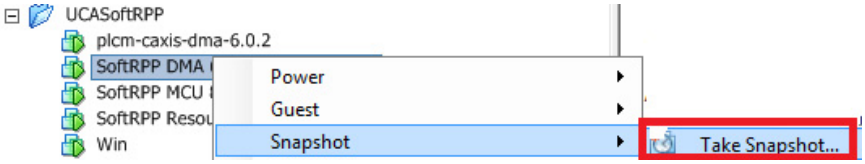
The Polycom RealPresence DMA, Virtual Edition system's login page appears.

2 Log in with default user ID admin and password admin with Domain set to Local.

3 The Polycom RealPresence DMA, Virtual Edition system's management interface appears, displaying the Dashboard.



4 At this point you recommend making a snapshot of the system. Using the VSphere client, Right click on the RealPresence DMA, Virtual Edition instance from the VM Inventory window and select **Snapshot>Take Snapshot**.



Summary and Next Steps

RealPresence DMA, Virtual Edition is now installed and the administration interface is accessible from a browser. You'll finish configuring the RealPresence DMA, Virtual Edition along with the rest of the Real Presence Platform, Virtual Edition in Part II of this solution guide.

The next step is installing RealPresence Resource Manager, Virtual Edition.

Install Polycom RealPresence Resource Manager, Virtual Edition in a Virtual Environment

This chapter describes the steps required to perform the initial installation and setup of Polycom RealPresence Resource Manager, Virtual Edition in a virtual environment. At the end of this procedure, you will have successfully created an instance of the RealPresence Resource Manager, Virtual Edition system on a virtual machine (VM) and be ready to finish configuring the system.

Overview of the Installation Process

The installation and initial setup of the RealPresence Resource Manager, Virtual Edition in a virtual environment involves several steps. First you'll create an instance of the RealPresence Resource Manager, Virtual Edition, then login to the console window to configure a static IP and finally, you'll restart the RealPresence Resource Manager, Virtual Edition and access the system's Web user interface using the new static IP address.

The installation and initial setup of RealPresence DMA, Virtual Edition involves the following:

- Install the OVA file to create a RealPresence Resource Manager, Virtual Edition instance in a new VM.
- Login to the Linux shell using the default credentials
- Change the network configuration using the console options
- Restart the RealPresence Resource Manager, Virtual Edition and access the web administration interface using the new IP address

OVA Package

The RealPresence Resource Manager, Virtual Edition system software for a virtual environment is packaged as an Open Virtualization Archive (OVA) file. The OVA file contains:

- The RealPresence Resource Manager, Virtual Edition application
- The CentOS 6.4 operating system
- Information about its virtual machine environment
- The most recent version of VMware Tools
- The RealPresence Resource Manager, Virtual Edition User License Agreement (EULA)

Deploy the RealPresence Resource Manager, Virtual Edition OVA package to create an instance of the RealPresence Resource Manager, Virtual Edition that is hosted on a virtual machine.

Installation Prerequisites

The following items and tasks are required before you begin installation of RealPresence Resource Manager, Virtual Edition:

- Complete the RealPresence Resource Manager, Virtual Edition first-time setup worksheet (see Appendix B).
- Setup DNS Host A and Service Records for the RealPresence Resource Manager, Virtual Edition (see Appendix C).
- Pre-stage a computer account (see Appendix D).
- A valid license. The RealPresence Resource Manager, Virtual Edition cannot be configured without the license.

Capacity Planning Guidance

The RealPresence Resource Manager, Virtual Edition system supports three hardware profiles when installed in a virtual environment. Each profile supports a maximum number of endpoints.

Table 4: RealPresence Resource Manager, Virtual Edition Hardware Profiles

Hardware Profile	*Supported Number of Endpoints*
2-physical-core Nehalem, 2.5 GHz or more CPU clock (e.g. 2 x Xeon E5506, Memory 8GB)	400
4-physical-core Nehalem, 2.5 GHz or more CPU clock (e.g. 2 x Xeon E5506, Memory 8GB)	4000
8-physical-core Nehalem, 2.5 GHz or more CPU clock (e.g. 2 x Xeon E5506, Memory 8GB)	10000

Note: Hardware vs VMware

Due to differences in hardware and VM environments, the performance information is provided for guidance purposes and does not represent a guarantee by Polycom.

Documentation Resources

In addition to this guide, the following documents provide details about the RealPresence Resource Manager, Virtual Edition system. To access these documents, go to support.polycom.com.

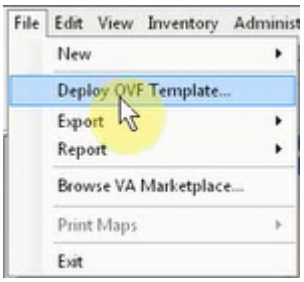
- Polycom RealPresence Resource Manager, Virtual Edition 8.0.1 Release Notes
- Polycom RealPresence Resource Manager, Virtual Edition Getting Started Guide

VMware support and reference documentation may be found at:
https://www.VMware.com/support/pubs/vsphere-esxi-vcenter-server-pubs.html.

Installation and Setup

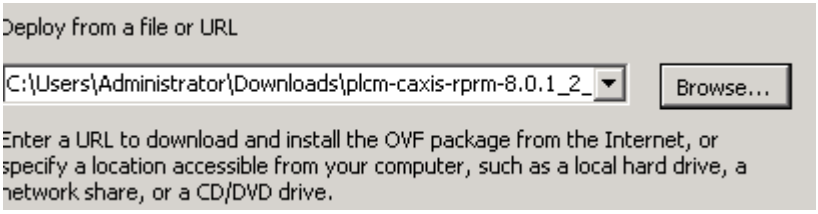
To install the RealPresence Resource Manager, Virtual Edition OVA file on a virtual host:

1. From the vSphere client, log into the VMware environment that will host the RealPresence Resource Manager, Virtual Edition.
2. Select **File > Deploy OVF Template**.

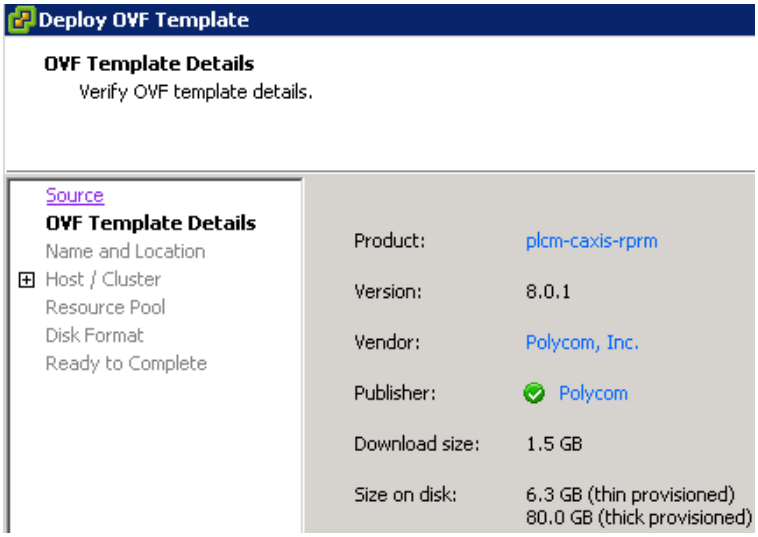


The **Deploy OVF Template** wizard appears and prompts you to select the source location.

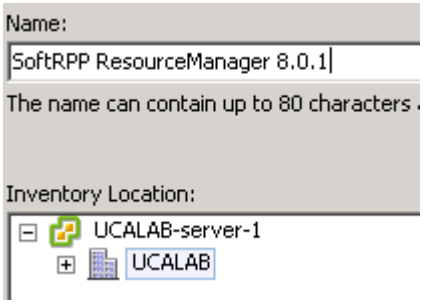
3. Browse to or enter the location of the OVA file you downloaded and click **Next**.



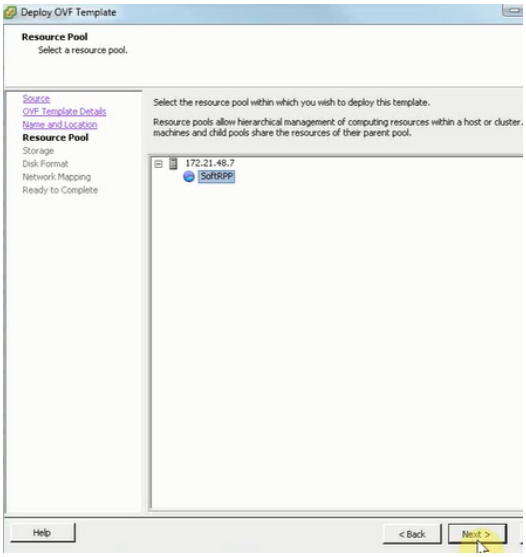
4. The OVF Template Details displays. Note the version and the disk size specifications and click **Next**.



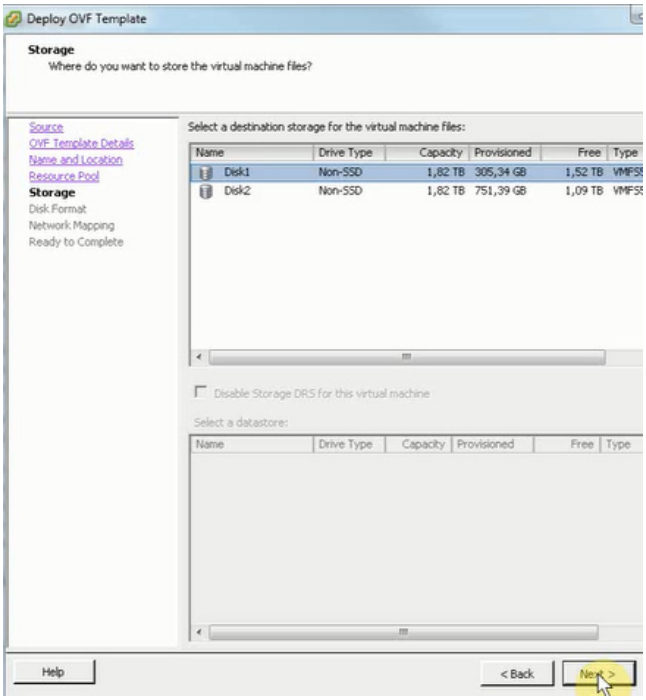
5 Specify an arbitrary name for the virtual machine. For example, RealPresence Platform, Virtual Edition 8.0.1



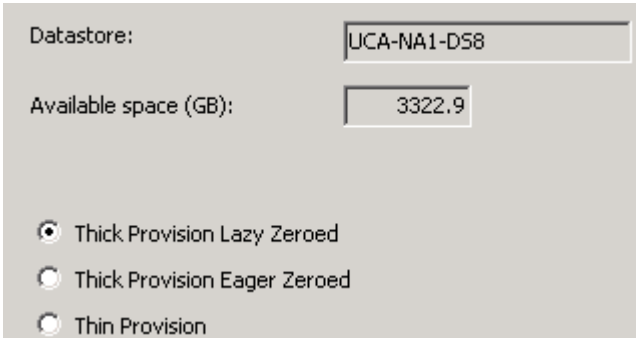
6 Select the **Resource Pool** you are using to host the virtual machine.



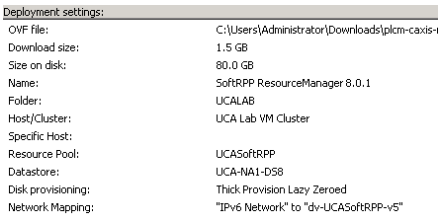
7 Select the destination storage disk that will host the virtual machine and click **Next**.



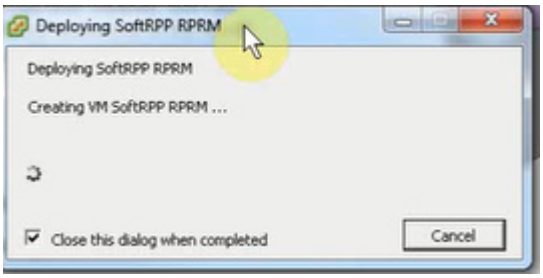
8 The **Disk Format** step appears. Keep the default **Thick Provisioned Lazy Zeroed** and click **Next**.



9 The **Ready to Complete** step appears. Just confirm the settings are correct and check the **Power on after Deployment** checkbox, then click **Finish**.



10 The last step in the installation can take some time to complete, depending on your network connection back to the VMware environment. Once this process is complete, a RealPresence Resource Manager, Virtual Edition instance is created and starts up.



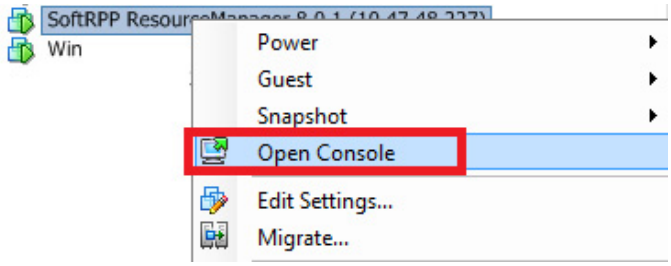
Configure a Static IP Address

Once the installation is complete, you can use the VSphere client to login to the console window of the RealPresence Resource Manager, Virtual Edition to change the password and configure the static IP address. If DHCP service is available on the RealPresence Resource Manager, Virtual Edition's network, the system will use the DHCP provided IP.

For the purpose of this document, you'll assume DHCP is not available and so the directions will include configuring the static IP using the console window utility. In either case, you should use the utility to set a static IP address.

To use the network utility to assign an IP address:

1 In the VSphere client, select the RealPresence Resource Manager, Virtual Edition you installed and click **Launch Virtual Machine Console**.



2 Click the mouse in the console window and press **Enter** if necessary to see the login prompt.

3 Once the login prompt appears, log in with user ID **polycom** and password **polycom**.

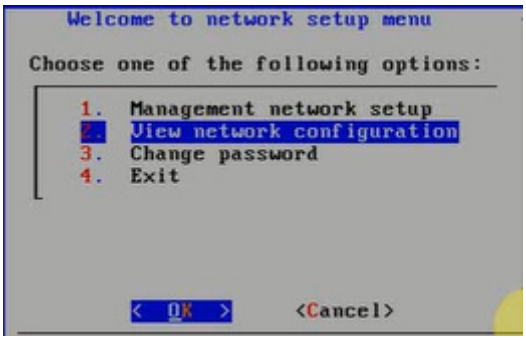
A restricted shell running the RealPresence Resource Manager, Virtual Edition **network setup utility** appears that enables you to assign an IP address.

4 Follow the prompts to configure and assign the IP address specified on the First-Time Setup Worksheet.

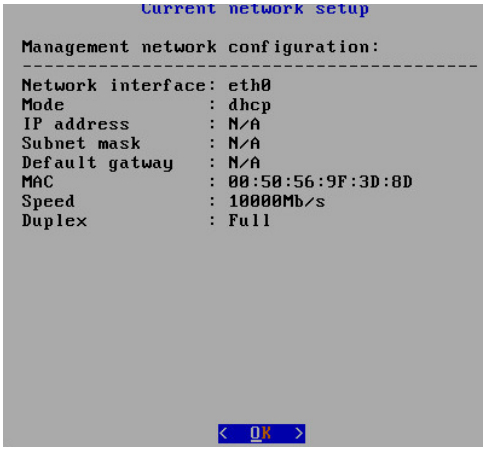
User Tip: Navigating the Utility

To navigate the utility, use up and down arrows to change fields and use the Tab key to change menu options. Press Enter to select an option.

1 In the Welcome to network setup menu, verify the default network configuration by selecting **View network configuration**.

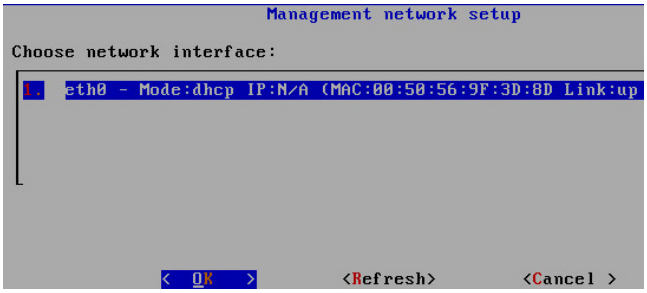


2 If DHCP service is available, the RealPresence Resource Manager, Virtual Edition will use the DHCP provided IP. The following screenshot was from a system installed on a network without DHCP and has no default IP address. In either case, select **OK** and you'll configure the static IP address in the next steps.

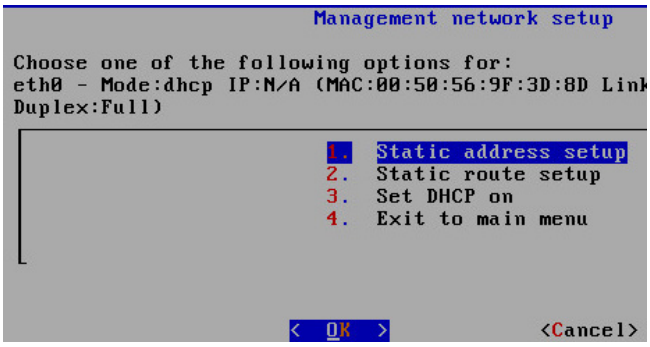


3 Set the new IP address by selecting **Option 1**, **Management network setup**.

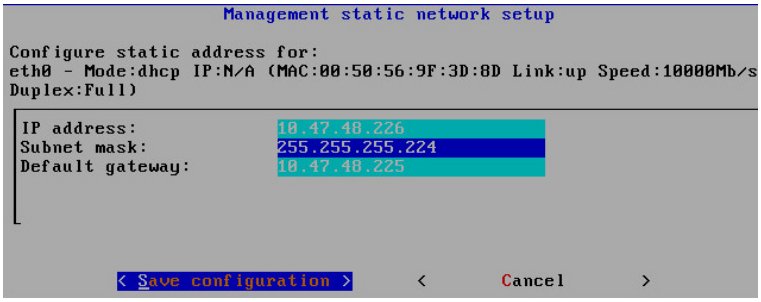
4 Select **OK** to accept the default NIC card.



5 In the **Management network setup** dialog box, select **Option1: Static address setup**.

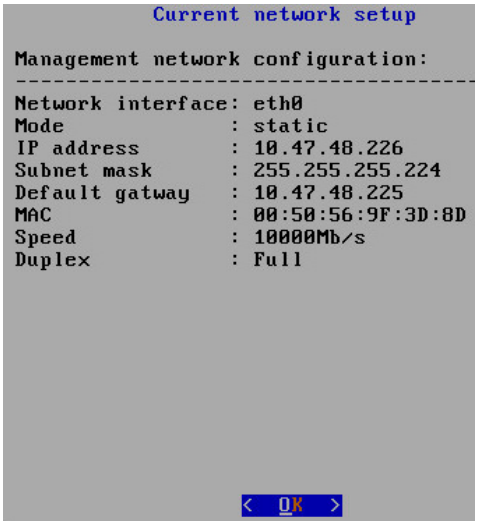


6 Enter the **IP address**, **Subnet mask** and **Default gateway** and select **Save Configuration**.

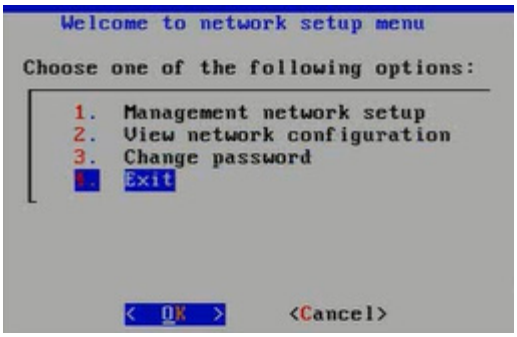


7 Select **OK** to **Restart the network service**.

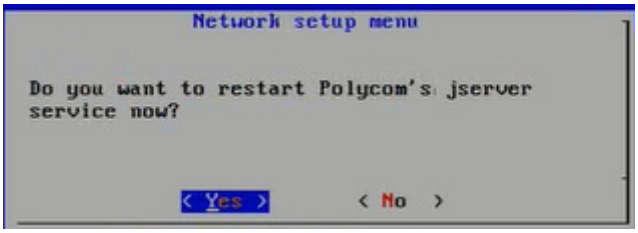
8 Select **OK** to confirm the current network setup.



9 Select **Exit** to finish with the **Network setup menu** dialog.



10 Finally, select **Yes** to restart the system so the changes take effect.



The system reboots.

11 Press **CTRL + ALT** to release the cursor from the console. Then close the console window as further configuration will be done through the browser

Connect to the RealPresence Resource Manager, Virtual Edition's Web interface

In this step, you'll confirm that static IP address was configured correctly and verify that you can login to the web interface. Each component of the Polycom RealPresence Platform provides a Web interface for administering the system and making configuration changes. You'll use the Web Interface to accept the license, change the password and configure the Hostname, DNS and Domain information.

To connect to the RealPresence Resource Manager, Virtual Edition Web interface:

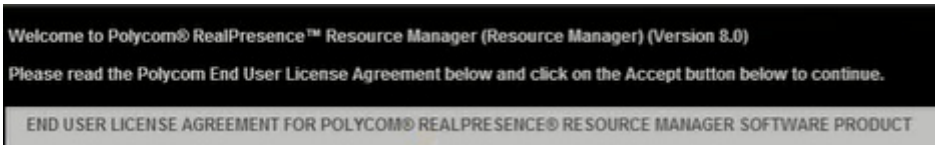
1 Point your browser to the IP address assigned (disregard any security certificate warnings)

https://<ipaddress>:8443/flex

The system's login page appears.

2 Log in with the default user ID admin and password admin with Domain set to **Local**.

3 Because the system has not previously been configured, the **Licensing** page of the setup wizard appears. Click **Accept**.

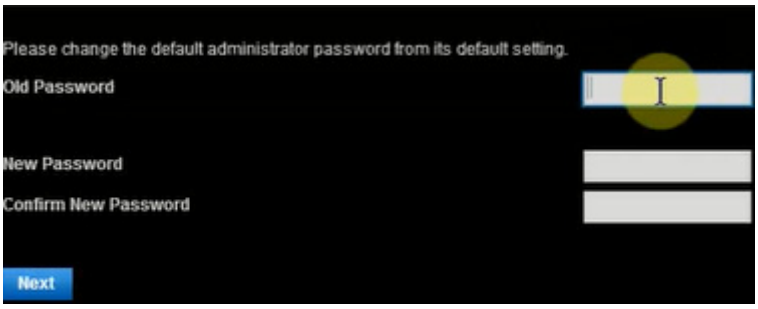


4 The **change default password** option appears. You must change the password.

Note: Passwords

The new password must meet the following criteria: At least eight (8) characters with at least one lower case letter, one upper case letter, one special character, one number and must not contain a word in the English dictionary.

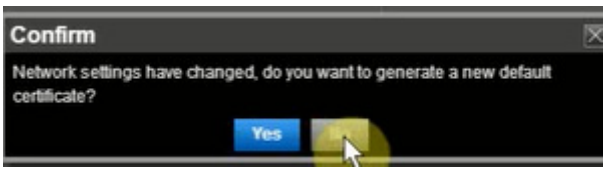
5 Confirm the **New Password** and click **Next**.



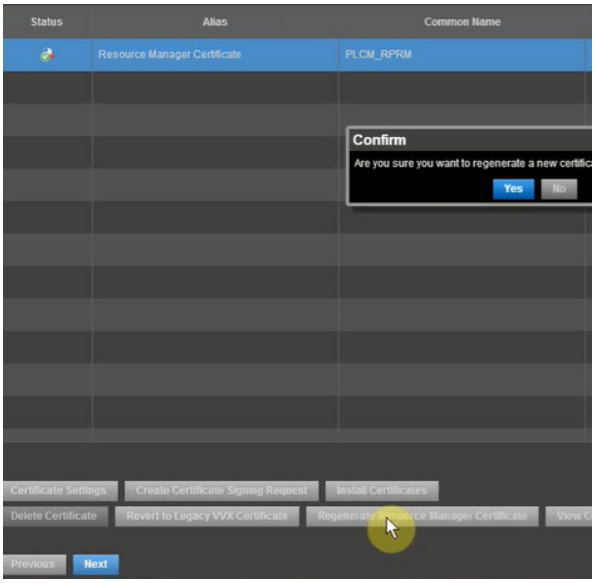
6 Verify and configure the following network settings and click **Next**

- IPv4 Address
- Subnet mask
- IPv4 Default Gateway
- DNS servers

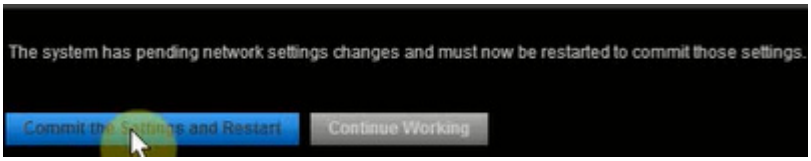
7 Decline the option to generate a new default certificate.



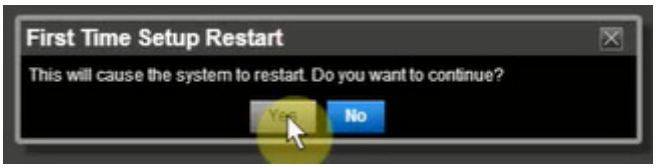
8 The next screen shows the default certificate. Highlight the Certificate and click the **Regenerate RealPresence Resource Manager, Virtual Edition Certificate** button. The **Confirm** dialog will appear next and click **Yes** to confirm.



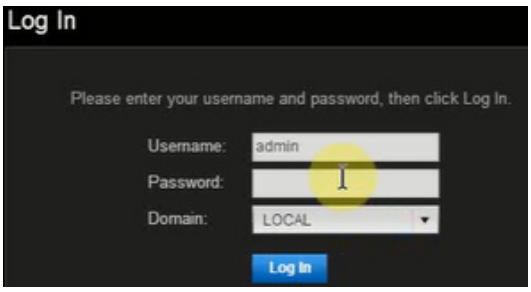
9 Click **Commit the Setting and Restart**.



10 Accept the option **Yes to restart**.



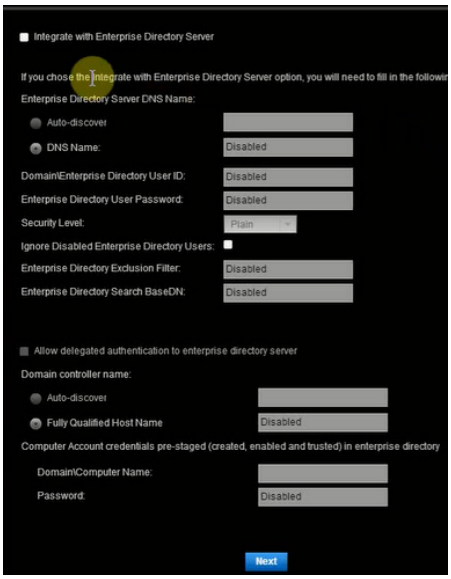
11 Wait for system restart and **log In** to the Web interface using the administrator password created earlier.



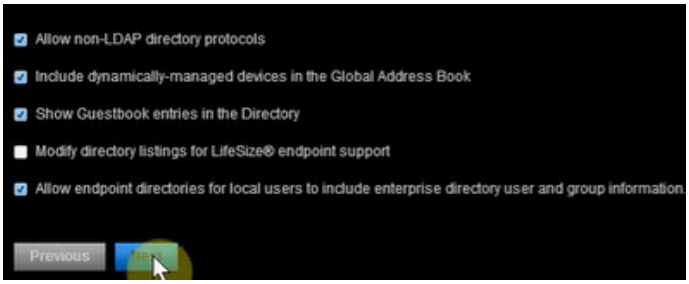
12 The next screen prompts for Enterprise Directory integration. Click **Next.**

Note: RealPresence Resource Manager, Virtual Edition Configuration Instructions

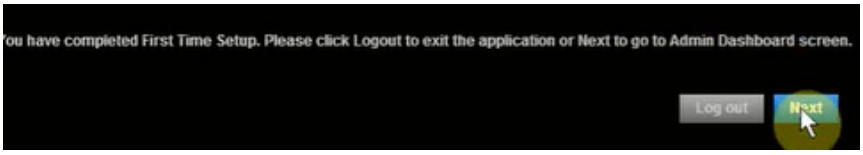
The RealPresence Resource Manager, Virtual Edition Configuration will be completed later in this document after the rest of the virtual RealPresence Platform is installed.



13 Accept the default settings and click **Next**.

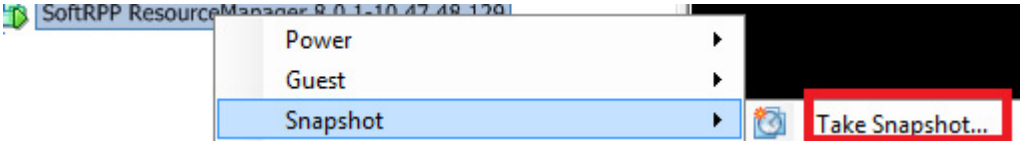


14 Finally, click **Next** to complete first time set up steps.



15 The RealPresence Resource Manager, Virtual Edition Dashboard displays.

16 At this point you recommend making a snapshot of the system. Using the VSphere client, Right click on the RealPresence Resource Manager, Virtual Edition instance from the VM Inventory window and select **Snapshot>Take Snapshot**.



Summary and Next Steps

The RealPresence Resource Manager, Virtual Edition is now installed and the administration interface is accessible from a browser. You'll finish configuring the RealPresence Resource Manager, Virtual Edition along with the rest of the Real Presence Platform in Part II.

The next step is installing RealPresence Collaboration Server, Virtual Edition.

Install Polycom RealPresence Collaboration Server, Virtual Edition in a Virtual Environment

This chapter describes the steps required to perform the initial installation and setup of Polycom RealPresence Collaboration Server, Virtual Edition in a virtual environment. At the end of this procedure, you will have successfully created an instance of the RealPresence Collaboration Server, Virtual Edition system on a virtual machine (VM) and performed the basic configuration of the system.

Overview of the Installation Process

The installation and initial setup of the RealPresence Collaboration Server, Virtual Edition in a virtual environment involves several steps. First you'll create an instance of the RealPresence Collaboration Server, Virtual Edition, then login to the console window to configure a static IP and finally, you'll restart the RealPresence Collaboration Server, Virtual Edition and access the systems Web user interface using the new static IP address.

The installation and initial setup of RealPresence Collaboration Server, Virtual Edition involves the following:

- Install the OVA file to create a RealPresence Collaboration Server, Virtual Edition instance in a new VM
- Configure CPU reservation and affinity
- Configure RAM reservation and allocation
- Login to the Linux shell using the default credentials
- Change the network configuration using the console options
- Restart the RealPresence Collaboration Server, Virtual Edition and access the web administration interface using the new IP

OVA Package

The system software for a virtual environment is packaged as an Open Virtualization Archive (OVA) file. The OVA file contains:

- The RealPresence Collaboration Server, Virtual Edition application
- The CentOS 6.4 operating system
- Information about its virtual machine environment
- The most recent version of VMware Tools
- The User License Agreement (EULA)

Deploying the OVA package creates an instance of the RealPresence Collaboration Server, Virtual Edition on a virtual machine on a VMware® ESXi host server.

Installation Prerequisites

The following items and tasks are required before you begin installation of RealPresence Collaboration Server, Virtual Edition:

- Setup DNS Host A record
- Verify the RealPresence Collaboration Server, Virtual Edition instance will match the minimum CPU requirements detailed in next section
- A valid license. The RealPresence Collaboration Server, Virtual Edition cannot be configured without the license

CPU and Network Requirements

Server hardware requirements for the RealPresence Collaboration Server, Virtual Edition (VM Instance) are as follows:

Table 5: RealPresence Collaboration Server, Virtual Edition Hardware Requirements

Number of CPUs	*Type*	*Speed*	*Physical Cores*	*Virtual Cores*
1 or 2	E5-2690	2.9 GHz	16	32
1 or 2	E5-2620	2.9 GHz	12	24

Table 6: Additional Hardware Requirements

Hard Drive
100 GB
NIC
2 x 1 GB
RAM
16 GB

Documentation Resources

In addition to this guide, the following documents provide details about the RealPresence Collaboration Server, Virtual Edition system. To access these documents, go to support.polycom.com.

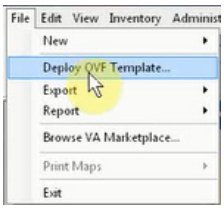
- Polycom RealPresence Collaboration Server, Virtual Edition 8.2 Release Notes
- Polycom RealPresence Collaboration Server, Virtual Edition Getting Started Guide
- Polycom RealPresence Collaboration Server, Virtual Edition Administrator's Guide

VMware support and reference documentation may be found at:
https://www.VMware.com/support/pubs/vsphere-esxi-vcenter-server-pubs.html.

Installation and Setup

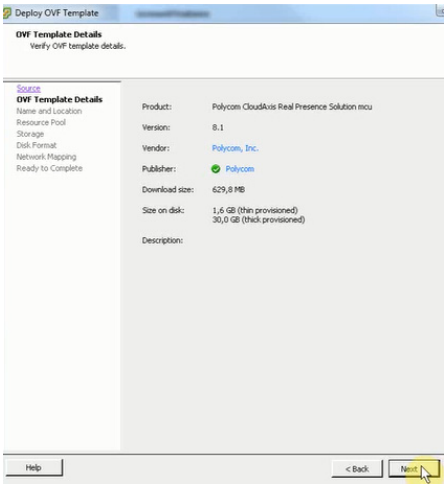
To install the RealPresence Collaboration Server, Virtual Edition OVA file on a virtual host:

1. From the vSphere client, log into the VMware environment that will host the RealPresence Collaboration Server, Virtual Edition
2. Select **File > Deploy OVF Template**.

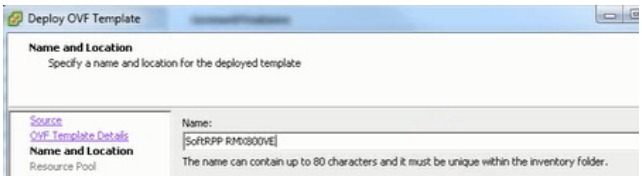


3. Next, the **Deploy OVF Template** wizard will appear and prompt you to select the source location.
4. Browse to or enter the location of the OVA file you downloaded and click **Next**.

5. The OVF Template Details are display. Note the version and the disk size specifications and click **Next**.

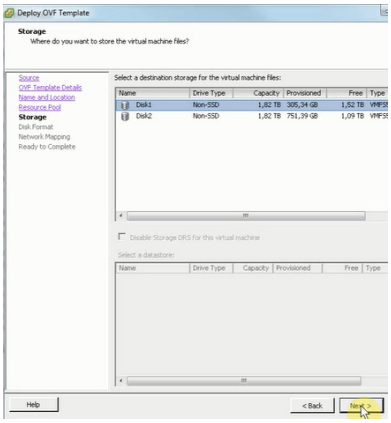


6. Specify an arbitrary name for the virtual machine. For example RealPresence Collaboration Server, Virtual Edition.

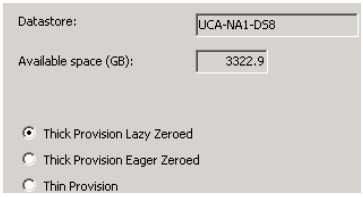


7 Select the **Resource Pool** you are using to host the virtual machine.

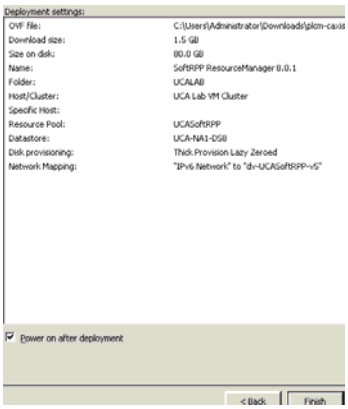
8 Select the destination storage disk that will host the virtual machine and click **Next**.



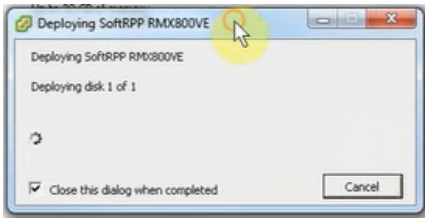
9 The **Disk Format** step appears. Keep the default **Thick Provisioned Lazy Zeroed** and click **Next**.



10 The **Ready to Complete** step appears. Confirm the settings are correct and check the **Power on after Deployment** checkbox, then click **Finish**.



11 The last step in the installation can take some time to complete depending on your network connection back to the VMware environment. Once this process is complete, a RealPresence Collaboration Server, Virtual Edition instance is created and starts up.



Additional Manual Configurations

It is highly recommended that you perform the following manual configurations listed below:

- CPU Reservations
- CPU Affinity
- RAM Allocation
- RAM Reservation

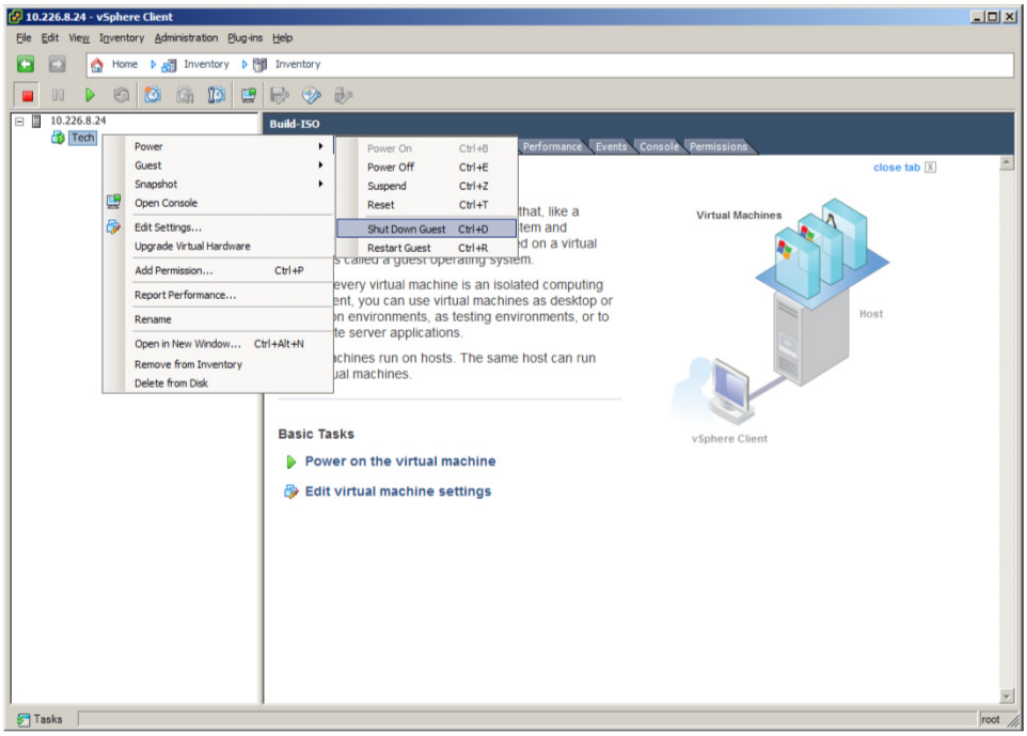
These manual configurations are not mandatory; however, not performing these manual configurations may result in degraded video and audio performance. These configurations may be performed later, but CPU reservations can only be done after shutting down the virtual machine.

Note: Network Interface Card

Depending on the environment, the virtual machine might need a Network Interface Card (NIC) from the host dedicated for the virtual machine.

To shut down the virtual machine:

» Right-click the MCU virtual machine, then click **Power > Shut Down Guest**.



When VM turns blue, the virtual machine has shut down.

CPU Reservations

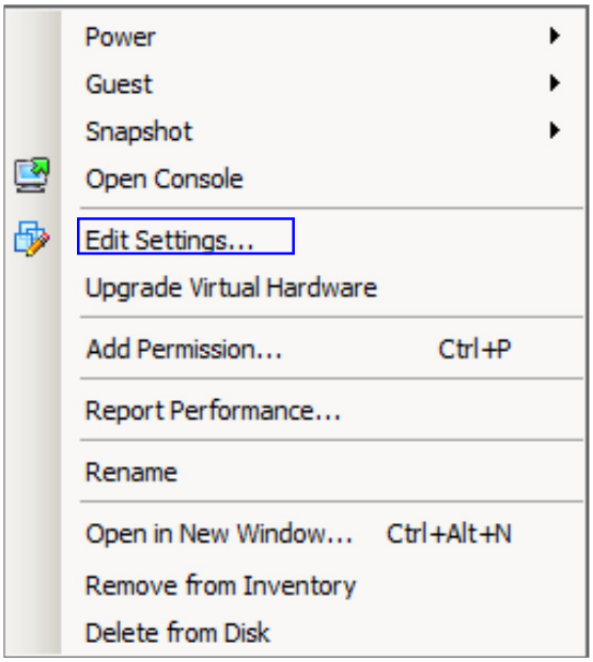
If you are running in a production environment, it is necessary to allocate a number of cores specifically for the virtual machine running the MCU.

Note: Core Allocation

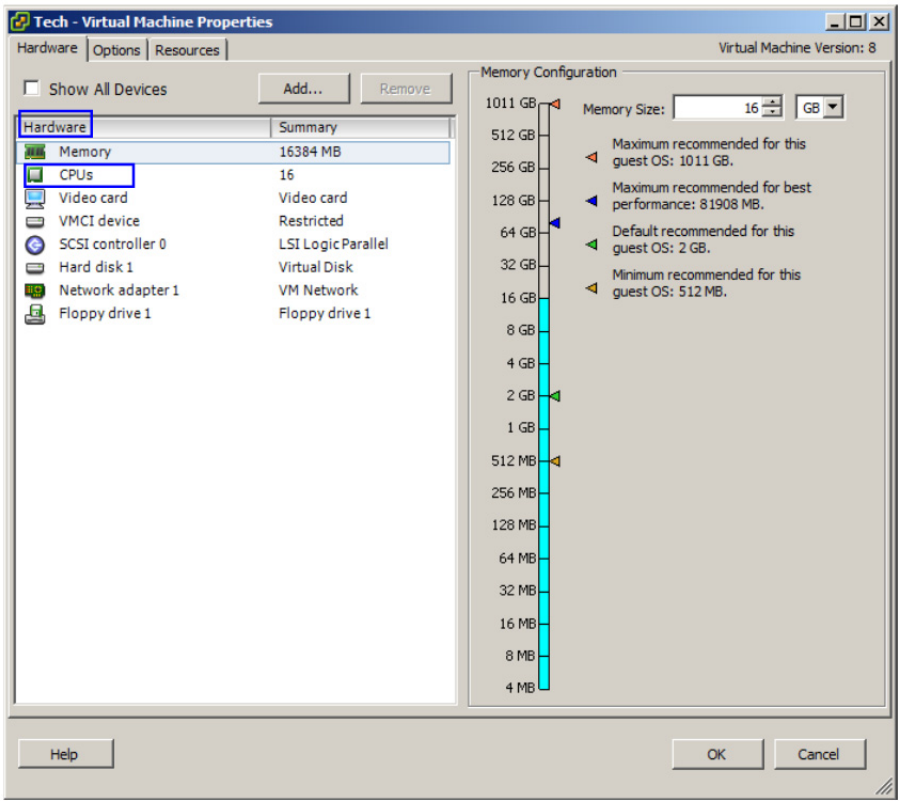
To ensure optimal performance, do not allocate all the cores. At least two cores should remain unallocated, regardless of how many licenses are purchased

To reserve CPUs for the virtual machine:

1 In the **VMware vSphere Client**, right-click on the deployed **MCU** and then click **Edit Settings...**

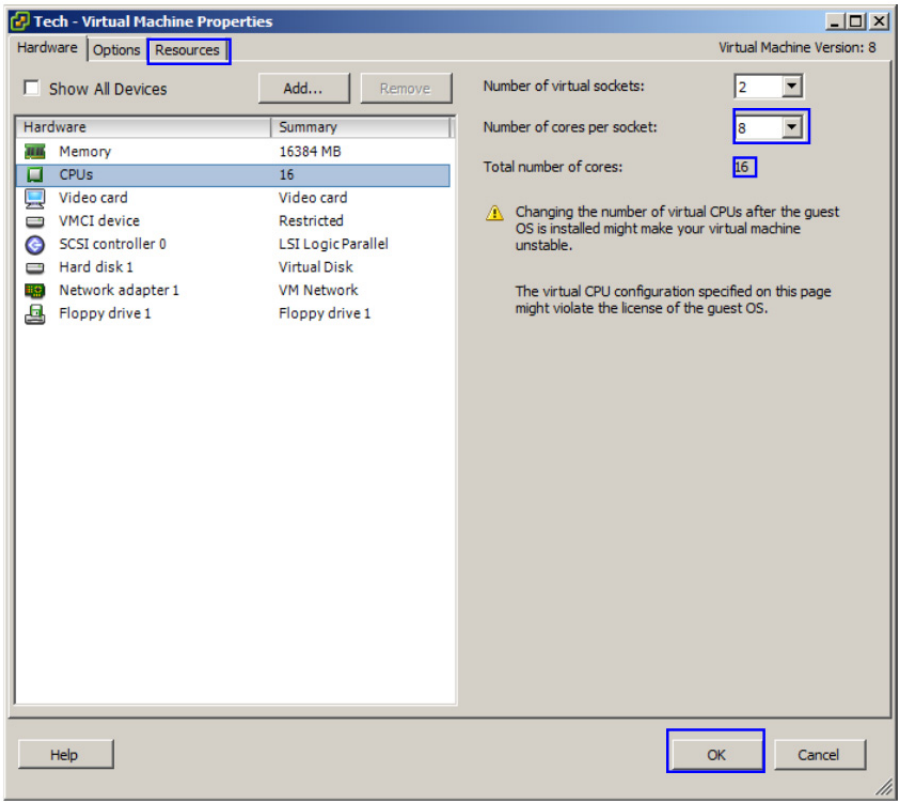


The settings for the **Virtual Machine** display.



2 Under the **Hardware** tab, click **CPUs.**

The CPU configuration displays.



3 Change the **Number of cores per socket** so that the **Total number of cores** reflects the capacity needed for the licenses purchased. Depending on the hardware used and the specific environment, this number may need to be adjusted later.

For example, if the physical machine contains two Intel E5-2690 CPUs and ten ports are purchased, sixteen cores should be assigned. However, regardless of the number of licenses purchased, two cores should remain unassigned. For example, if the physical machine contains two Intel E5-2690 CPUs and twenty licenses are purchased, the Number of cores per socket should be thirty-two.

Note: Number of Cores

These numbers assume that hyperthreading is enabled in the physical server's BIOS. If hyperthreading is disabled, the above numbers should be divided by approximately 2.

For more information on hardware requirements, see the RealPresence Collaboration Server, Virtual Edition 8.2 Release Notes located at support.polycom.com.

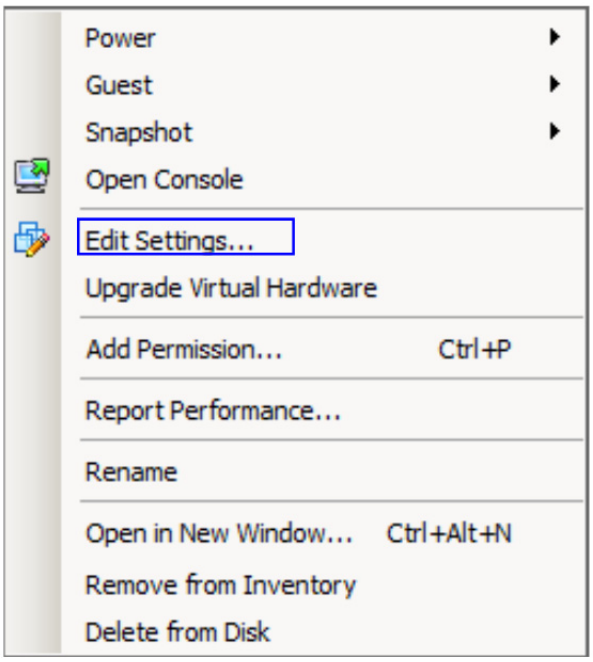
CPU Affinity

Use the following guidelines to reserve the recommended specific CPU cores to the virtual machine:

- CPU core 0 should not be allocated. Host operating system performance may be affected if this core is assigned to the virtual machine.
- At least one other core should not be allocated, regardless of how many licenses are purchased.
- When possible, it is advised to allocate cores on one CPU die.
- If other virtual machines are run on the server, the MCU does not require that the other virtual machines be allocated CPUs.

To set CPU affinity:

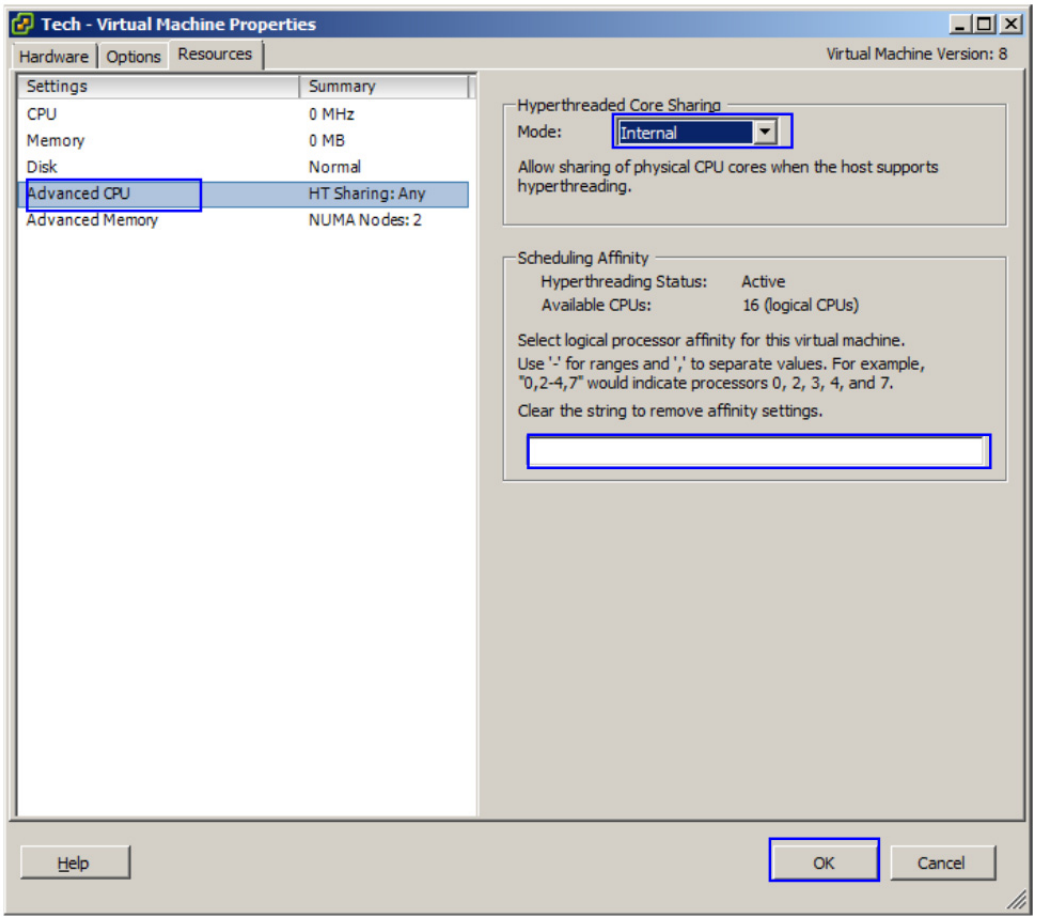
1 In the VMware vSphere client, right-click on the deployed MCU and then click **Edit Settings...**.



The settings for the Virtual Machine display.

2 Click the **Resources** tab.

The Resources tab displays.



3 Change the Hypertreaded Core Share mode to **Internal**.

4 Select the specific CPU cores to be used. For example, if assigning 8 cores, enter, **8-15**.

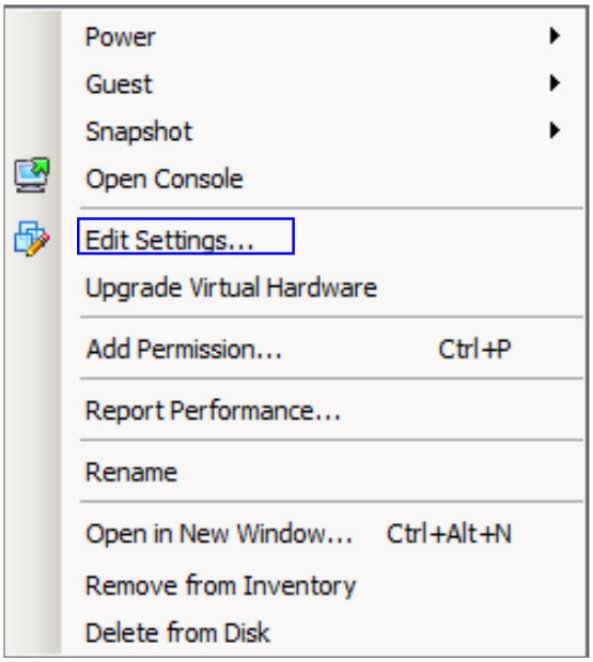
5 Click **OK**.

RAM Allocation

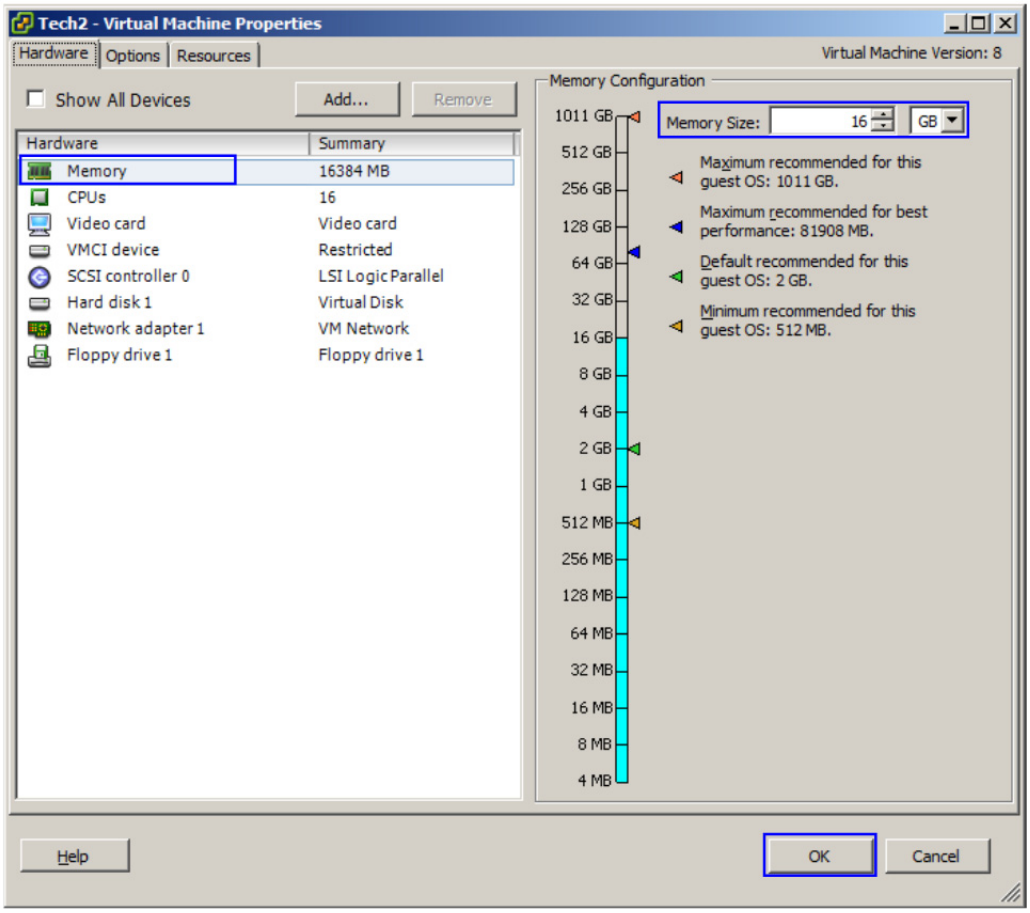
It is highly recommended to allocate RAM for the virtual machine. Regardless of the number of licenses purchased, a minimum of 16 GB is needed for the virtual machine.

To allocate RAM for the virtual machine:

1 In the VMware vSphere client, right-click on the deployed MCU and then click **Edit Settings...**.



2 The settings for the Virtual Machine display.



3 In Memory Size, allocate at least **16 GB**.

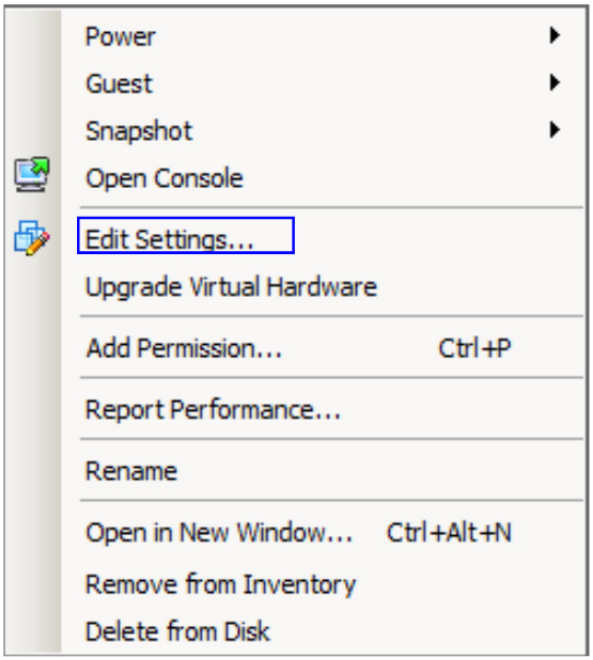
4 Click **OK**.

RAM Reservations

It is highly recommended to reserve RAM for the Virtual Machine. Regardless of the number of licenses purchased, a minimum of 16 GB is needed for the Virtual Machine.

To reserve RAM for the virtual machine:

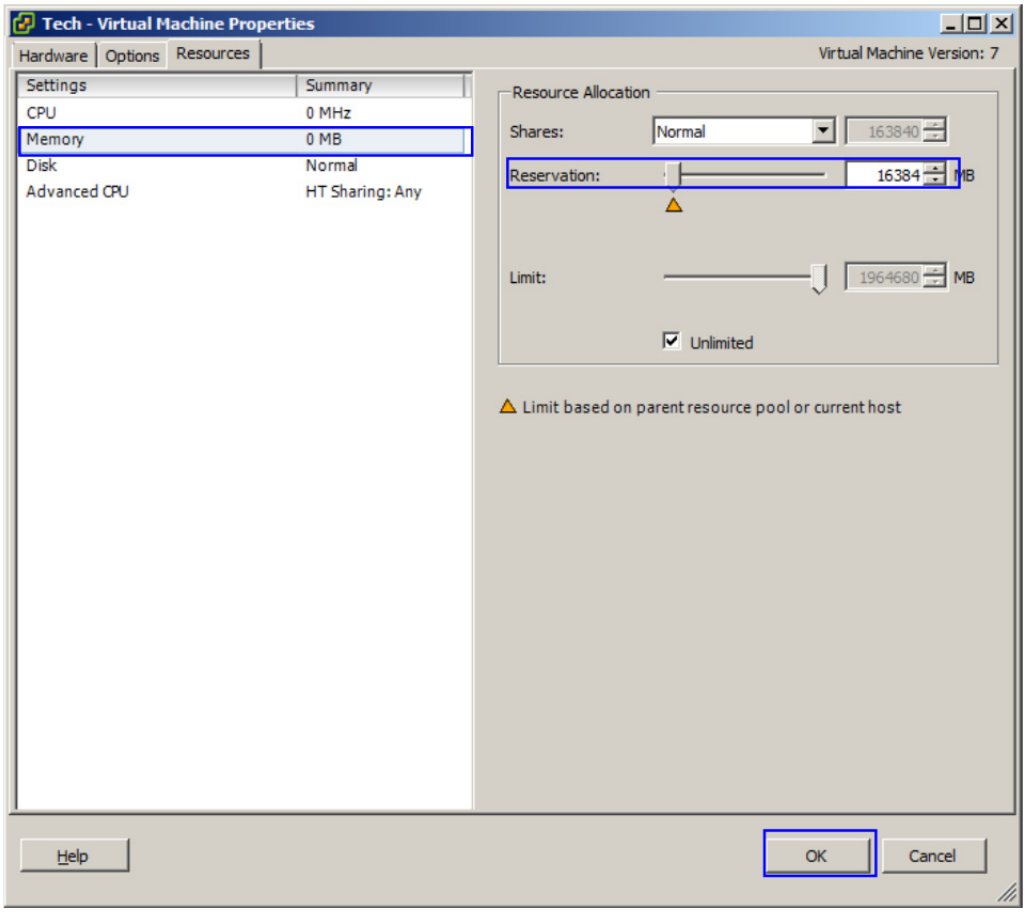
1 In the VMware vSphere client, right-click on the deployed MCU and then click **Edit Settings...**.



The settings for the Virtual Machine display.

2 Click the **Resources** tab.

The Resources tab displays.



3 Click **Memory**.

4 Adjust the Reservation slider so that at least **16 GB** is allocated.

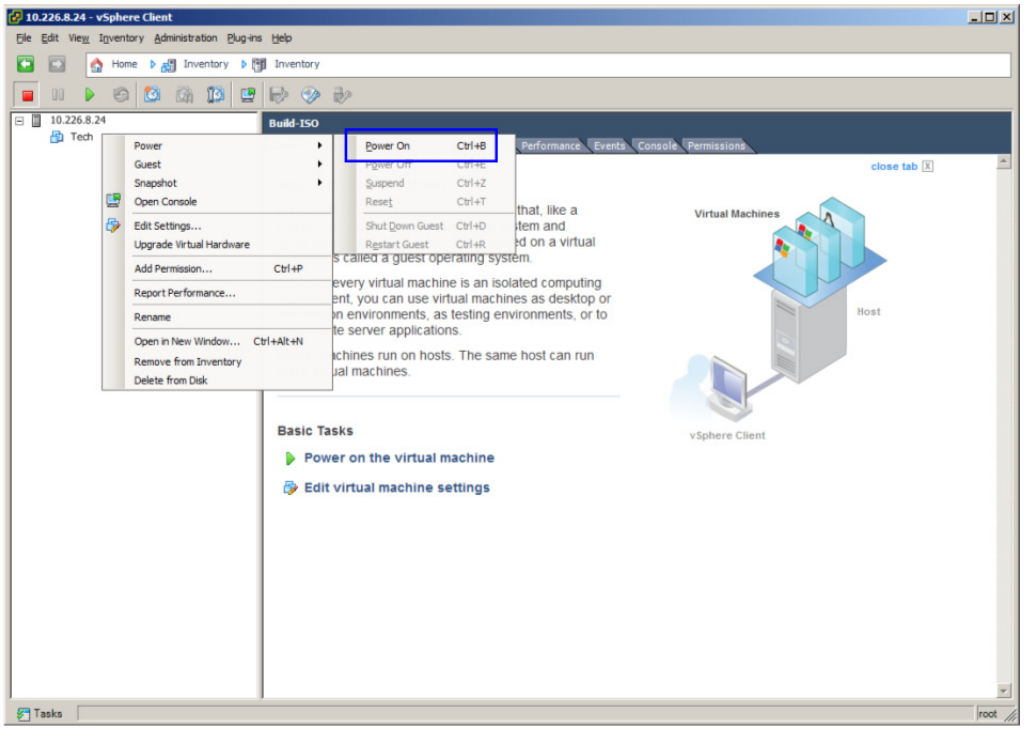
5 Click **OK**.

Restarting the Virtual Machine

After changes are made, it will be necessary to power the virtual machine back on.

To power on the virtual machine:

1 In the VMware vSphere client, right-click on the deployed **MCU** and then click **Power > Power On.**



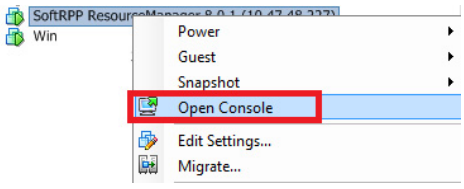
2 Wait five minutes until the MCU is powered on.

Configure a Static IP Address

Once the installation is complete, you can use the VSphere client to login to the Console window of the RealPresence Collaboration Server, Virtual Edition to change the password and configure the static IP address. If DHCP service is available on the network, the system will use the DHCP provided IP. For the purpose of this document, you'll assume DHCP is not available and so the directions will include configuring the static IP using the console window utility. In either case, you should use the utility to set a static IP address

To use the network utility to assign an IP address:

1 In the vSphere client, select the RealPresence Collaboration Server, Virtual Edition you installed and click **Launch Virtual Machine Console**.



2 Click the mouse in the console window and press **Enter** if necessary to see the login prompt.

3 Once the login prompt appears, log in with user ID **polycom** and password **polycom**.

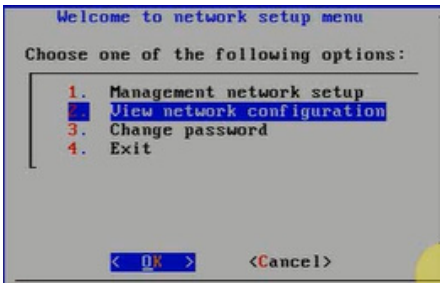
A restricted shell running the RealPresence Collaboration Server, Virtual Edition network setup utility appears that enables you to assign an IP address.

4 Follow the prompts to configure and assign the IP address specified on the First-Time Setup Worksheet

User Tip: Navigating the Utility

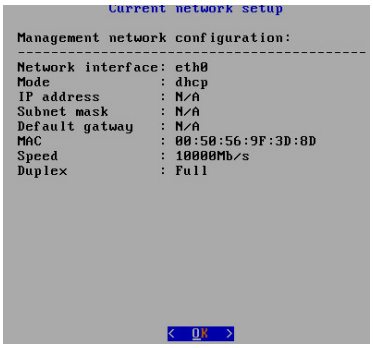
To navigate the utility, use up and down arrows to change fields and use the Tab key to change menu options. Press Enter to select an option.

5 In the Welcome to network setup menu, verify the default network configuration by selecting **View network configuration**.



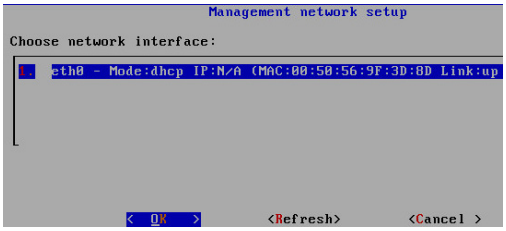
6 If DHCP service is available, the RealPresence Collaboration Server, Virtual Edition will use the DHCP provided IP. The following screenshot was from a system installed on a network without DHCP and has no default IP address.

In either case, select **OK** and you'll configure the static IP address in the next steps.

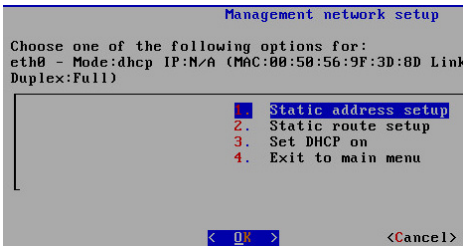


7 Set the new IP address by selecting **Option 1, Management network setup**.

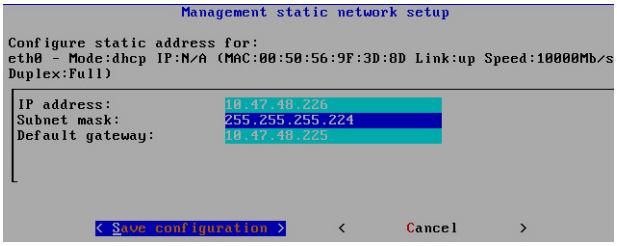
8 Select **OK** to accept the default NIC card



9 In the Management network setup dialog box, select **Option1: Static address setup**.



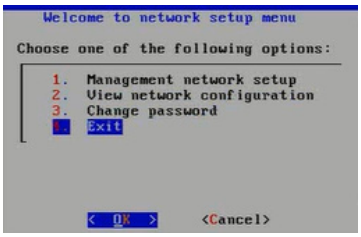
10 Next, enter the **IP address**, **Subnet mask** and **Default gateway** and select **Save Configuration**.



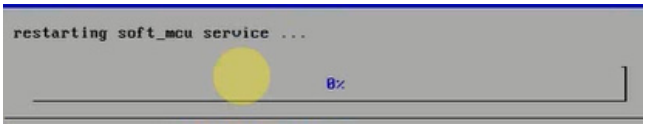
11 Select **OK** to restart the network service.

12 Select **OK** to confirm the current network setup.

13 Select **Exit** to finish with the Network setup menu dialog.



14 Finally, select **Yes** to restart the system so the changes take effect.



The system reboots.

15 Press **CTRL + ALT** to release the cursor from the console. Then close the console window as further configuration will be done through the browser interface.

Connect to the RealPresence Collaboration Server, Virtual Edition System

In this step, you'll confirm that static IP address was configured correctly and verify that you can login to the Web interface. Each component of the Polycom RealPresence Platform, Virtual Edition provides a Web interface for administering the system and making configuration changes.

To connect to the RealPresence Collaboration Server, Virtual Edition Web interface:

- Point your browser to the IP address appended by the port 8080 (if a security certificate warning appears, ignore it).

http://<ipaddress>:8080

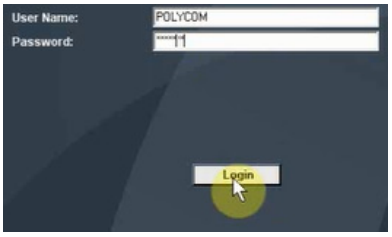
The system's login page appears.

If the **Browser environment error. Please close all the browser sessions** error appears, close all the browser sessions, and reconnect to the MCU. If the error message appears again, either run the automatic troubleshooter utility or manually preform the suggested troubleshooting procedures.

For more details, see Appendix E, Internet Explorer 8 Configuration.

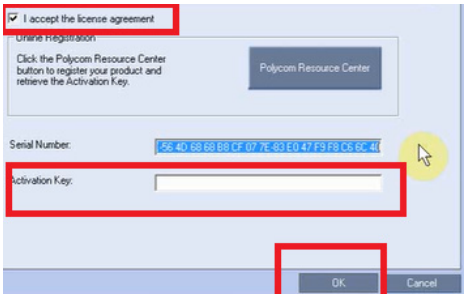
To connect to the RealPresence Collaboration Server, Virtual Edition without using a Web browser:

1. Click the **Install RMX Manager** link to download and install the connection application.
2. Log in with default user ID **POLYCOM** and password **POLYCOM**.



Because the system has not previously been configured, the Licensing page of the setup wizard appears.

3. Accept the license agreement.
4. Provide a valid activation key.



Summary and Next Steps

RealPresence Collaboration Server, Virtual Edition is now installed and the administration interface is accessible from a browser. You'll finish configuring the RealPresence Collaboration Server, Virtual Edition along with the rest of the RealPresence Platform, Virtual Edition in Part II.

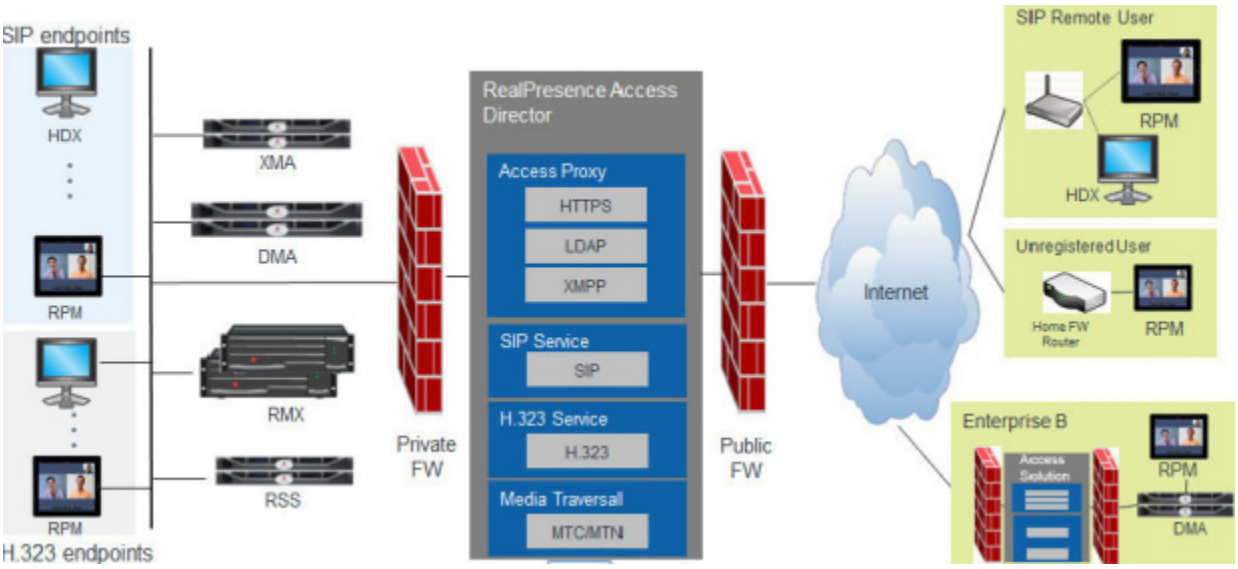
The next step covers installation of RealPresence Access Director, Virtual Edition.

Install Polycom RealPresence Access Director, Virtual Edition in a Virtual Environment

This chapter describes the steps required to perform the initial installation and setup of a Polycom® RealPresence Access Director, Virtual Edition in a virtual environment. At the end of this procedure, you will have successfully created an instance of the RealPresence Access Director, Virtual Edition on a virtual machine (VM) and be ready to finish configuring the system.

As the following diagram depicts, The RealPresence Access Director, Virtual Edition is deployed in the network DMZ and handles video traffic through the firewall.

Figure 2: RealPresence Access Director, Virtual Edition Overview



You strongly recommend consulting the RealPresence Access Director, Virtual Edition Getting Started Guide to understand deployment considerations. During this installation procedure, you will configure the RealPresence Access Director, Virtual Edition in the DMZ with one IP Address.

Overview of the Installation Process

The installation and initial setup of the RealPresence Access Director, Virtual Edition in a virtual environment involves several steps. First you'll create an instance of the RealPresence Access Director, Virtual Edition, then login to the console window to configure a static IP and finally, you'll restart the RealPresence Access Director, Virtual Edition and access the system's Web user interface using the new static IP address.

The installation and initial setup of RealPresence Access Director, Virtual Edition involves the following:

- Install the OVA file to create a RealPresence Access Director, Virtual Edition instance in a new VM.
- Login to the Linux shell using the default credentials
- Change the network configuration using the console options
- Restart the RealPresence Access Director, Virtual Edition and access the web administration interface using the new IP address

OVA Package

The RealPresence Access Director, Virtual Edition software for a virtual environment is packaged as an OpenVirtualization Archive (OVA) file.

The OVA file contains:

- The RealPresence Access Director, Virtual Edition application
- The CentOS 6.4 operating system
- Information about its virtual machine environment
- The most recent version of VMware Tools
- The RealPresence Access Director, Virtual Edition User License Agreement (EULA)

Deploying the RealPresence Access Director, Virtual Edition OVA package creates an instance of the RealPresence Access Director, Virtual Edition on a virtual machine on a VMware® ESXi host server.

Installation Prerequisites

The following items and tasks are required before you begin installation of RealPresence DMA, Virtual Edition:

- Complete the RealPresence Access Director, Virtual Edition First-Time Setup Worksheet (see Appendix F)

Capacity Planning Guidance

The RealPresence Access Director, Virtual Edition system supports three hardware profiles when installed in a virtual environment. The following table describes the data center server hardware profile for each virtual machine (VM) with an installed instance of the RealPresence Access Director, Virtual Edition system. The table also provides throughput and performance details.

Table 7: Server Hardware Profiles

Component	*Recommended Profile*
CPU	4-physical-core Nehalem, 2.5 GHz or more CPU clock (e.g., Xeon E5506 [minimum requirement])

Component	*Recommended Profile*
Memory	8 GB
Disk	32 GB
Throughput	600 MB
Performance	900 calls

Note: Hardware Profiles

Different hardware profiles may not be supported by Polycom and could affect your system performance..

Documentation Resources

In addition to this guide, the following documents provide details about the RealPresence Access Director, Virtual Edition system. To access these documents, go to support.polycom.com.

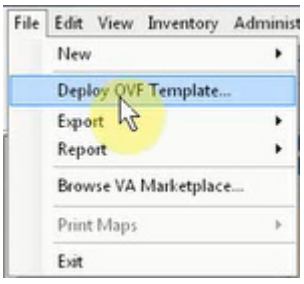
- Polycom RealPresence Access Director, Virtual Edition 3.0 Release Notes
- Polycom RealPresence Access Director, Virtual Edition Getting Started Guide

VMware support and reference documentation may be found at:
https://www.VMware.com/support/pubs/vsphere-esxi-vcenter-server-pubs.html.

Installation and Setup

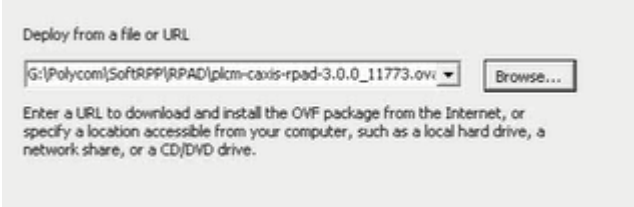
To install the RealPresence Access Director, Virtual Edition OVA file on a virtual host:

1. From the vSphere client, log into the vCenter Server or one of the ESXi hosts.
2. Select **File > Deploy OVF Template**.

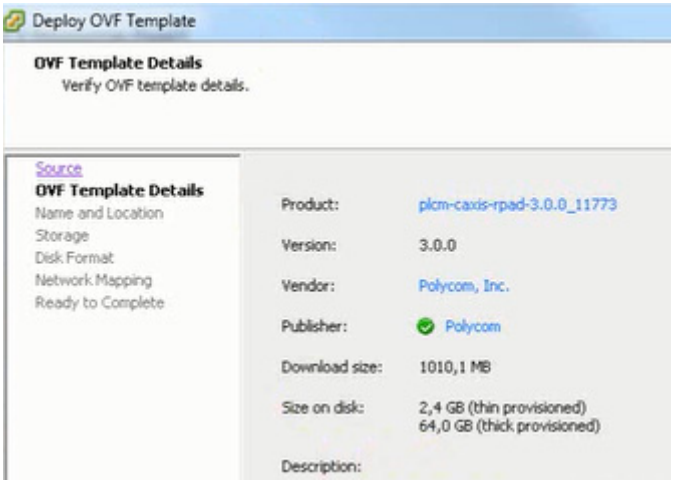


The Deploy OVF Template wizard appears and prompts you to select the source location.

3. Browse to or enter the location of the OVA file you downloaded and click Next.

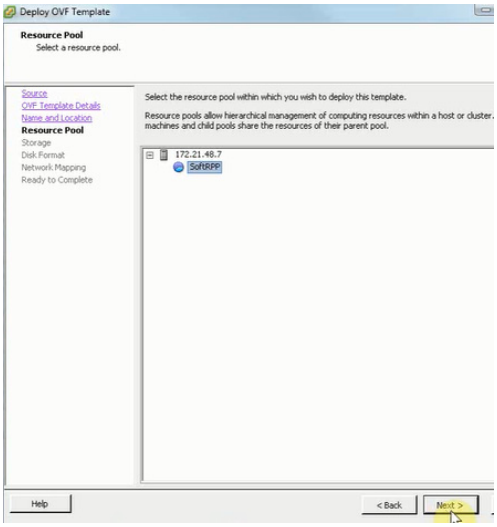


4 The OVF Template Details displays. Note the version and the disk size specifications and click **Next**.

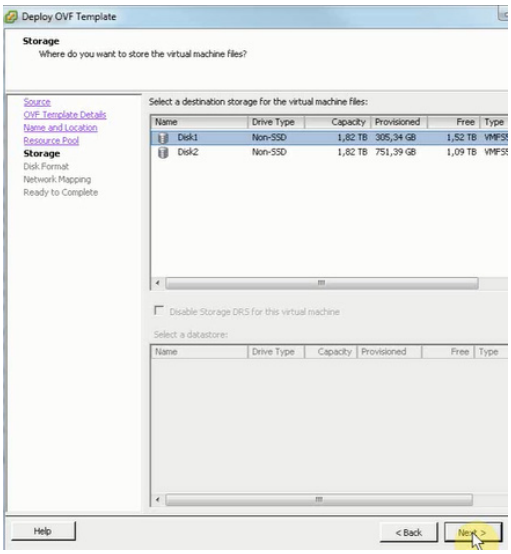


5 Specify an arbitrary name for the virtual machine. For example, RealPresence Access Director, Virtual Edition.

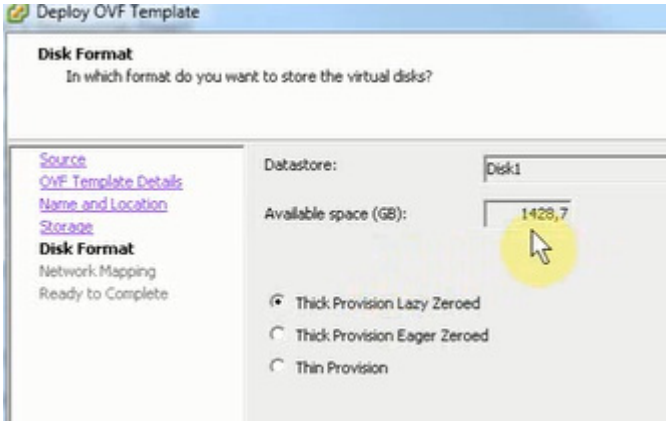
6 Select the **Resource Pool** you are using to host the virtual machine.



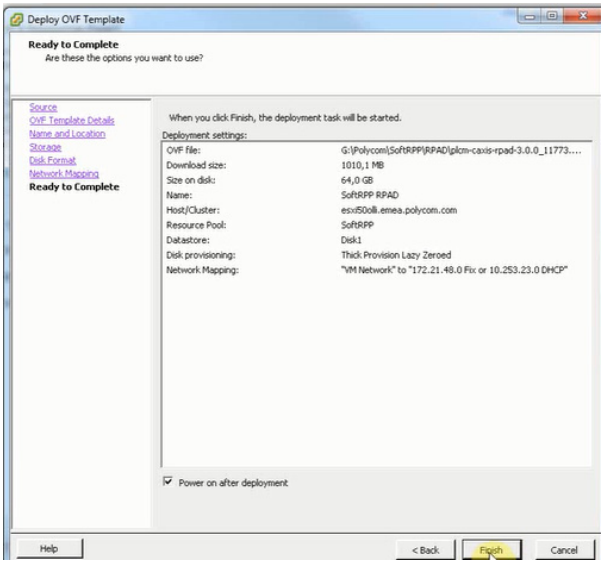
7 Select the destination storage disk that will host the virtual machine and click **Next**.



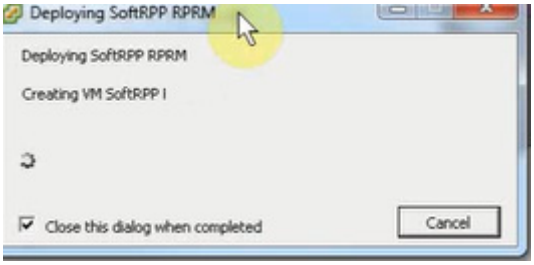
8 The **Disk Format** step appears. Keep the default **Thick Provisioned Lazy Zeroe**d and click **Next**.



9 The **Ready to Complete** step appears. Confirm the settings are correct and check the **Power on after Deployment** checkbox, then click **Finish**.



10 The last step in the installation can take some time to complete depending on your network connection back to the VMware environment. Once this process is complete, an RealPresence Access Director, Virtual Edition instance is created and starts up.



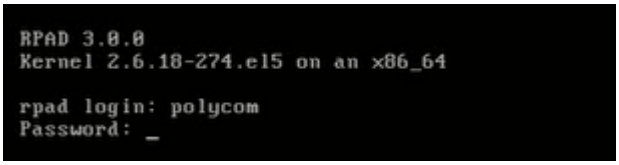
Configure a Static IP Address

To assign an IP address to the system manually:

1 In the VSphere client, select the RealPresence DMA, Virtual Edition you installed and click **Launch Virtual Machine Console**.

2 Click the mouse in the console window and press **Enter** if necessary to see the login prompt.

3 Once the login prompt appears, log in with user ID **polycom** and password **polycom**.

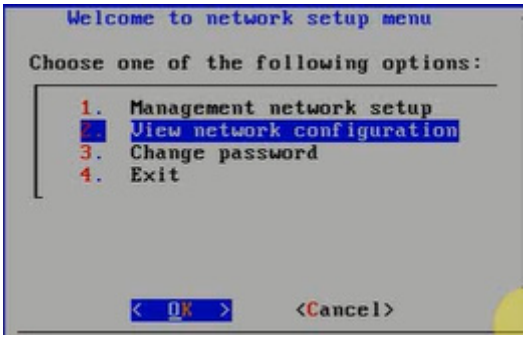


A restricted shell running the network setup utility appears that enables you to assign an IP address. Follow the prompts to configure and assign the IP address specified on the First-Time Setup Worksheet.

User Tip: Navigating the Utility

To navigate the utility, use up and down arrows to change fields and use the Tab key to change menu options. Press Enter to select an option.

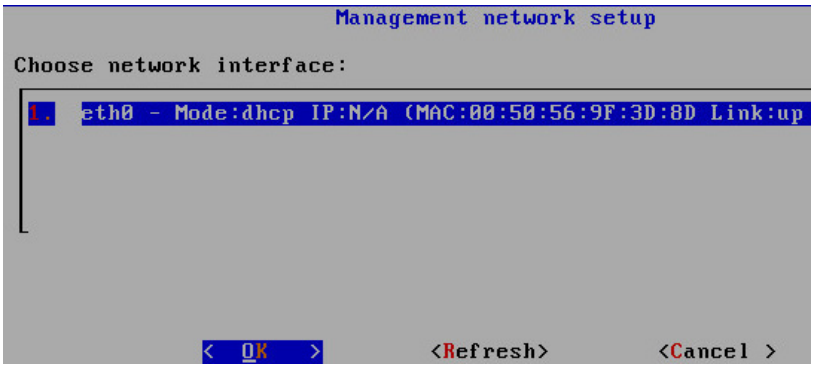
4 Check the default network configuration, by selecting **View network configuration**.



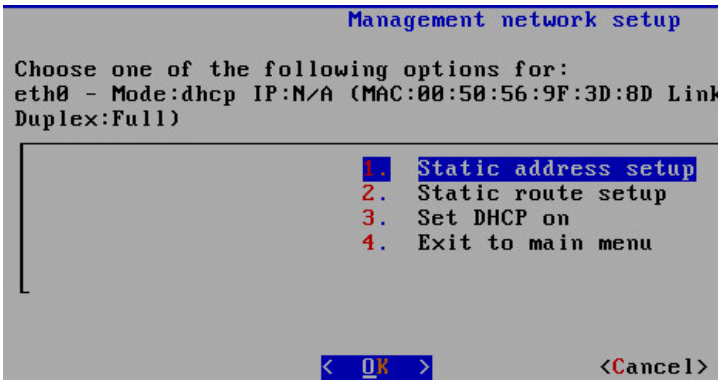
5 If DHCP service is available, the RealPresence DMA, Virtual Edition will use the DHCP provided IP. The following screenshot was from a system installed on a network without DHCP and has no default IP address. In either case, select **OK** and you'll configure the static IP address in the next steps.

6 Set the new IP address by selecting **Option 1**, **Management network setup**.

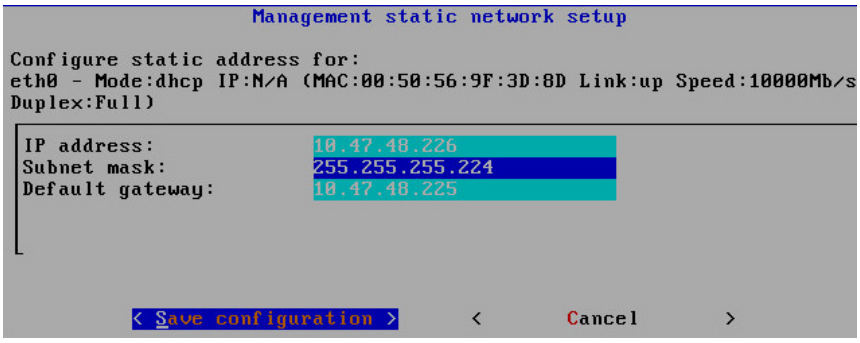
7 Select **OK** to accept the default NIC card.



8 In the **Management network setup** dialog box, select **Option1: Static address setup**.

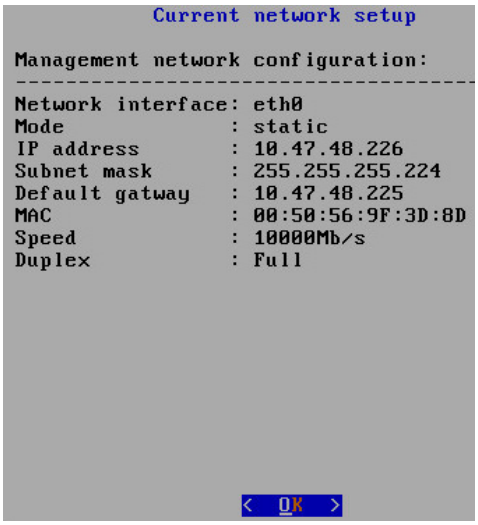


9 Enter the **IP address**, **Subnet mask** and **Default gateway** and select **Save Configuration**.

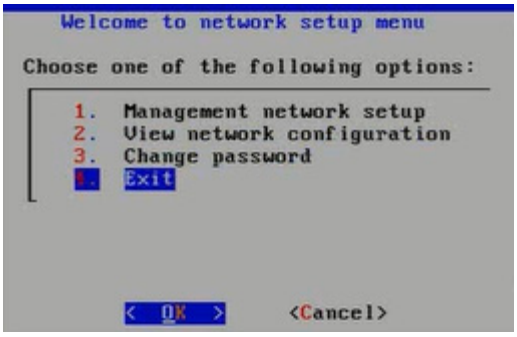


10 Select **OK** to restart the network service.

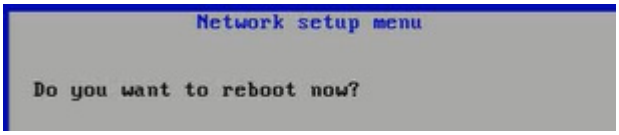
11 Select **OK** to confirm the current network setup.



12 Select **Exit** to finish with the Network setup menu dialog.



13 Select **Yes** to restart the system.



The system reboots.

14 Press **CTRL + ALT** to release the cursor from the console. Then close the console window as further configuration will be done through the browser.

Connect to the RealPresence Access Director, Virtual Edition's Web Interface

In this step, you'll confirm that static IP address was configured correctly and verify that you can login to the web interface. Each component of the Polycom RealPresence Platform, Virtual Edition provides a Web interface for administering the system and making configuration changes.

To connect to the RealPresence Access Director, Virtual Edition Web interface:

1 Point your browser to the IP address assigned (disregard any security certificate warnings).

https://<staticipaddress>:8443/edge

The system's login page appears.

2 Log in with default user ID **admin** and password **Polycom123**.

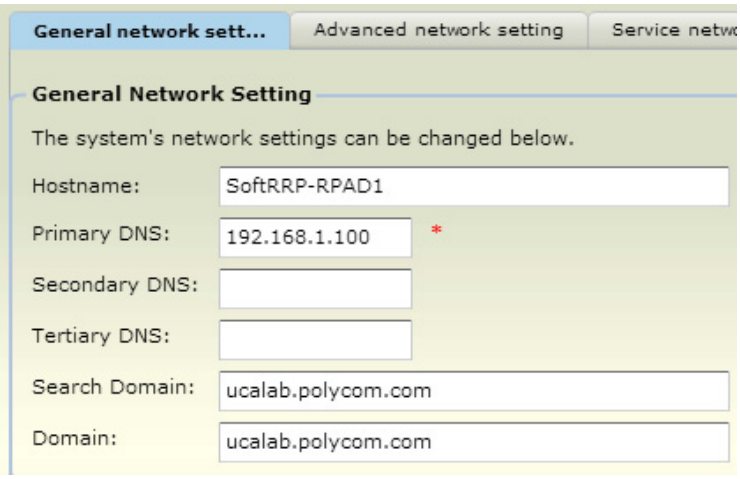
Note: Login Errors

During any login attempt, if you enter the wrong credentials three times in a row, you must wait one hour before trying to log in again.

3 Go to **Admin > Network Settings**.

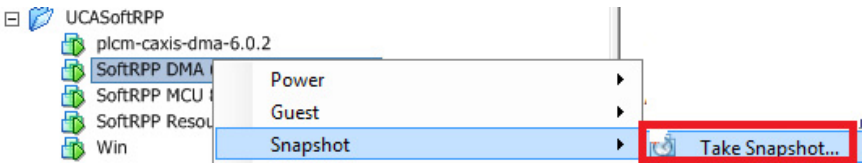
4 In the **General network setting** tab, complete the fields below:

- Hostname
- Primary DNS
- Search Domain
- Domain



5 Click **OK** and this will force a system restart.

6 At this point you should make a snapshot of the system. Using the VSphere client, right click on the RealPresence DMA, Virtual Edition instance from the VM Inventory window and select **Snapshot>Take Snapshot**.



Summary and Next Steps

RealPresence Access Director, Virtual Edition is now installed and the administration interface is accessible from a browser. You'll finish configuring the RealPresence Access Director, Virtual Edition along with the rest of the Real Presence Platform, Virtual Edition in Part II.

Part II: RealPresence Platform, Virtual Edition Solution Configuration

This part will walk you through the steps to configure a Polycom RealPresence Platform, Virtual Edition. These steps provide one methodology to use in configuring the four main components of the RealPresence Platform, Virtual Edition. This documentation is a supplement to and not a replacement for the existing product documentation.

Part II contains the following chapters:

Get Started with RealPresence Platform, Virtual Edition Solution

RealPresence DMA, Virtual Edition Configuration

RealPresence Resource Manager, Virtual Edition Configuration

RealPresence Access Director, Virtual Edition Configuration

Advanced Features

Get Started with RealPresence Platform, Virtual Edition Solution

The Polycom RealPresence Platform, Virtual Edition infrastructure available at introduction will consist of RealPresence DMA, Virtual Edition for signaling, RealPresence Resource Manager, Virtual Edition for provisioning, RealPresence Collaboration Server, Virtual Edition, and RealPresence Access Director, Virtual Edition for firewall traversal.

Polycom RealPresence Platform, Virtual Edition contains the following components:

- **RealPresence DMA, Virtual Edition** is designed to manage and distribute calls across collaboration networks with the scalability, redundancy, and resiliency – up to 25,000 concurrent sessions and 75,000 device registrations on up to 64 video servers.
- **RealPresence Resource Manager, Virtual Edition provides video resource management** to centrally manage, monitor, and deliver video collaboration across an organization.
- **RealPresence Collaboration Server, Virtual Edition** provides multipoint video, voice, and content collaboration that connects multiple protocols, enabling people and content to connect at the highest quality.
- **RealPresence Access Director, Virtual Edition provides universal access and security** that easily and securely connects video participants inside and outside the organization while optimizing for the best collaboration experience.

This document provides a step-by-step guide to configure RealPresence Platform, Virtual Edition. This documentation is a supplement to and not a replacement for the existing product documentation.

The RealPresence Platform, Virtual Edition architecture can be broken into three main areas:

- Endpoints. These endpoints can consist of any Unified Communication (UC) device, including phones, video units, tablets, etc.
- The core infrastructure. This is the audio and video bridging and switching resources, as well as the management and call signaling.
- Network services and UC ecosystems components including, but not limited to call control devices like TDM and IP PBX’s, IM/Presence engines, directory services, calendaring services, web collaboration applications, and other types of business and social applications that benefit from a connection with UC.

RealPresence DMA, Virtual Edition Configuration

The first step in setting up the RealPresence Platform, Virtual Edition in a virtual environment is configuring the RealPresence DMA, Virtual Edition. The RealPresence DMA, Virtual Edition is a key element of the Polycom RealPresence Platform and provides redundancy, reliability, and efficiency of video services by managinga pool of MCUs and distributing multipoint video calls across conference platforms. When combined with the RealPresence Collaboration Server, Virtual Edition, the RealPresence DMA, Virtual Edition provides unsurpassed conference quality and scale by using intelligent routing algorithms.

Resource Scheduling vs. Ad-hoc Usage vs. Calendaring

How you start audio/video conference calls is as much a function of an organizations culture, and workflows as it is anything else.

Scheduled Calls

Many educational organizations continue to “schedule” video calls to coincide with classes, and many enterprise organizations also manually schedule calls as part of the overall process of having a “meeting”. In this case, the conference is pre-defined, and the conference bridge calls each of the participating locations at the time of the conference. This represents a more traditional view of conferencing (audio or video), and works well with a small number of fixed locations each with a large number of participants. In this type of conference, the participants are required to be at the appropriate location on a schedule. The technical benefits of this model are that all conferences are treated with a “high-level” of service, and any resources required are dedicated to the scheduled conference. However, the drawback to this model is reduced flexibility for the participants, higher cost per conference and lack of scale.

Ad-hoc Calls

As communication has become more pervasive and as the workforce has become more mobile, the ad-hoc conferencing methodology is more flexible and simpler for people to understand. The flexibility comes from the endpoint devices use to connect and the simplicity in the way that you create a video call.

Several years ago in the audio conferencing industry, the model of “reservation-less conferencing” became prevalent, this occurred as audio conferencing ports became plentiful. Today it would be unheard of to ask someone in IT to schedule an audio conference, and this same dynamic is happening with video conferencing.

Polycom provides an industry leading ad-hoc conferencing model through the use of Virtual Meeting Rooms (VMR). VMRs and designed to allow for communication from many different types of systems including PSTN, audio, ISDN, H.323, SIP, Cisco TIP, Microsoft RTV, and others to converge on the conference bridge. Each of these communications types requires a different way to “dial” the call, and the

VMR concept allows each participant to understand their favorite methods of dialing, without the organizer knowing in advance where all participants will be.

This Solution Guide will cover how to automatically create a VMR for every employee in the organization. VMRs have the ability to transform the way a business operates but has an added cost of requiring an infrastructure to support the “peak” number of calls, just as it does in the audio industry, but typically the return on investment includes faster ‘time to market’, better decision making, lower travel costs, better employee retention, and many more.

Calendared Calls

While the ad-hoc conferencing model provides many benefits, it doesn’t fit every circumstance. Calendaring is a hybrid of the two models and allows for the flexibility and simplicity of an ad-hoc model while still providing the benefits of scheduling a call with multiple participants.

For example, people can send out a Microsoft Outlook or IBM Notes Calendar invite and include their VMR number as the location along with the ISDN/Audio dial in number and a SIP “call to:” hyperlink for any Microsoft Lync or IBM Sametime users. When attendees open the meeting invite, the can simply dial the VMR number from their endpoint or click the hyperlink from their UC client.

Set up RealPresence DMA, Virtual Edition

The first step in setting up the Soft RealPresence Platform, Virtual Edition is configuring the RealPresence DMA, Virtual Edition.

To configure the RealPresence DMA, Virtual Edition, you must use the following process:

- Network configuration
- NTP configuration
- Add MCU to RealPresence DMA, Virtual Edition
- Add second MCU to RealPresence DMA, Virtual Edition
- Create MCU Pool
- Add MCUs to Pool
- Assign MCU Pool order
- Configure Conference Settings
- Configure Conference Templates
- Active Directory Integration
- Assign Conference Template to Virtual Meeting Rooms
- Testing H.323 and SIP Video Calls to VMRs
- RealPresence Resource Manager, Virtual Edition Integration
- Add Roles to RealPresence DMA, Virtual Edition Administrative User

Configure RealPresence DMA, Virtual Edition Networking and Network Time Protocol (NTP) configuration

The static IP for the RealPresence DMA, Virtual Edition was created during the installation process, but now you need to configure some additional network information including the DNS server and Domain information along with providing an NTP server so the Soft RealPresence Platform, Virtual Edition Platform is in sync.

To configure additional network information:

1. Point your browser to the static IP address assigned manually during the installation

   https://<ipaddress>:8443/

   The Polycom RealPresence DMA, Virtual Edition System's login page appears.

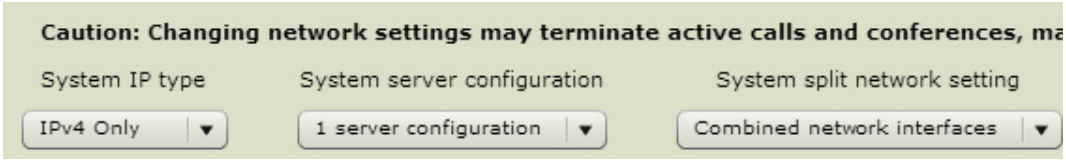
2. Log in with default User ID **admin** and Password **admin**.

   The Polycom RealPresence DMA, Virtual Edition system's management interface appears, displaying the **Dashboard**.

Note: The RealPresence DMA, Virtual Edition Dashboard

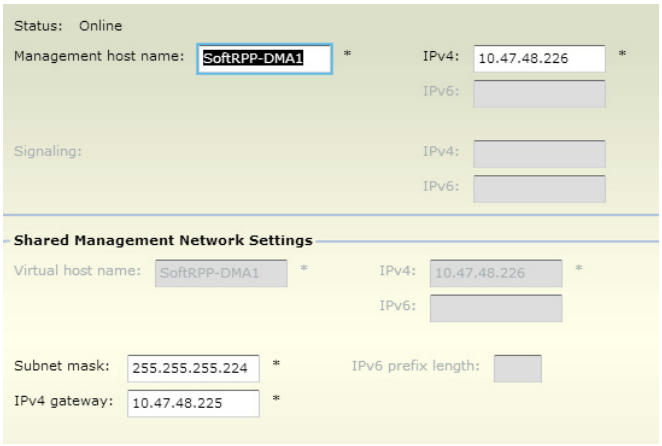
The **Dashboard** is a group of panes can be configured to show the status of any server or process that you want more detail. Each pane of the dashboard provides an alert icon to indicate an abnormal condition, problem, or just something you should be aware of. Hover over the alert icon to see details.

3. Navigate to Admin > Local Cluster > Network Settings and verify the following:
   - System server configuration is set to **1 server configuration**
   - System split network setting is set to **Combined network interfaces**



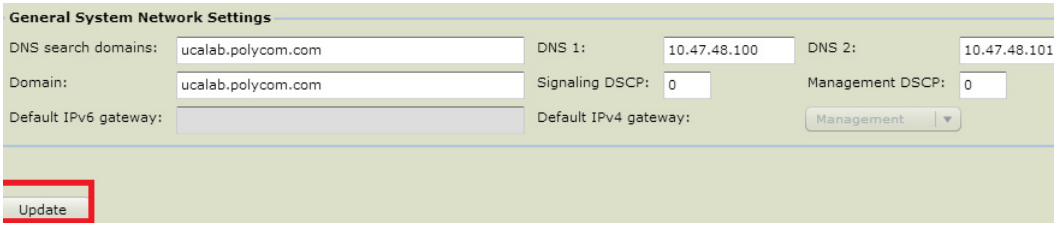
4. In the Network Settings dialog box, populate the following fields with correct values for your environment and click **OK**.
   - Management host name
   - IPv4
   - Subnet mask

- IPv4gateway

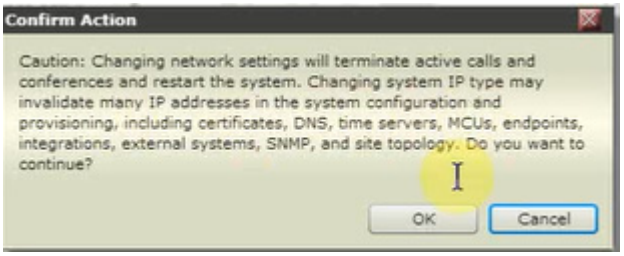


5 In the General System Network Settings window, verify the following fields have the correct value for your setup and click **Update**.

- Domain
- Search Domain
- DNS Servers

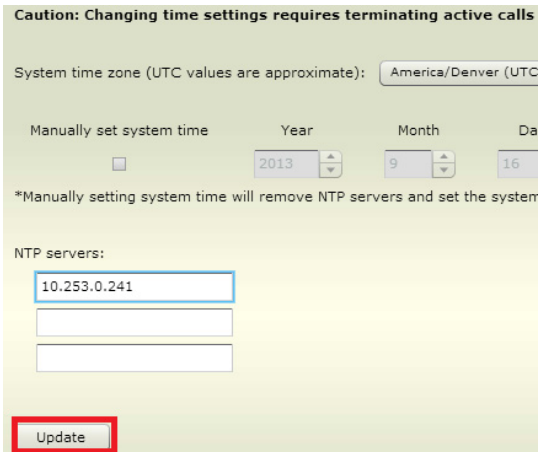


6 Verify the new network settings you want to put in place in the Confirm Action dialog, and click **OK**. The system will reboot for the change to take effect.

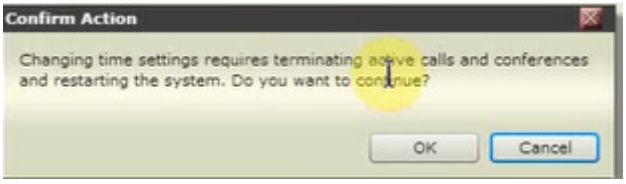


7 When your system reboots, and the RealPresence DMA, Virtual Edition is accessible again, open your browser and login to the RealPresence DMA, Virtual Edition.

8 Select **Admin>Local Cluster>Time Settings** and fill in the appropriate time zone and NTP information and click **Update**



9 Click **OK** in the Confirm Action dialog box to confirm the time setting and NTP change, and restart the RealPresence DMA, Virtual Edition System



Integrate the RealPresence DMA, Virtual Edition with the RealPresence Collaboration Server, Virtual Edition

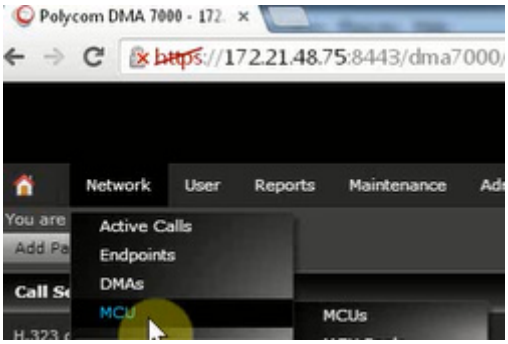
The RealPresence Collaboration Server, Virtual Edition is a Multipoint Control Unit (MCU) that provides continuous presence multi-point video capabilities. In this section, you'll create an MCU pool containing two RealPresence Collaboration Server, Virtual Edition instances. The MCU pool is managed by the RealPresence DMA, Virtual Edition and allows the RealPresence DMA, Virtual Edition to virtualize MCU resources.

Settings: Secondary RealPresence Collaboration Server, Virtual Edition

Adding the secondary RealPresence Collaboration Server, Virtual Edition as described in the following section is optional. If you don't have another system, you can skip the steps to add the second RealPresence Collaboration Server, Virtual Edition.

To integrate RealPresence DMA, Virtual Edition with RealPresence Collaboration Server, Virtual Edition:

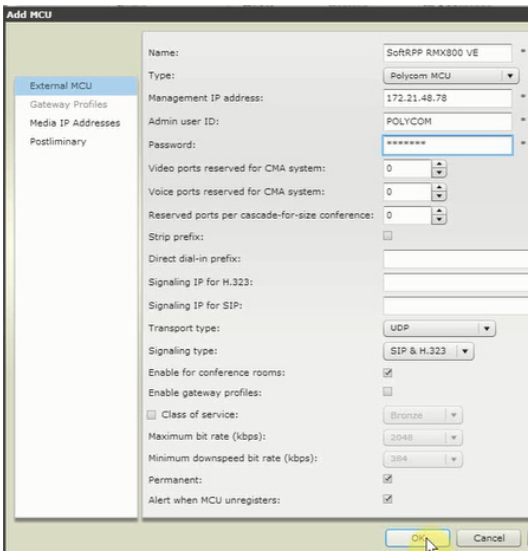
1 Navigate to **Network>MCU>MCUs**.



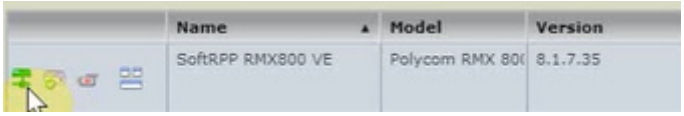
2 Click **Add** to start integrating the RealPresence Collaboration Server, Virtual Edition to the RealPresence DMA, Virtual Edition.

3 In the Add MCU dialog box, populate the following fields with correct values for your environment and click **OK**.

- Name: Arbitrary name
- Type: Polycom MCU
- Management IP Address: IP Address of the RealPresence Collaboration Server, Virtual Edition
- Admin User ID: Admin user ID
- Password: Admin password
- Enable for conference room: Ensure box is checked
- Permanent: Ensure box is checked

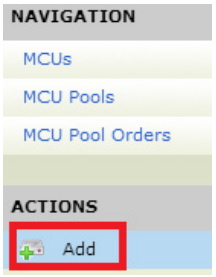


The RealPresence DMA, Virtual Edition connects to the RealPresence Collaboration Server, Virtual Edition and displays the connection status.



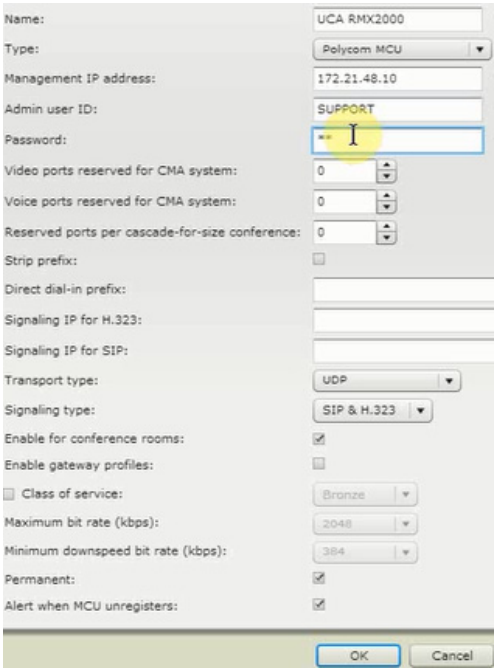
4 If you are going to add a secondary MCU, you'll do that next. If you are only adding a single MCU, go to step 7.

Add a second MCU by clicking **Add**. The second MCU can be a software or a hardware version (RealPresence Collaboration Server, Virtual Edition or RealPresence Collaboration Server 1500/2000/4000/800s).

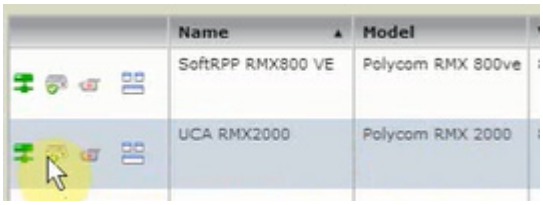


5 In the Add MCU dialog box, populate the following fields with correct values for your environment and click **OK**.

- Name: Arbitrary name
- Type: Polycom MCU
- Management IP Address: IP Address of the RealPresence Collaboration Server, Virtual Edition
- Admin User ID: Admin user ID
- Password: Admin password
- Enable for conference room: Ensure box is checked
- Permanent: Ensure box is checked

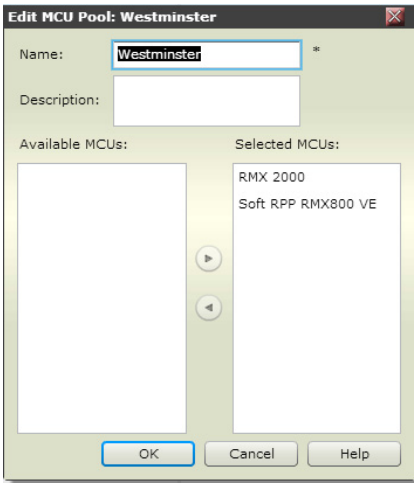


Once you click OK, the RealPresence DMA, Virtual Edition connects to the RealPresence Collaboration Server, Virtual Edition(s) and displays the connection status. Notice in the screenshot following, the icon on the far left is green to show the RealPresence DMA, Virtual Edition is successfully connected to the MCU.

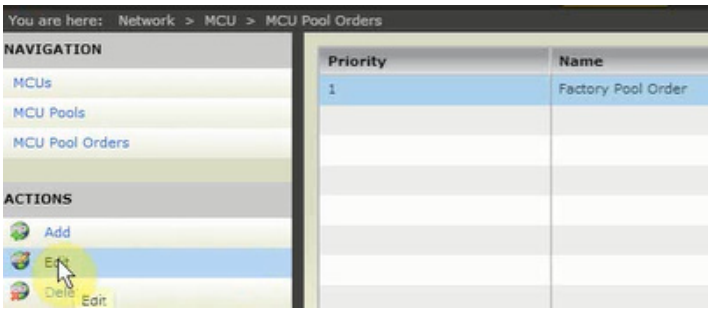


6 From the left side menu option, select **MCU Pool>Add** to add the RealPresence Collaboration Server, Virtual Edition(s) to the MCU Pool. The MCU Pools list shows the MCU pools, or logical groupings of RealPresence Collaboration Servers that are defined in the Polycom RealPresence DMA, Virtual Edition system.

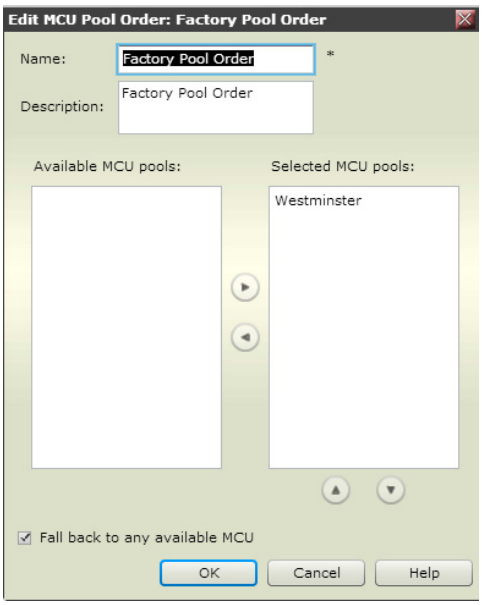
7 Select the RealPresence Collaboration Server, Virtual Edition(s) from the **Available MCU** column and use the right arrow to move the RealPresence Collaboration Server, Virtual Edition(s) to the **Selected MCU** column and click **OK**.



8 Select **MCU Pool Order>Edit** from the left side menu options. A pool order contains one or more MCU pools and specifies the order of preference in which the pools are used.



9 Select the Pool you created from the **Available MCU** pool column, use the right arrow to move it to the **Selected MCU** pool column, and click **OK**.



Settings: Fall Back to any Available MCU

Checking the **Fall back to any available MCU** box will allow the RealPresence DMA, Virtual Edition to use another RealPresence Collaboration Server outside of the Pool Order if the Pool is unavailable.

This box is checked by default, but it will only impact your settings if you have another RealPresence Collaboration Server available.

Understand the RealPresence DMA, Virtual Edition's role in Managing RealPresence Collaboration Server, Virtual Edition Conferences

The RealPresence DMA, Virtual Edition's role is to provide redundancy, reliability, and efficiency of video services by distributing multipoint video calls across conference platforms. It does this by creating a pool of RealPresence Collaboration Servers that could be geographically separated to intelligently routing incoming call requests to the closest RealPresence Collaboration Server.

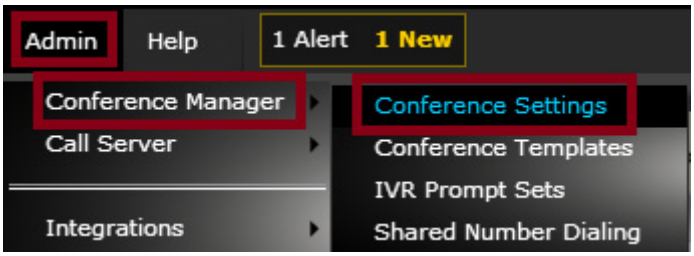
In this example, the RealPresence DMA, Virtual Edition has defined an MCU pool with at least one RealPresence Collaboration Server, Virtual Edition. You'll manage the RealPresence Collaboration Server conference settings at the RealPresence DMA, Virtual Edition level instead of configuring each RealPresence Collaboration Server independently. During the next step, you'll examine the conference template options that define the video conference properties.

The conference template allows the administrator to define a set of properties and assign them to different Virtual Meeting Rooms (VMR). In this example, you'll create one Template for Mixed AVC/SVC and another for just SVC conferences. It is beyond the scope of this document to explain the H.264 conference modes that are available, but understand this feature allows you to granularly control the VMR

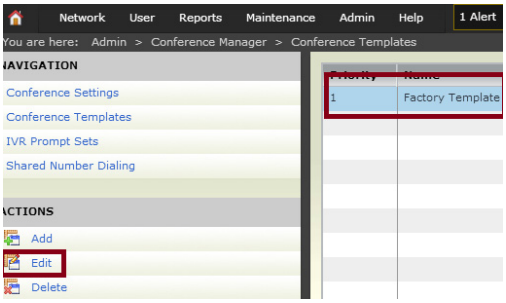
conference attributes. Please see the RealPresence DMA, Virtual Edition Getting Started Guide for more details.

To create conference templates for VMRs:

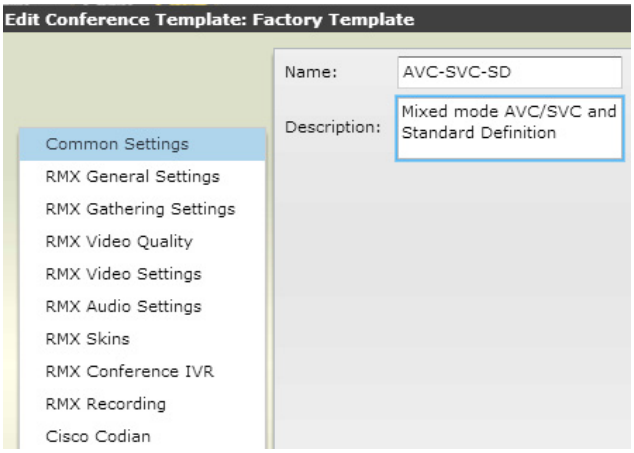
1. Select **Admin>Conference Manager>Conference Settings**.



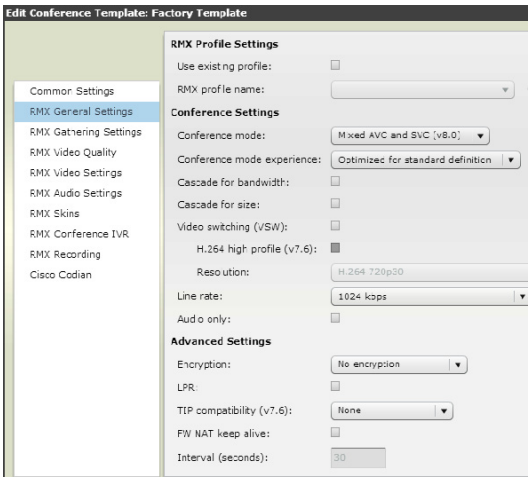
2. Understand the fields that control the global conference settings. In this case, the default values are sufficient and require no changes.
   - Default class of Service: Class of Service for conferences
   - Default Maximum bit rate: Max connection rate per client
   - Default Minimum bit rate: Minimum connection rate per client
   - Dialing Prefix: Allows you to add a prefix to the VMR. If the default VMR is 76500x, you can add a prefix 76 and then to dial a VMR (for example, 7676500x)
   - Conference Duration: Allows you to specify the max conference duration
3. Select **Admin>Conference Manager>Conference Templates**.



4. Click **Edit** and provide a name and description for the conference template.



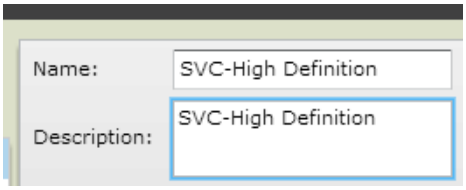
5 Click **RMX General Settings** and ensure the conference mode is set to **AVC/SVC**.



6 Click **OK** to save the Template.

7 Select **Actions>Add** from the left side menu options to add a second template.

8 Enter a value for the name and description to reflect the conference attributes that you'll define.



9 Select **Conference Mode** and choose **SVC only**. Click **OK**.

Admin Tip: Defining Additional Templates

Administrators can define addition templates for lecture mode or for conferences that need a higher resolution for content, for example. There are many more options available. For more information on creating conference templates, refer to the product documentation at support.polycom.com.

Configure RealPresence DMA, Virtual Edition Integration with Active Directory

You can add users to the system in two ways, manually and integrating them with Microsoft Active Directory (AD).

Add Users Manually to RealPresence DMA, Virtual Edition

Users that are added manually are known as local users. When adding users manually, you must assign them conference rooms and any specific roles they should have.

Integrate RealPresence DMA, Virtual Edition with Microsoft AD

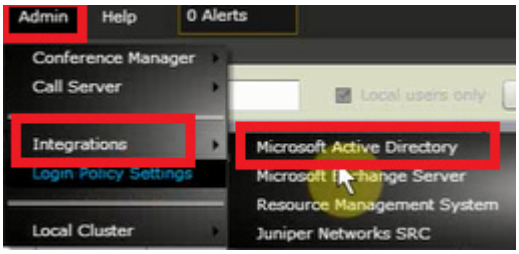
Integrating RealPresence DMA, Virtual Edition with Microsoft AD allows users with specific roles (Administrator, Auditor, or Provisioner) to log into the Polycom RealPresence DMA, Virtual Edition with their Active Directory user names and passwords. The integration process can automatically create conference rooms for AD users based on an AD Attribute (such as phone number) that you specify.

When the RealPresence DMA, Virtual Edition is integrated with an Active Directory server, the Active Directory users are automatically added as RealPresence DMA, Virtual Edition users with a Conferencing User role and displayed in the RealPresence DMA, Virtual Edition's Users list. An administrator can assign users additional roles as required.

In this section, you'll configure the RealPresence DMA, Virtual Edition to use the Enterprise Active Directory for LDAP services and then use this integration to automatically assign VMRs.

To configure RealPresence DMA, Virtual Edition with AD:

1 Select **Admin>Integrations>Microsoft Active Directory**.



2 Enable the **Enable integration with Microsoft Active Directory Server** checkbox.

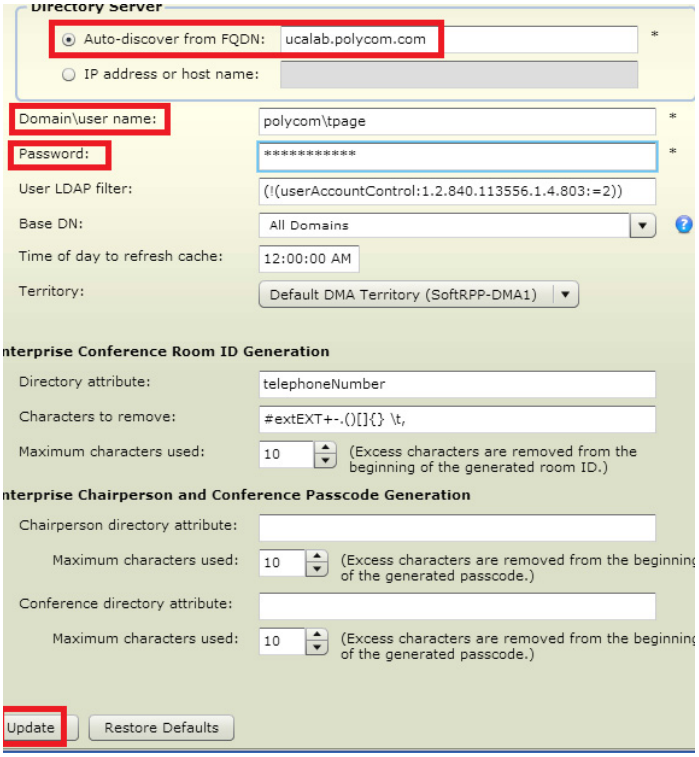
3 Populate the following fields with correct values for your environment and click **Update**.

- Select **Auto-discover from FQDN** and fill in domain information
- Domain\user name: appropriate domain login information
- Password: domain password

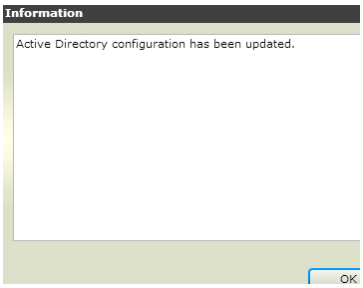
Note: Directory Attribute Value

Under Enterprise Conference Room ID Generation, the directory attribute value is used by the RealPresence DMA, Virtual Edition to determine which Active Directory attribute will provide the Virtual Meeting Room ID. In this case, you will use the default telephoneNumber attribute. Any values in the Characters to remove field will be stripped out. The Maximum characters used field controls how many remaining characters will be included in the VMR ID.

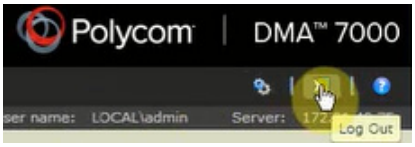
For example, using the default Characters to remove value and setting the Maximum characters used to 6, a person who had an LDAP telephoneNumber value of +1 (512) 555 1212 would return 551212. Chairperson and Conference IDs can be automatically created for each VMR in the same fashion.



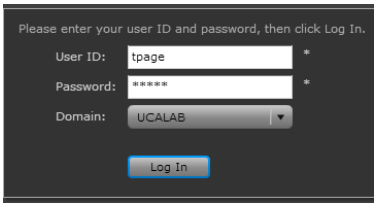
4 When the Information dialog appears, click **OK** to confirm the update.



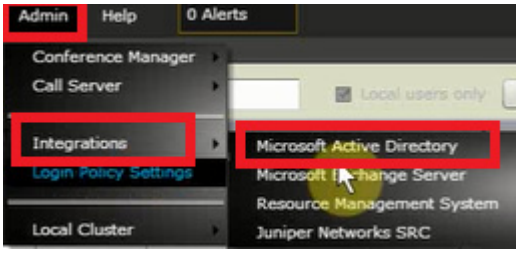
5 Now that the RealPresence DMA, Virtual Edition is using Active Directory, logout and login again using the domain credentials for the changes to take effect. Click the **Log Out** icon.



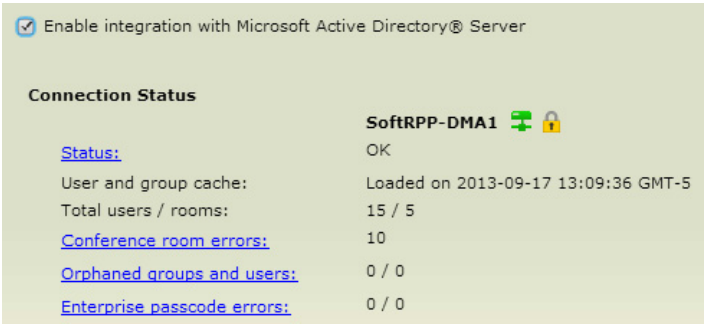
6 Login using the Active Directory credentials.



7 Select **Admin>Integrations>Microsoft Active Directory**.



8 Confirm the **Connection Status** and other information. In this screenshot, the Total users / rooms shows 15/5. This means that it found 15 users, but only created 5 Virtual Meeting Rooms. The difference between these values is shown in the Conference Room error field. In this case, 10 of the users don't have any telephone numbers. You can click the **Conference room errors** link to see specific errors you might have in your environment.



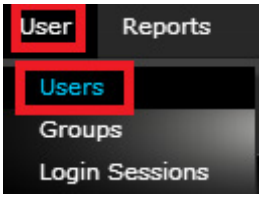
Understand the Role of Virtual Meeting Rooms

Each RealPresence Collaboration Server, Virtual Edition has static meeting rooms defined that allow users to dial a preset number to enter a video conference. However, this presents certain problems such as users knowing which RealPresence Collaboration Server hosted their meeting or redundancy/scalability problems if a RealPresence Collaboration Server is down or out of resources.

The RealPresence DMA, Virtual Edition allows us to abstract this process by providing a Virtual Meeting Room (VMR). VMRs are entities that reside on the RealPresence DMA, Virtual Edition and allow people to each have their own video conference number. No resources are consumed until the meeting room is used and this allows the RealPresence DMA, Virtual Edition to route incoming requests to the appropriate RealPresence Collaboration Server in the resource pool.

To create VMRs:

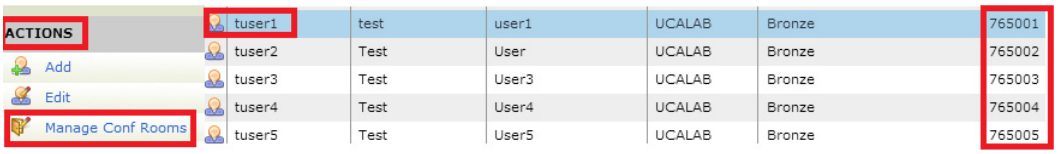
1 Select **User>Users** to ensure the AD integration is working.



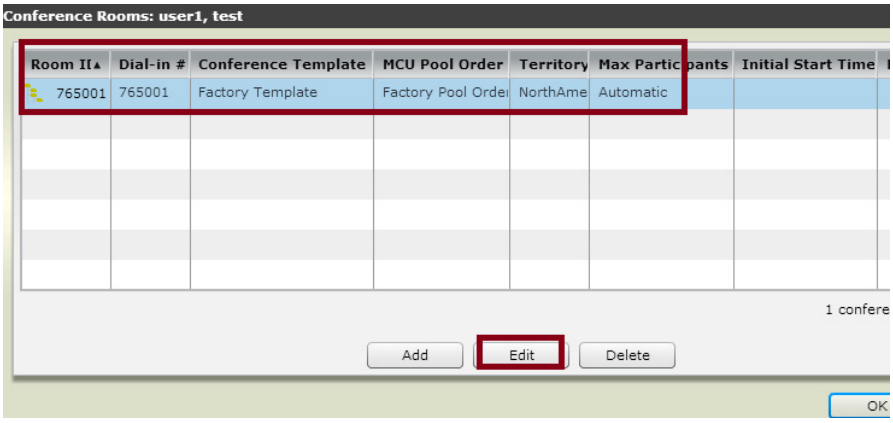
2 Uncheck the box to search **Local users only** and click **Search**. Local users are not defined in the LDAP server and this process will search for AD users.

You can now see the Active Directory users and the VMRs that were imported. In the screenshot below, test user1 has VMR number 765001 that was derived from a subset of numbers in the telephone number attribute. Any devices that are H.323 or SIP registered to the RealPresence DMA, Virtual Edition will be able to dial 765001 to enter this VMR. You'll test the VMR functionality at the end of this section.

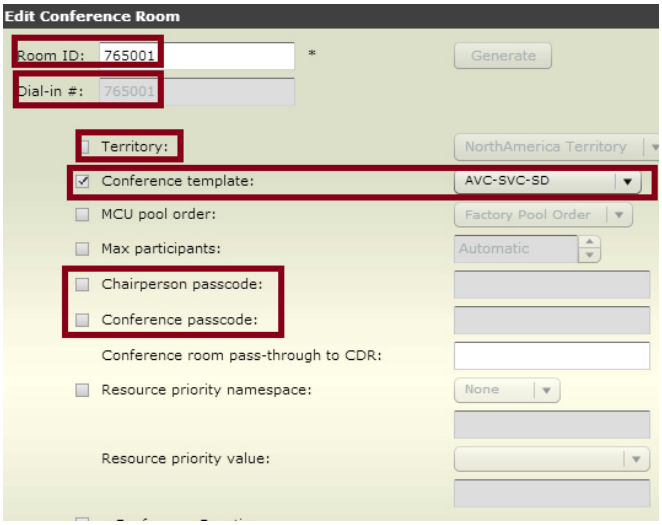
3 Click **Manage Conf Rooms** to see the VMR details.



4 Highlight the VMR and click **Edit** to apply a conference template.



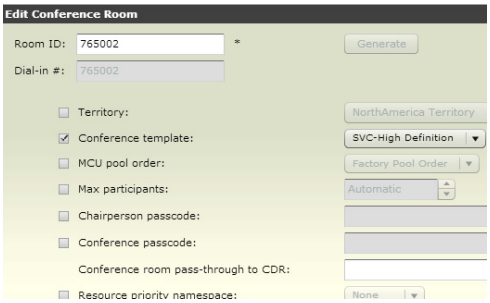
5 Edit the VMR Properties so the Conference template is set to **AVC-SVC-HD** and click **OK**.



Note: You can also define values for **Chairperson Passcode** or **Conference Passcode** and other properties in addition to choosing the conference template.

6 Highlight another VMR and click **Manage Conf Rooms**.

7 Click **Edit** and set the next conference to use the **SVC Template**.



Additional VMR Configuration Options

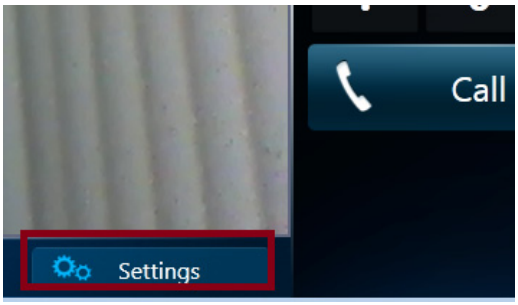
There are some additional RealPresence DMA, Virtual Edition configurations that integrate VMRs with your enterprise telephony system. In this process you configure an entry queue on the RealPresence DMA, Virtual Edition and then route PSTN traffic from your PBX to an automated voice queue that will prompt the user for the conference ID and then route audio traffic to the appropriate VMR. This step is beyond the scope of this guide, but refer to the RealPresence DMA, Virtual Edition System Operations Guide for more details.

Test the RealPresence DMA, Virtual Edition configuration

Now that you have an added one or more RealPresence Collaboration Server, Virtual Editions to the RealPresence DMA, Virtual Edition, created an MCU pool and VMRs, you need to test that users can register with an endpoint with the RealPresence DMA, Virtual Edition and connect into a VMR. In this example, you'll use the Polycom RealPresence Desktop (RPD) client as the endpoint and you can download a trial version of the RealPresence Desktop client at support.polycom.com.

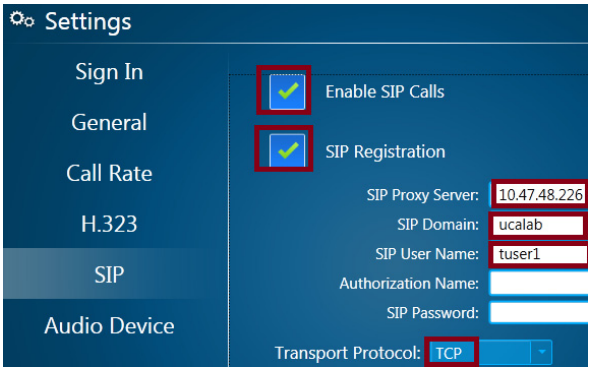
Once you have finished downloading and installing the client, proceed with the next steps:

1. Launch the RealPresence Desktop client by double clicking on the RPD icon added to the desktop during installation.
2. Click **Settings** on the bottom right side of the user interface to configure RPD.



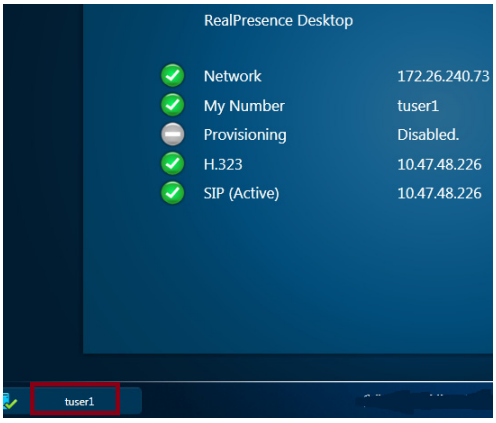
3. Select **H.323** and populate the following values to configure H.323 capabilities:
   - Checkbox to Enable H.323 Calls
   - Checkbox to Enable GateKeeper Registration
   - Gatekeeper Address
   - H.323 Alias
   - H.323 Extension

4. Select **SIP** and populate the following values to configure SIP capabilities.
   - Checkbox to Enable SIP Calls
   - Checkbox to Enable SIP Registration
   - SIP Proxy Server: IP address of RealPresence DMA, Virtual Edition
   - SIP Domain: Domain value
   - SIP User Name: There is no authentication at this point and value can be arbitrary
   - Transport Protocol: TCP

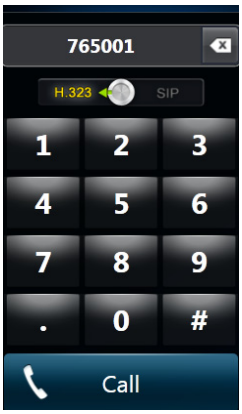


5 Select **Audio Device** and **Camera** to ensure the RPD has a microphone, speakers and camera configured. Click **OK** to confirm the settings.

6 Click the username in the bottom left corner of the client to confirm connectivity. You should see the green checkbox for H.323 and SIP. Click **Close**.



7 To dial into a VMR using H.323, select **H.323** and enter the VMR number into the Dialpad and click **Call**. For example, 765001.

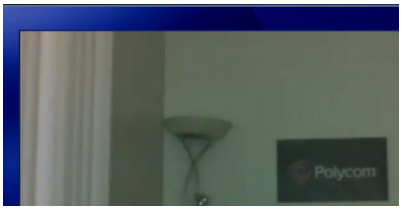


The RPD client connects into the VMR and the call begins.

8 The RPD client contains the following in-call features:

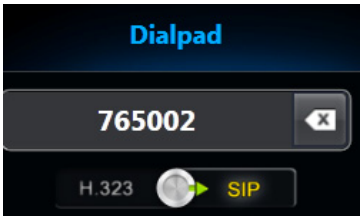
- Content sharing

- Far-end camera control
- Dialpad to enter any conference codes
- Network indicator
- Mute microphone and Mute Camera
- Full screen



9 Click the **Hang up** icon to end the call.

10 To test SIP dialing functionality, call into the second VMR using SIP. Select the **SIP** option, enter the second VMR number (765002), and click **Call**.



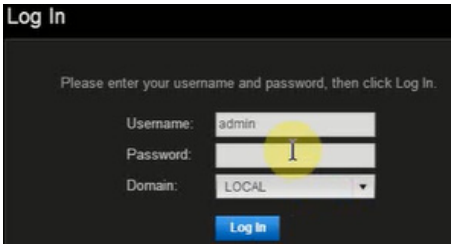
Configure RealPresence Resource Manager, Virtual Edition Prerequisites for RealPresence DMA, Virtual Edition Integration

Now that you have Active Directory integration, an MCU Pool defined and have assigned, configured and tested VMRs, the next step is to configure the RealPresence DMA, Virtual Edition with RealPresence Resource Manager, Virtual Edition. However, before you can complete that step you'll need to assign the RealPresence Resource Manager, Virtual Edition's license and ensure that the RealPresence Resource Manager, Virtual Edition has a DNS Host and SRV record.

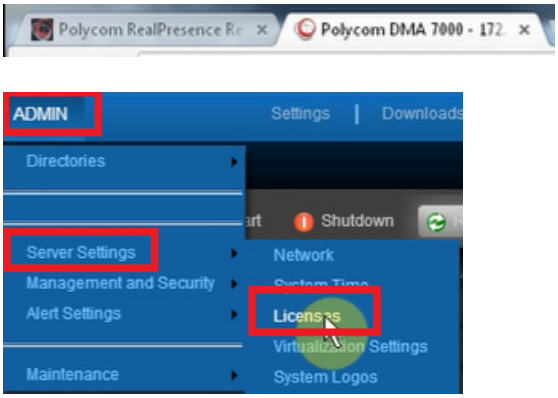
To assign the RealPresence Resource Manager, Virtual Edition license:

1 Open a second tab in your browser for RealPresence Resource Manager, Virtual Edition and login with admin and the new password created during the install.

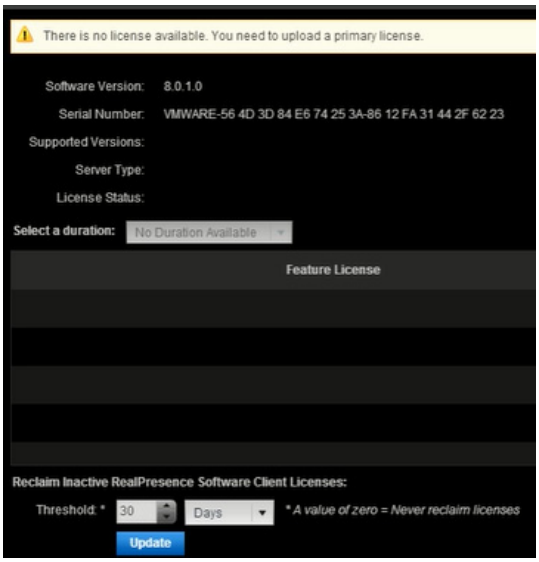
https://<ipaddress>:8443/flex



2 Select **Admin>Server Settings>Licenses**.

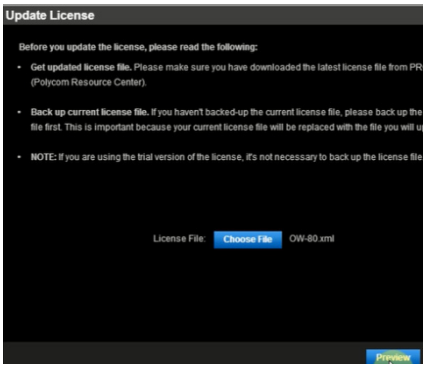


3 Click **Update** to start the licensing process.

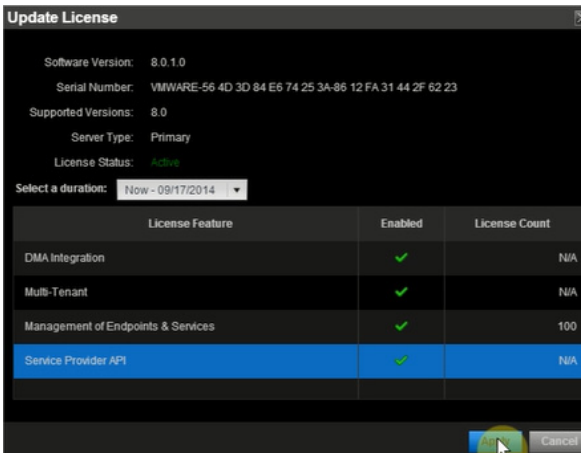


4 Click **Choose File** and select your license file.

5 On the same screen, click **Preview**.



6 Click **Apply** to add the license.



Verify a DNS Host A Record

RealPresence DMA, Virtual Edition Integration with the RealPresence Resource Manager, Virtual Edition requires a DNS entry for the host name of the RealPresence Resource Manager, Virtual Edition.

» Verify that you can ping the fully qualified domain name (FQDN) of the RealPresence Resource Manager, Virtual Edition.

Caution: Verification Failed

If this step fails, you must add a Host A record in DNS or the RealPresence DMA, Virtual Edition integration with RealPresence Resource Manager, Virtual Edition will fail.

Verify a Service Record exists for RealPresence Resource Manager, Virtual Edition

To dynamically manage endpoints (which includes dynamic provisioning, dynamic software update, and presence) right out-of-the-box, they must be able to automatically discover the RealPresence Resource Manager, Virtual Edition system.

» Verify that a DNS SRV record exists.

Troubleshooting: SRV Record Does Not Exist

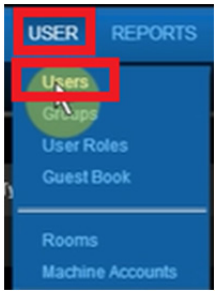
If this step fails, you should add a Service Record as this allows the RealPresence Desktop and Mobile clients to automatically determine the RealPresence Resource Manager, Virtual Edition.

Add Roles to the Admin User

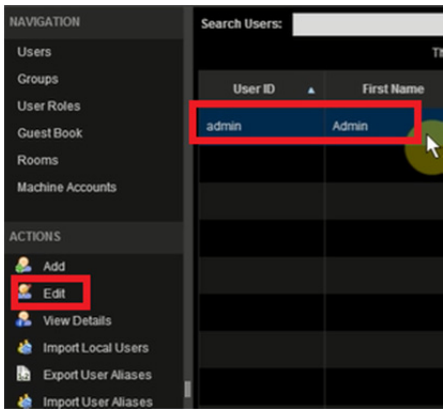
Adding Roles to a user is required before that person can make changes to the RealPresence Resource Manager, Virtual Edition.

To add roles to a user:

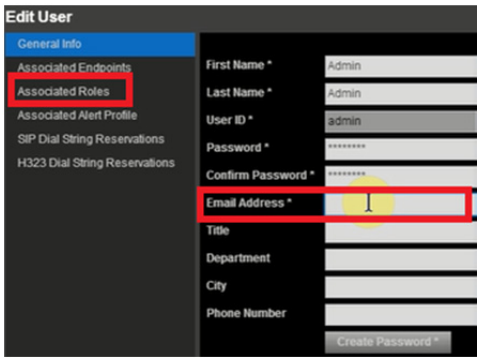
1. Select **User>Users** to begin adding roles.



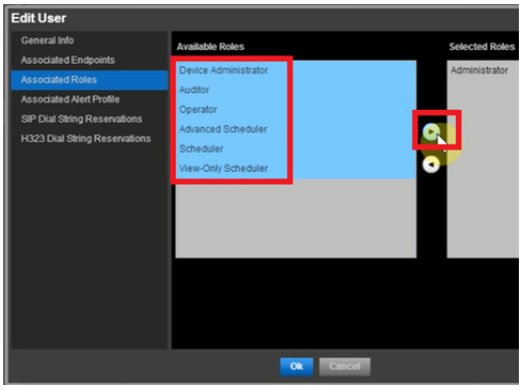
2. Click on the **Admin** user and click **Edit**.



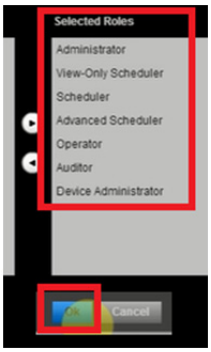
3. Add an email address to the Email Address field as this is a required field and click **Associated Roles**.



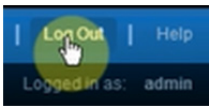
4. Highlight all of the **Available Roles** and click the right arrow icon to assign the roles to the user.



5 Ensure all roles are displayed under the **Selected Roles** column.



6 Click **Log Out** so the changes to the users' roles take effect.



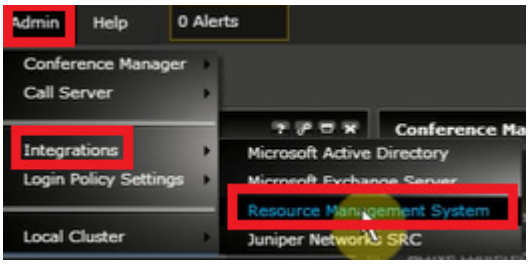
Integrate the RealPresence DMA, Virtual Edition with RealPresence Resource Manager, Virtual Edition

RealPresence Resource Manager, Virtual Edition is a key component of the Polycom RealPresence Platform, Virtual Edition and provides the ability to monitor, manage and provision thousands of video endpoints and provides directory, scheduling and reporting services. It also manages the bandwidth controls and allows administrators to monitor and manage the entire video collaboration network.

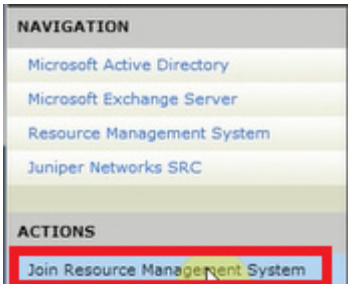
To integrate RealPresence DMA, Virtual Edition with RealPresence Resource Manager, Virtual Edition:

1 Return to the browser tab of the RealPresence DMA, Virtual Edition management application.

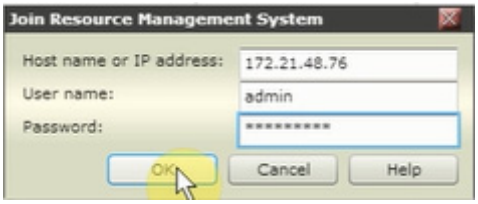
2 Select **Admin>Integrations>Resource Management System**.



3 Click **Join Resource Management System**.

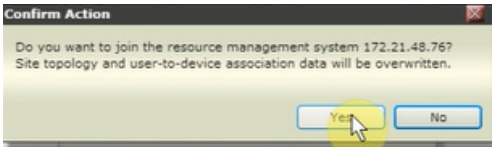


4 Add the IP address or fully qualified hostname along with admin credentials and click **OK**.



Note: If this fails, confirm DNS has an entry for the RealPresence Resource Manager, Virtual Edition IP.

5 Click **Yes** to finish the process.



6 Click **OK** to confirm successful integration.

7 The validate the node screen appears. Disregard the Status and Time column information as it will update when finished syncing with the RealPresence Resource Manager, Virtual Edition.

Summary and Next Steps

The RealPresence DMA, Virtual Edition is now integrated with Active Directory and RealPresence Resource Manager, Virtual Edition and has defined a RealPresence Collaboration Server, Virtual Edition Pool. Each user in the LDAP server that had a telephone number was automatically assigned a Virtual Meeting Room, and you used the Conference Settings and Template options to control the attributes for each VMR.

You have basic video call functionality working, but this guide has merely touched on some of the options available to configure the RealPresence DMA, Virtual Edition with your environment. There are many facets of the product that you have not touched on. To understand the other features available, please see the RealPresence DMA Operations Guide located at support.polycom.com.

The next section will focus on configuring the RealPresence Resource Manager, Virtual Edition and demonstrating the provisioning, management, and bandwidth control features that extend the value of the Real Presence Platform, Virtual Edition.

RealPresence Resource Manager, Virtual Edition Configuration

The Polycom RealPresence Resource Manager, Virtual Edition is a key component in the RealPresence Platform, Virtual Edition and is critical to effectively manage mobile, desktop, and group telepresence systems.

The RealPresence Resource Manager, Virtual Edition application monitors, manages, and provisions thousands of video endpoints and provides directory, scheduling, and reporting services. Organizations can easily manage video collaboration–enabled mobile devices, personal workspaces, desktops, and conference rooms using this single highly scalable application.

Administrators can centrally provision, monitor, and manage the entire video collaboration network. Through dynamic provisioning, thousands of video clients are automatically configured and maintained at predetermined software baselines. This eliminates typical management issues like having a variety of software releases in the field, end user configuration mismatches, and any uncertainly around the quality of video being provided. Built in reports, application dashboards, and drill-down tabs ensure troubleshooting and operation metrics are readily available.

Set up RealPresence Resource Manager, Virtual Edition

The initial setup of the RealPresence Resource Manager, Virtual Edition in a virtual environment involves several steps. The RealPresence Resource Manager, Virtual Edition provides directory services, endpoint authentication and provisioning, item topology, and bandwidth management services along with integration with the RealPresence DMA, Virtual Edition and RealPresence Access Director, Virtual Edition. This chapter provides detailed examples of how to configure each of these items in the following order:

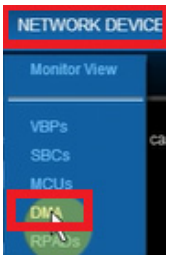
- Configure Virtual Settings
- Check the RealPresence Resource Manager, Virtual Edition Integration with RealPresence DMA, Virtual Edition
- Configure Site Topology and Bandwidth Management
- Configure Active Directory integration
- Configure Dynamic Provisioning
- Configure Dashboard
- Test the Solution
- Understand Client IPs and Site Topology

Confirm RealPresence Resource Manager, Virtual Edition Integration with RealPresence DMA, Virtual Edition

The RealPresence Resource Manager, Virtual Edition is already integrated with the RealPresence DMA, Virtual Edition in the last section. Now you just need to confirm the configuration is correct.

To confirm component integration:

1. Return to the browser tab that is logged into RealPresence Resource Manager, Virtual Edition.
2. Select **Network Device > RealPresence DMA, Virtual Edition**.

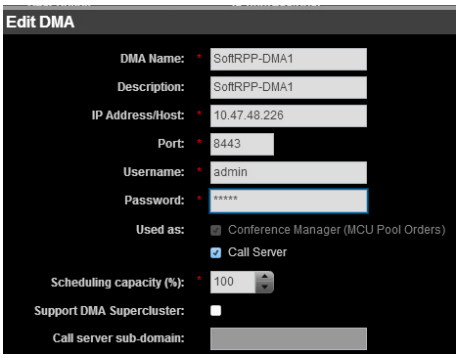


3. Select the RealPresence DMA, Virtual Edition from the list and the select **Actions>Edit**.
4. Ensure to enable the checkboxes to use **Conference Manager** and **Call Server**. The other field defaults should be fine and pre-populated via the RealPresence DMA, Virtual Edition integration with RealPresence Resource Manager, Virtual Edition. Since you don't have a Supercluster defined, you'll leave this field unchecked.

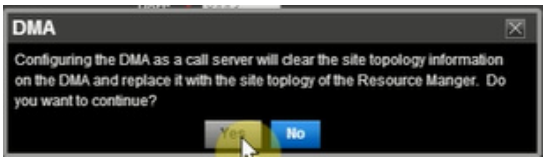
Admin Tip: Superclusters

A Supercluster is comprised of multiple RealPresence DMA, Virtual Editions in different geographies that can provide failover capabilities for all registered endpoints.

5. Click **Save Changes**.



6 If you receive the following message, click **Yes** to continue.

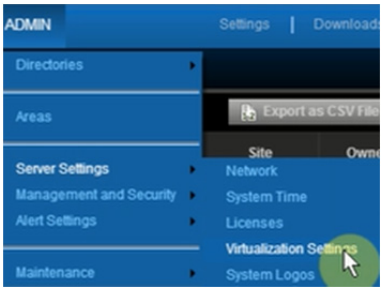


Configure Virtual Settings for RealPresence Resource Manager, Virtual Edition

This step allows you to configure the RealPresence Resource Manager, Virtual Edition's endpoint management capacity to match the capacity of the virtual environment's hardware resources.

To configure your virtualization settings:

1 Navigate to **Admin > Server Settings > Virtualization Settings**.



2 In the System Capability setting field, enter the number of endpoints that matches your hardware configuration using the System Capacity table. The value in the System Capability setting will limit the number of endpoints managed by the RealPresence Resource Manager, Virtual Edition.

Table 8: System Capacity Table

Hardware	Memory Size	8G	8G	8G
	CPU Requirement	8 Virtual CPU Core	4 Virtual CPU core	2 Virtual CPU core
Capacity	Max registered endpoints	10000	4000	400
	Max Provision Profile	500	200	20
	Max Provision rules	500	200	20
	Max user groups	200	100	10
	Max Site	500	500	500

Set up Site Topology

Two important features used to manage a video environment include site topology and bandwidth management. This section provides an overview of the terminology and configuration settings used to manage these features along with an example of how to configure different sites and link them together to control video traffic on the network.

Terminology Definitions

- **Territory**: A grouping of one or more sites for which a RealPresence DMA, Virtual Edition or RealPresence DMA, Virtual Edition cluster is responsible.
- **Site**: A local area network (LAN) that generally corresponds with a geographic location such as an office or plant. A site contains one or more subnets, so a device's IP address identifies the site to which it belongs.
- **Network Cloud**: Multi-protocol Label Switching (MPLS) network cloud defined in the site topology.
- **Internet/VPN**: An entity that represents your network's connection to the public Internet. Reserve the Internet/VPN "site" for IP addresses that fall outside your private or corporate network (for example remote workers), because all calls routed to the Internet/VPN site will be routed through the site or your private or corporate network that has Internet access.
- **Site Links**: A network connection between two sites or between a site and an MPLS network cloud.

The Site Topology feature of RealPresence Resource Manager, Virtual Edition provides a global view of the video conferencing network, how it is organized within groupings called Territories,and direct Site Links indicating cumulative bandwidth capacity and utilization for all subnets within a Site.

The general idea is to define a site for each physical location in which a LAN or an ISDN connection exists. For VPN connections, you can consolidate distinct physical locations into a single logical site to simplify management tasks. Then for each Site, you define the subnets in which the video endpoint systems are deployed and create links between the Sites and MPLS network.

Steps to Setting up Site Topology

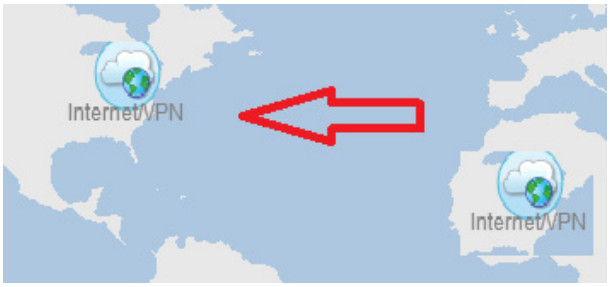
In this example, you'll create a Territory for the US. Then you'll create two Sites, one in Austin, TX and the other in Westminster, CO. Each of these Sites will contain at least one subnet. Next you'll create a Network Cloud and finally link the Sites together and connect them to the Network Cloud

- Define Territory
- Define Site

- Create Site links between Sites
- Link the Sites to the Network Cloud
- Add LAN Subnets to the Sites

Before you start, look at the default Network Topology:

1. Select Network Topology>Site Topology.
2. Move the Internet/VPN to the appropriate country. The US in this example.



Admin Tip: Site Topologies

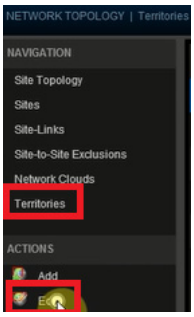
At this point, the default Internet/VPN Site is the only topology that is defined. With this basic configuration, there is no bandwidth control, everyone can register regardless of subnet and all endpoints can connect to one another. Defining the site topology allows and administrator to provide granular management of the video network.

Define a Territory in RealPresence Resource Manager, Virtual Edition

The Territories page contains a list of the territories defined in the site topology. On the right, it displays information about the selected territory. A Territory is a set of one or more sites for which a RealPresence DMA, Virtual Edition System is responsible. By default, there is one Territory named Default RealPresence Resource Manager, Virtual Edition Territory, and the RealPresence DMA, Virtual Edition instance is the primary node.

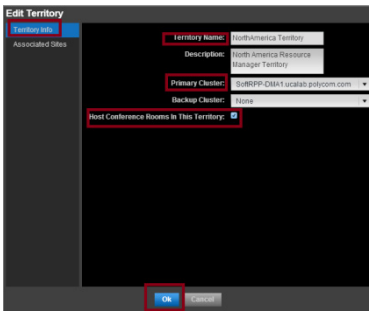
To change the name of the default Territory and verify the configuration to allow conference rooms:

1. Select **Network Topology>Territories>Edit**.



2. Edit or confirm the following fields:
   - Territory Name – This field is an arbitrary name

- Primary Cluster – This field should be pre-populated with the RealPresence DMA, Virtual Edition
- Enable the checkbox for **Host Conference Rooms in this Territory**

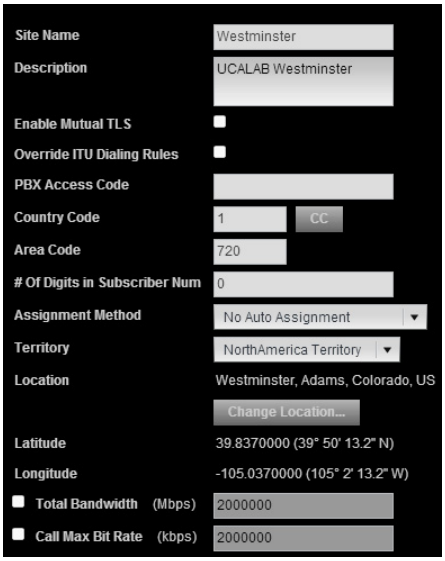


Add Site to RealPresence Resource Manager, Virtual Edition

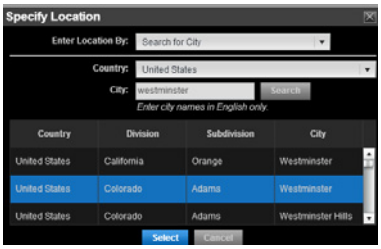
Now that you defined a Territory, the next step is to add Sites. Again, a Site is a local area network (LAN) that generally corresponds with a geographic location such as an office or plant and contains one or more subnets. The Sites page (Network Topology > Sites) contains a list of the sites defined in the RealPresence Resource Manager, Virtual Edition system and you can use the commands in the Actions list to add, edit, or delete existing sites and see information about a site, including the number of devices of each type it contains.

To add a site:

1. Select **Network Topology > Sites**.
2. Populate the following fields:
   - Site Name – This field is an arbitrary value
   - Description – This field is an arbitrary value and a required field
   - Country Code – Country Code
   - Area Code – Area Code
   - Territory – There is only one Territory to select. In an environment with more than one Territory, this field determines the RealPresence Resource Manager, Virtual Edition system responsible for the Site.



3 Select **Specify Location** and fill in the country and city, and the RealPresence Resource Manager, Virtual Edition will do a lookup and populate the location field.

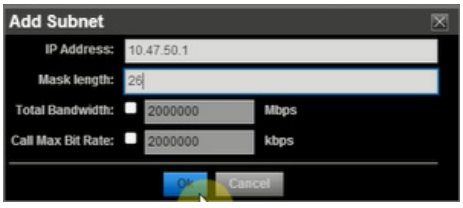


4 Leave the default settings for H323 Routing and SIP Routing.

5 Select the **Subnets** option and then click **Add**.

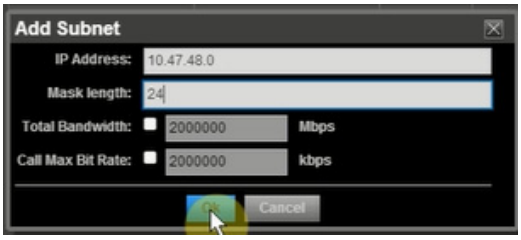
6 Populate the following fields and click **OK**.

- IP Address – The IP address of the subnet you are adding
- Mask Length – The length of Subnet Mask
- Total Bandwidth/Call Max Bit Rate – This is the Mbps allowed within this Subnet

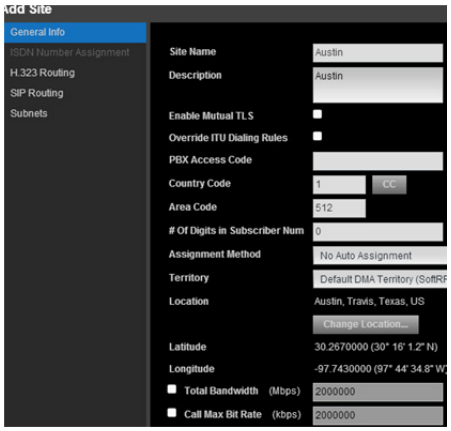


7 Ensure the subnet is now displayed in the Add Site Pane.

8 Define additional subnets that belong to your site as needed. This site example includes a second subnet.



9 Follow the first 8 steps of this section to add another site and then define subnets associated with this Site. In this example, you'll define a second Site and two additional subnets for Austin, TX.



Review Site Topology

There are now two sites and three subnets defined, but there is no link between these entities. In order for local sites to connect to the outside world, you need to create a **Network Cloud** and use **Site Links** to connect these two **Sites**.

Add Site to Cloud on RealPresence Resource Manager, Virtual Edition

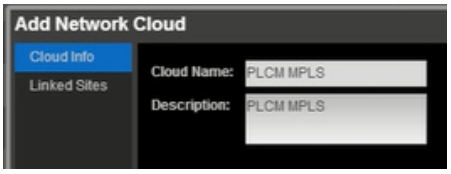
The Network Clouds link contains a list of the MPLS (Multi-protocol Label Switching) network clouds defined in the site topology and you can use the commands in the Actions list to add, edit, or delete an MPLS cloud. The next step is to create a Network Cloud as a central hub to connect the two sites.

Note that MPLS clouds are not associated with an IP address range, so they can be used to group multiple subnets and could also represent a connection to a service provider.

To add the site to the cloud:

1. From the left side menu options, select **Network Topology>Network Clouds**.

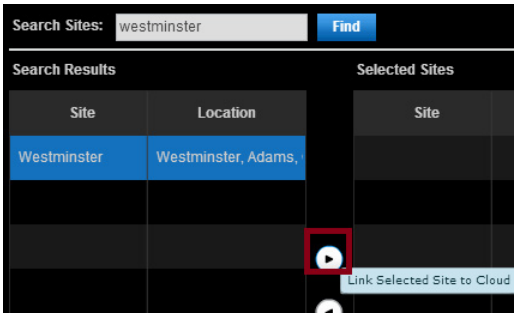
2. Enter values for the **Cloud Name** and **Description**.



3. Click the **Linked Sites** menu item.

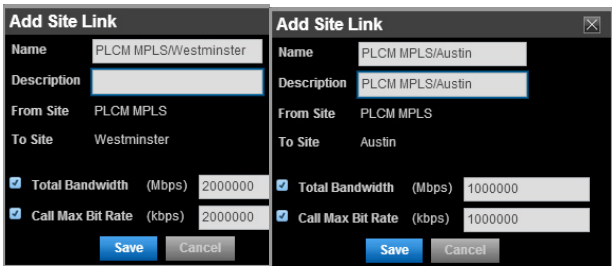
4. Use the **Search Sites** field to search for the Sites you defined. Next highlight the Site from the Search Results column and use the right arrow to move it to the Selected Site column.

   Ensure that you add any additional sites that you defined. This example adds both the Austin and Westminster Sites, but only includes a screenshot for adding Westminster.



5 The **Add Site Link** dialog box appears. During this step, you can define any bandwidth limitations between your Site and the MPLS Cloud.

For example, you might have a 10 Mbps connection from Austin to the MPLS and 20 Mbps from Westminster to the MPLS and the screenshots below shows these bandwidth values for each Site Link.



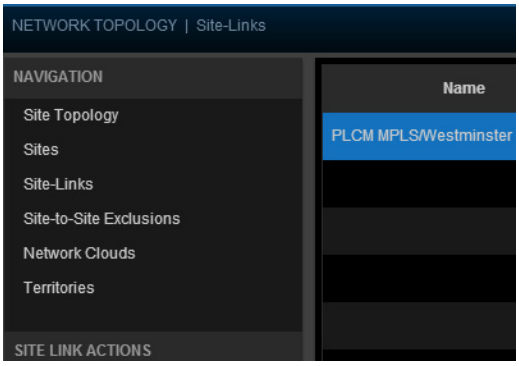
6 The main window appears. Click **OK** to finalize the Add Network Cloud step.

Add Site Links to RealPresence Resource Manager, Virtual Edition

The Site Links page contains the links defined in the site topology. A link can connect two sites, or it can connect a site to an MPLS Network Cloud. When you add a site link, you enter the starting and ending sites of the link and the maximum bandwidth and bit rates available for calls (audio and video) that use the link. Links are bidirectional and so if you create a link from Site A to Site B, you automatically have a bi-directional link from Site B to Site A, although the link appears as unidirectional.

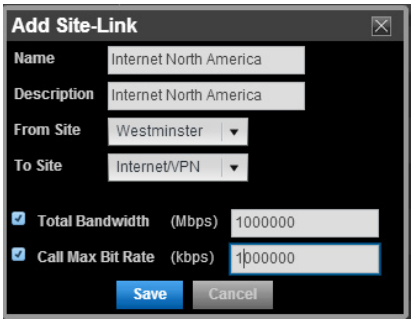
To add site links:

1 Select **Network Topology>Site-Links**.

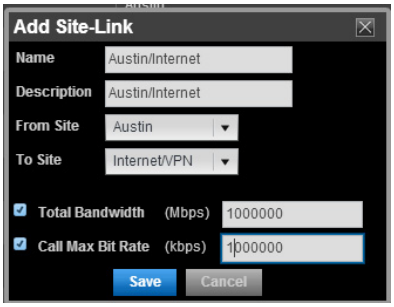


2 Notice that you already have a Site Link created between the Westminster Site and the MPLS Cloud that was added during the last step of creating the Network Cloud. However, you still need a link between the Internet and the two Sites.

3 Select the **Add** option from the Site Link Action menu to create a second link between Westminster and the Internet/VPN. Again define any bandwidth limitations.

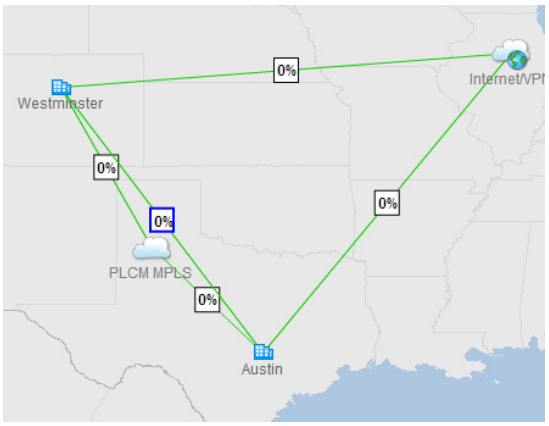


4 Follow the same steps to add a Site Link between Austin and the Internet/VPN.



Review the Site Topology

You should now have two Sites defined with each site specifying one or more subnets along with a Network cloud and connections between all three entities and the Internet. The bandwidth between each of these WAN links can be managed and you should have understanding of how to add more sites and link them together.



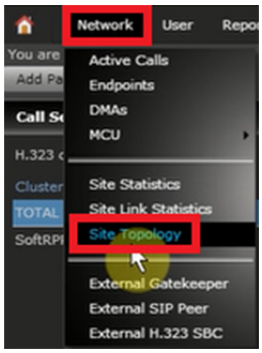
Once the topology and bandwidth are defined, the RealPresence DMA, Virtual Edition measures and controls the video traffic between sites to ensure the bandwidth isn't exceeded. If someone tries to place a video call when the bandwidth is limited, the RealPresence DMA, Virtual Edition will either restrict the call to use a lower call rate or setup the call as audio only. For example, if someone attempts a 1 MB call, the RealPresence DMA, Virtual Edition might downgrade the call to 512K or 384K.

Test the RealPresence DMA, Virtual Edition integration with RealPresence Resource Manager, Virtual Edition

To ensure the RealPresence DMA, Virtual Edition and RealPresence Resource Manager, Virtual Edition are in sync, you can check the RealPresence DMA, Virtual Edition to make sure it is receiving the list of Sites from the RealPresence Resource Manager, Virtual Edition.

To test the component integration:

1. Select the RealPresence DMA, Virtual Edition tab in the browser and login to the RealPresence DMA, Virtual Edition Web UI.
2. Select **Network>Site Topology**.



3. Verify the RealPresence DMA, Virtual Edition has the site information that you created in RealPresence Resource Manager, Virtual Edition.

Name	Description	Col	Area Cc	Max Bandwid	Max Bit Rate	Territory
Internet/VPN	Internet Placeholder			Unlimited	Unlimited	
Westminster	UCALAB Westminster	1	720	Unlimited	Unlimited	NorthAmerica Territory
Austin	Austin	1	512	Unlimited	Unlimited	NorthAmerica Territory

Active Directory Integration

In this section, you'll configure the RealPresence Resource Manager, Virtual Edition to use the enterprise Active Directory. In a large organization, integrating your RealPresence Resource Manager, Virtual Edition system with Microsoft Active Directory greatly simplifies the task of managing conference system security and provides the following features:

- **Single sign-on capability** - Users get the benefits of pass-through authentication, allowing them to leverage their Active Directory user name and password.
- **Single management environment** - Manage group memberships through Active Directory and grant those groups rights within RealPresence Resource Manager, Virtual Edition.

Settings: Active Directory Settings

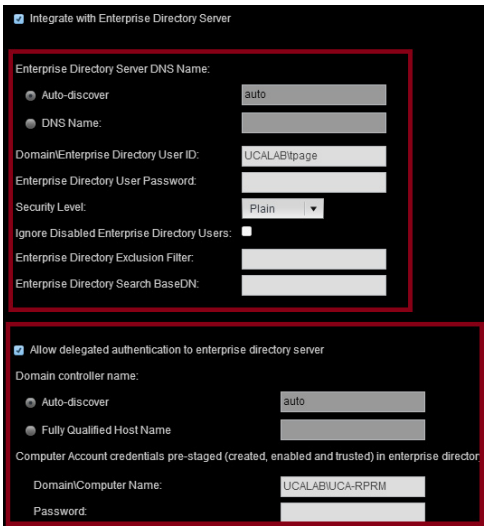
The RealPresence Resource Manager, Virtual Edition does not modify the Active Directory in any way.

To integrate Active Directory:

1 Select **Admin>Integrations>Microsoft Active Directory**.

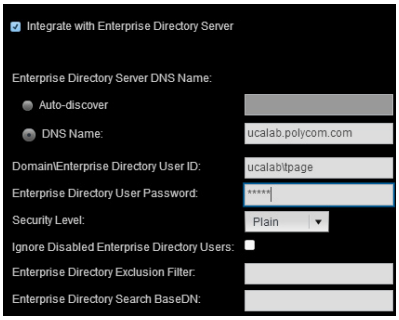
2 Enable the **Integrate with Enterprise Directory Server** checkbox.

Note: There are two configuration options on this screen. The top section defines configurations settings for AD integration so that people can search the directory with their endpoint. The bottom section defines configurations settings to allow endpoints to login with their domain credentials.



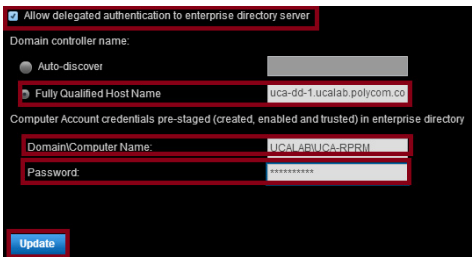
3 Populate the following fields with correct values for your environment and click **Update**.

- DNS Name: FQDN of Active Directory server
- Domain\user name: appropriate domain login information
- Password: domain password



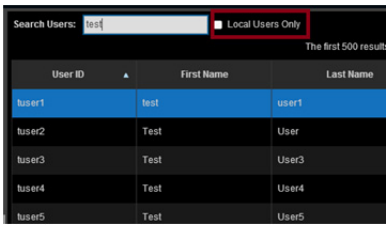
This section allows authentication with domain credentials, but requires a pre-staged computer account in Active Directory to be available first. See Appendix D for details on creating the computer account.

4 Enter the FQDN and appropriate computer account credentials and click **Update**.



5 To test the directory integration, select **User>Users**.

6 Uncheck the **Local Users Only** option and enter a search in the **Search Users** field.



You'll test the endpoint authentication using Active Directory credentials later in this section, but people should now be able to login to the RealPresence Resource Manager, Virtual Edition server with their Active Directory credentials and browse the directory.

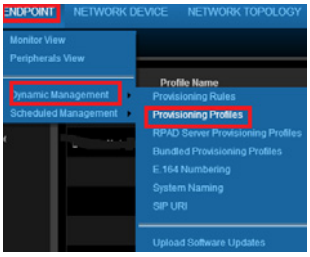
Configure Site Provisioning Profile

Provisioning Profiles contain configuration information that administrators use to remotely manage endpoints with network settings such as security, quality of service, gatekeeper address, SIP server address, and so on. For example, as soon as an endpoint is configured to use the RealPresence Resource Manager, Virtual Edition for its provisioning server, it starts polling for provisioning profile updates. With network provisioning profiles, you can ensure that all dynamically managed endpoints have the optimal and correct settings respective to their network location.

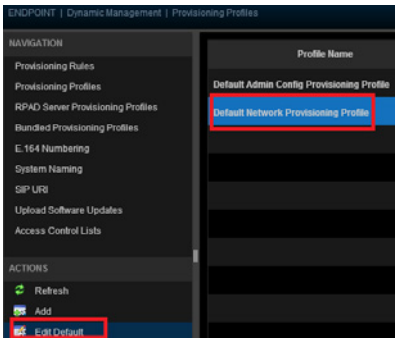
The RealPresence Resource Manager, Virtual Edition comes with a default Network Provisioning Profile that can be edited to include information specific to your environment. In this section, you'll modify the default Network Provisioning Profile to include information that clients will use to establish a connection to the environment.

To configure the site provisioning profile:

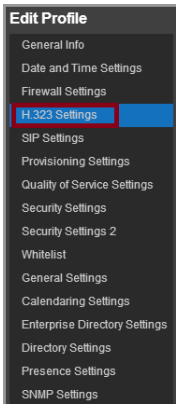
1 Select **Endpoint>Dynamic Management>Provisioning Profiles**.



2 Click on the **Default Network Provisioning Profile** and click **Edit Default**.



3 Click **H.323 Settings**.

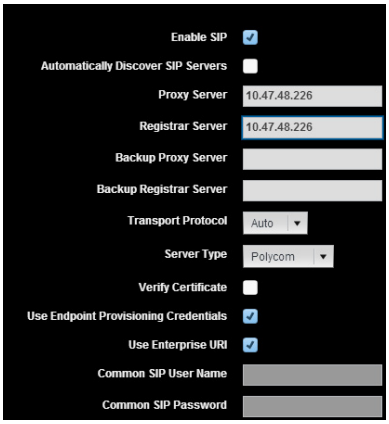


4 Populate the following fields:

- Enable IP H.323 – Enable the checkbox
- Gatekeeper Address – Use the IP address of the RealPresence DMA, Virtual Edition
- User Gatekeeper for Multipoint Calls – Dynamic

5 Click **SIP Settings** and populate the following fields:

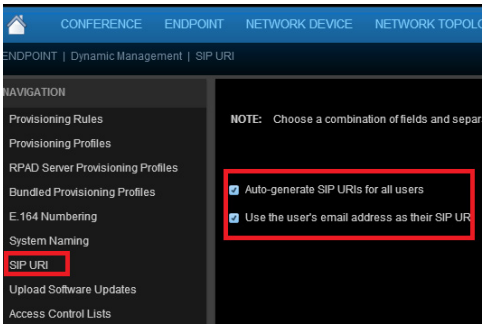
- Enable SIP – Enable the checkbox
- Proxy Server– IP address of the RealPresence DMA, Virtual Edition
- Registrar Server – IP address of the RealPresence DMA, Virtual Edition
- Transport Protocol – Auto
- Server Type – Polycom



6 Click **OK** to save the Default Network Provisioning Profile.

7 Navigate to **Endpoint>Dynamic Management>SIP URI**.

8 Enable the **Auto-generate SIP URI for all users** and **Use the user's email address as their SIP URI** checkboxes. This setting will automatically populate the SIP URI field of each user and thus allow other endpoints to dial someone via email address.



9 Navigate to **Endpoint>Dynamic Management>E.164 Numbering**.

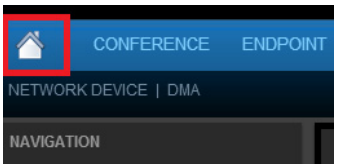
10 Select **Use Phone Number for the Base Field** and choose the maximum number of digits to use. In this case, you'll choose 3 digits, so a person with phone number of 512 555 1212 would automatically receive an E.164 number of 44212 if they logged in with RealPresence GroupSeries and 66212 if they logged in with RealPresence Desktop.

Add new Panes to RealPresence Resource Manager, Virtual Edition's Dashboard

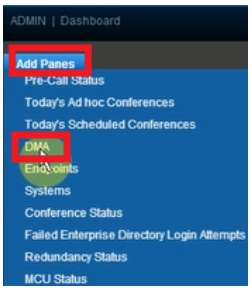
The RealPresence Resource Manager, Virtual Edition's dashboard is an easy way to understand what is happening with your video environment, so take a minute to add some additional Panes to the Dashboard.

To add new Panes to the Dashboard:

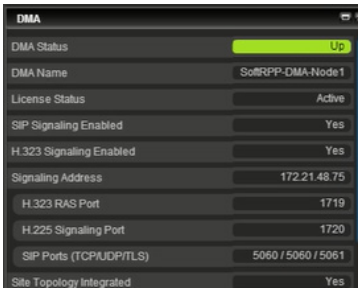
1. Click the **Home** icon in the top left corner.



2. Click **Add Panes>RealPresence DMA, Virtual Edition**.



3. Confirm that the RealPresence DMA, Virtual Edition pane is added to the dashboard.



4 Follow the same steps to add **MCU Status** and **Endpoints** to the Dashboard.

Test the Solution

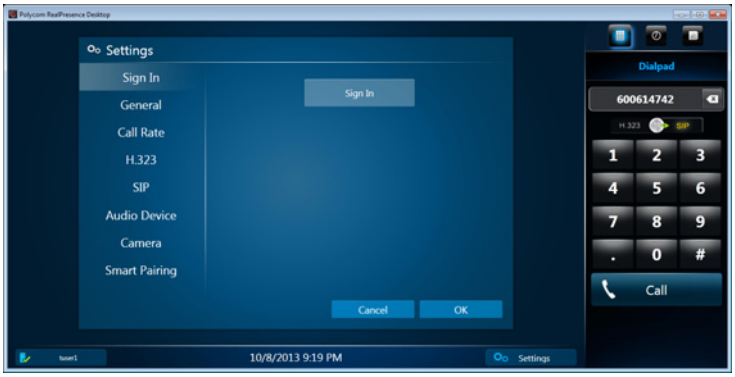
Now that you are finished configuring the RealPresence Resource Manager, Virtual Edition, people should be able to use their email address to automatically discover the RealPresence Resource Manager, Virtual Edition. They should also be able to login from their video endpoints using their Active Directory credentials and automatically receive the connection information you populated in the Network provisioning profile, including the correct H.323 and SIP servers along with the appropriate SIP URI and E.164 Number.

To test the solution:

1 Launch the RealPresence Desktop client.

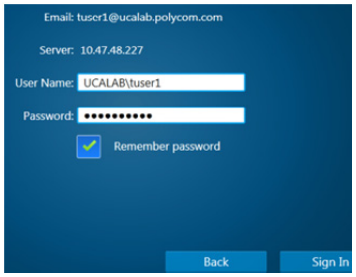
2 Click **Settings**.

3 Click **Sign In**.



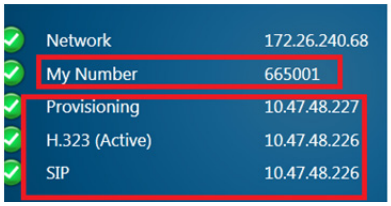
4 Enter your email address and click **Next**.

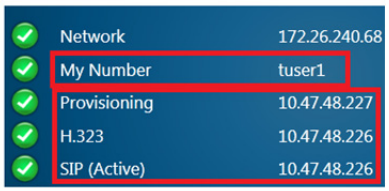
5 Notice the **Server** value is populated automatically using the DNS SRV record that you created earlier. Enter the your domain credentials and click **Sign In**.



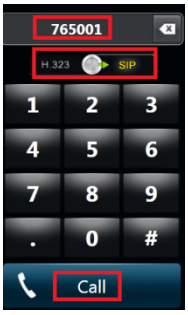
6 Click the username in the bottom left hand corner of the RPD client.

7 Confirm that you have the correct H.323 and SIP URI.



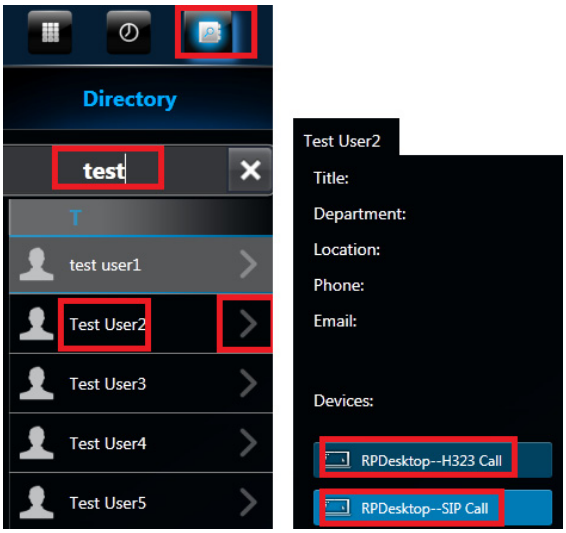


8 Test dialing into a VMR using SIP and H.323. Select the **SIP** or **H.323** option and then enter the dialing string(765001 in this example). Click **Call**.



9 To test point-to-point calls, click the **Search Directory** icon on the RPD client and search for another person.

In this example, the search found the five test users. By selecting the arrow to the right of the name, you can select to call this user with either SIP or H.323.



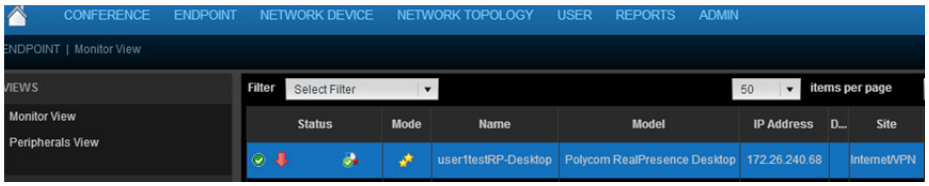
Understand Site Topology and Client Access

After configuring the Site Topology, any endpoints that register to RealPresence Resource Manager, Virtual Edition will end up associated with one of the Sites based on their IP address matching one of the subnets you defined for each site. If the IP address of an endpoint doesn't match any subnets defined for a Site, the endpoint will automatically end up in the Internet/VPN Site. Conversely, if the IP address matches a subnet, the endpoint will be associated with the correct Site.

In this step, you'll login to RealPresence Resource Manager, Virtual Edition and confirm that endpoints are getting associated correctly.

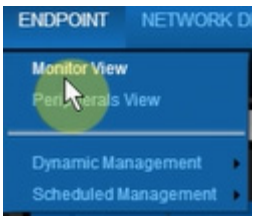
To confirm endpoint association:

1. Navigate to **ENDPOINT>Monitor View** and notice that the RealPresence Resource Manager, Virtual Edition is able to monitor the status of the endpoint.

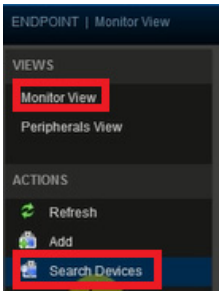


   Note: This example's endpoint's IP hasn't been defined by a Site and is automatically associated with the Internet/VPN Site.

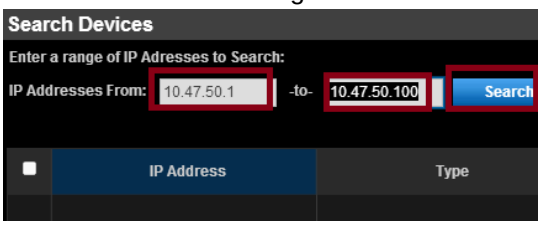
2. Click **ENDPOINT>Monitor View**.



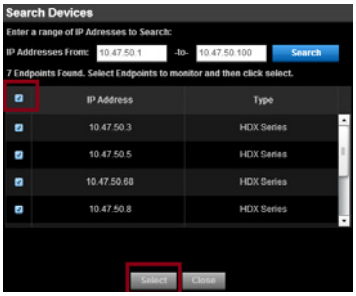
3. Click **Search Devices**.



4 Enter the IP address range of some selected endpoints and click **Search**.



5 When the list of endpoints is returned, click the checkbox on the top left to select all endpoints in the list and then click **Select**.



6 The endpoints are added to the RealPresence Resource Manager, Virtual Edition's list of managed devices, and since they match one of the Westminster subnets that you defined earlier, they are associated with Westminster.

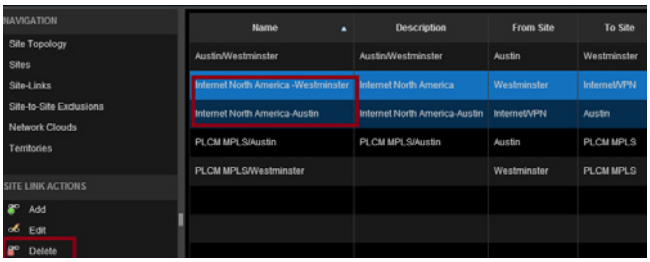
Configure Site Topology to Limit Internet/VPN access

At this point, you have defined the Site Topology and confirmed that endpoints are correctly getting associated with the Site they belong to, but you haven't limited access between any Sites. To block endpoints associated with the Internet/VPN zone, you can delete the Site-Links between one of the defined Sites and the Internet/VPN Site so that video calls from unknown endpoints are blocked.

To configure site topology to limit Internet/VPN access:

1 Click **NETWORK TOPOLOGY>Site-Links**.

2 Click the Internet/VPN Site and then click **Delete** to remove the links from Internet/VPN to the other Sites.



Now that you have blocked traffic from any unrecognized subnets, how do you provide video access for B2B or B2C scenarios if there is no Site-Link defined for the Internet? The answer is to deploy the Real Presence RealPresence Access Director, Virtual Edition and manage video traffic through the firewall. You'll cover this in the next chapter.

Summary and Next Steps

RealPresence Resource Manager, Virtual Edition is now integrated with Active Directory and RealPresence DMA, Virtual Edition. The Site Topology has been defined, and you should have good understanding of how bandwidth controls are implemented and how to block rogue access to the environment. You also configured the Network Provisioning Profile, and you should have a good understanding of how to remotely manage configuration settings on the endpoints in your environment by using the Dynamic Management capability of the RealPresence Resource Manager, Virtual Edition.

Next you integrated with Active Directory and confirmed that people are able authenticate with their domain credentials and browse the directory. You also confirmed that everyone with a telephone number and email address was automatically provisioned with a SIP URI and E.164 Number. Lastly you tested to confirm that both point-to-point and Virtual Meeting Room calls are working.

The next chapter will demonstrate how to configure the Real Presence RealPresence Access Director, Virtual Edition and allow video traffic through the firewall.

RealPresence Access Director, Virtual Edition Configuration

The RealPresence Access Director, Virtual Edition provides universal access and security that allows users outside the firewall to video conference safely with anyone in the organization. The RealPresence Access Director, Virtual Edition is a software-based edge server to securely route communication, management, and content traffic through firewalls without requiring special dialing methods or additional client hardware or software. Remote Users can securely and transparently access video services and collaborate with colleagues, customers and partners from virtually anywhere, with the same functionality they would have if they were in the office. Additionally, customers, partners and vendors can join a video conference as a guest user or over a federated network. By providing a seamless video collaboration experience, Polycom enables organizations to focus on what really matters—connecting people, networks, and companies.

It is important to understand that the RealPresence Access Director, Virtual Edition is deployed in the network DMZ and it is strongly recommended to consult the RealPresence Access Director, Virtual Edition Deployment Guide to understand the different deployment options that are available. This example demonstrates how to configure the RealPresence Access Director, Virtual Edition in the DMZ with one IP address.

The RealPresence Access Director, Virtual Edition requires configuration changes and open ports on the firewall. These steps are beyond the scope of this document and can be found in the RealPresence Access Director Deployment Guide on support.polycom.com.

Set up RealPresence Access Director, Virtual Edition

The RealPresence Access Director, Virtual Edition is designed to be configured using the RealPresence Resource Manager, Virtual Edition's provisioning service by extending the Site Topology to include the RealPresence Access Director, Virtual Edition. Once the RealPresence Resource Manager, Virtual Edition provisioning is in place, the RealPresence Access Director, Virtual Edition can connect to RealPresence Resource Manager, Virtual Edition and retrieve its provisioning information. The final step tests the full Soft RealPresence Platform solution by logging in with an endpoint connected to the RealPresence Access Director, Virtual Edition to ensure the client successfully connects and receives provisioning details from the RealPresence Resource Manager, Virtual Edition and is able to establish a video call.

This chapter provides detailed examples of how to configure each of these items in the following order:

- Configure External DNS SRV Record
- Configure Network Settings on RealPresence Access Director, Virtual Edition
- Create new user account on RealPresence Resource Manager, Virtual Edition for Integration with RealPresence Access Director, Virtual Edition
- Connect RealPresence Access Director, Virtual Edition to RealPresence Resource Manager, Virtual Edition

- Configure RealPresence Access Director, Virtual Edition Site on RealPresence Resource Manager, Virtual Edition
- Configure Endpoint Provisioning Profile on RealPresence Resource Manager, Virtual Edition
- Configure Provisioning Rule on RealPresence Resource Manager, Virtual Edition
- Configure RealPresence Access Director, Virtual Edition Server Provisioning Profile on RealPresence Resource Manager, Virtual Edition
- Configure RealPresence Resource Manager, Virtual Edition's Site Topology to include RealPresence Access Director, Virtual Edition
- Check the RealPresence Access Director, Virtual Edition Configuration
- Test the Solution

Log into RealPresence Access Director, Virtual Edition

The first step in configuring RealPresence Access Director, Virtual Edition is to log into the system.

To log into the system:

1. Point your browser to the IP address assigned (disregard any security certificate warnings).

   https://<staticipaddress>:8443/edge

   The system's login page appears.

2. Log in with default user ID **admin** and password **Polycom123**.

Note: Login Errors

During any login attempt, if you enter the wrong credentials three times in a row, you must wait one hour before trying to log in again.

Configure External DNS SRV Record

Create a DNS service record (SRV record) on the external DNS server to map the SRV service address for endpoint provisioning to the FQDN of the RealPresence Access Director, Virtual Edition. The SRV record is required by the Auto Find Provisioning Server feature of the Mobile system.

You performed the same configuration step by creating an SRV record for the RealPresence Resource Manager, Virtual Edition on the internal DNS server so that people don't need to know any server hostname or IP information in order to connect. In this case, the SRV record will be on the external DNS, so any endpoints outside the firewall will be able to resolve the RealPresence Access Director, Virtual Edition's IP address using the email address.

If the RealPresence Access Director, Virtual Edition system has the FQDN name rpad.example.com, add an SRV record as follows.

_cmaconfig._tcp.example.com. IN SRV 0 100 443 rpad.example.com.

Where: Service = _cmaconfig, Protocol = _tcp, Priority = 0, Weight = 100, Port = 443 and Host offering this service = rpad.example.com

Configure Network Settings

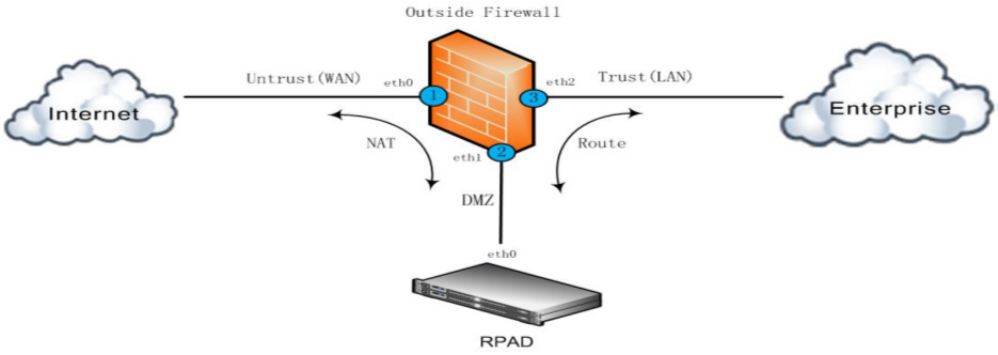
In this example, the RealPresence Access Director, Virtual Edition resides in the DMZ with a single firewall and uses one IP address for signaling, media, and management traffic. The firewall is configured to provide 1:1 NAT to RealPresence Access Director, Virtual Edition, and RealPresence Access Director, Virtual Edition routes traffic to the LAN side.

For example, an endpoint will resolve cmaconfig._tcp.example.com to 140.242.10.142. When it connects to this IP address, the firewall NATs traffic to RealPresence Access Director, Virtual Edition IP address 10.47.53.6, and finally the RealPresence Access Director, Virtual Edition routes traffic to the LAN side RealPresence DMA, Virtual Edition, RealPresence Resource Manager, Virtual Edition and RealPresence Collaboration Server, Virtual Edition.

Table 9: IP Addresses

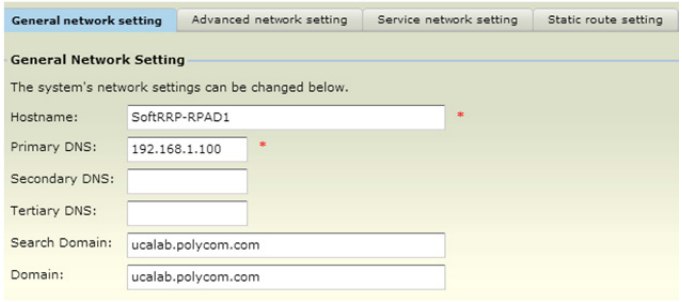
Device	*IP*
Firewall providing 1:1 NAT	140.242.10.142
RealPresence Access Director, Virtual Edition	10.47.53.6

Figure 3: Firewall Traversal



To configure network settings:

1. Select **Admin>Network Settings>General Network Settings** and confirm that the DNS and Domain information is correct.

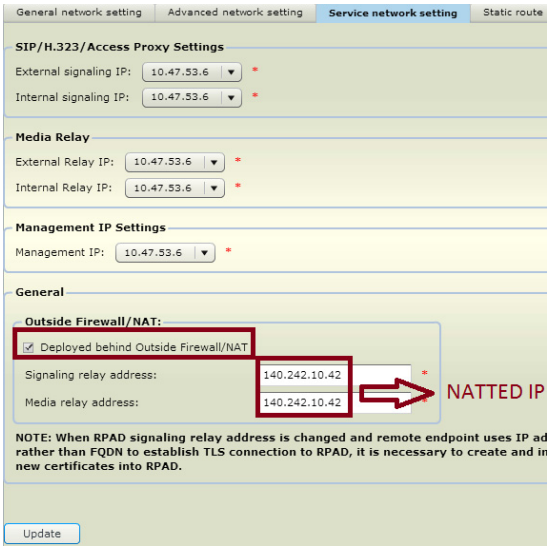


2 Select **Admin>Network Settings>Service Network Settings**.

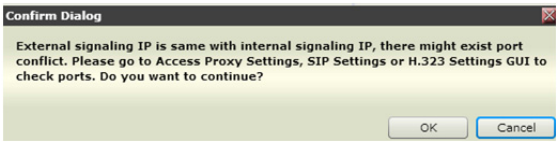
3 Click the arrow next to the fields listed below and select the static RealPresence Access Director, Virtual Edition IP address for eth0:

- External Signaling IP – RealPresence Access Director, Virtual Edition IP
- Internal Signaling IP – RealPresence Access Director, Virtual Edition IP
- External Relay IP – RealPresence Access Director, Virtual Edition IP
- Internal Relay IP – RealPresence Access Director, Virtual Edition IP
- Management IP – RealPresence Access Director, Virtual Edition IP
- Deployed behind Outside Firewall/NAT – Check the box
- Signaling relay address – External IP that endpoints will use for access
- Media relay address – External IP that endpoints will use for access

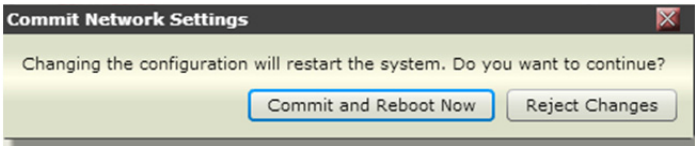
4 Click **Update**.



5 Click **OK** if you receive the message.



6 Click **Commit and Reboot Now**.



Activate License

The RealPresence Access Director, Virtual Edition ships with five call licenses that expire in thirty days. If you have a permanent license, navigate to **Maintenance>License** and click **Activate**.

After you have activated the license for your system, RealPresence Access Director, Virtual Edition automatically calculates the port ranges to accommodate the number of calls for which your system is licensed.

You can change port ranges as needed and, if you specify a beginning port range number for signaling or media dynamic source ports, the RealPresence Access Director, Virtual Edition system automatically calculates the end port number.

Active Directory Integration

Integration with Active Directory allows user accounts defined on the LDAP server to administer the RealPresence Access Director, Virtual Edition. However, the Active Directory integration is used only for administrative purposes and not for endpoint authentication.

In this example, you'll skip this step and use a local account to manage the system. You can optionally connect to Active Directory using the same configuration settings as the RealPresence DMA, Virtual Edition or RealPresence Resource Manager, Virtual Edition used to connect.

Create User Account

The configuration settings for RealPresence Access Director, Virtual Edition are defined and provisioned by the RealPresence Resource Manager, Virtual Edition. However, before the RealPresence Access Director, Virtual Edition can connect to the RealPresence Resource Manager, Virtual Edition to access the provisioned settings, users must provide credentials.

The next step is to define an account that is used by the RealPresence Access Director, Virtual Edition to login to RealPresence Resource Manager, Virtual Edition. There are two options for defining an account:

- Create a new account in Active Directory and then add the account to the Administrator group.
- Login with a local account created directly on the RealPresence Resource Manager, Virtual Edition.

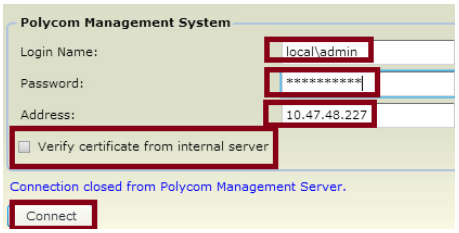
  In this case, you'll use the local\admin account that you have been using to login to RealPresence Resource Manager, Virtual Edition's Web UI.

To create a user account:

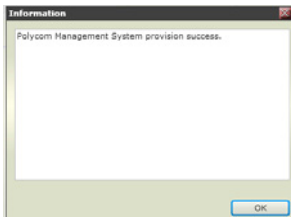
1. In the RealPresence Access Director, Virtual Edition Web UI, navigate to **Admin>Polycom Management System**.
2. Enter the **Login Name** and **Password** credentials along with the RealPresence Resource Manager, Virtual Edition's IP address.

3 Disable the **Verify certificate from internal server** checkbox and click **Connect**.

Note: No certificates have been exchanged between servers, so the **Verify certificate from internal server** box must be unchecked unless the certificate exchange step has been completed in advance. Exchanging certificates provides enhanced security and can be configured at any time in the future.



4 Click **OK** to confirm the successful integration.



Define a New Site in the RealPresence Resource Manager, Virtual Edition

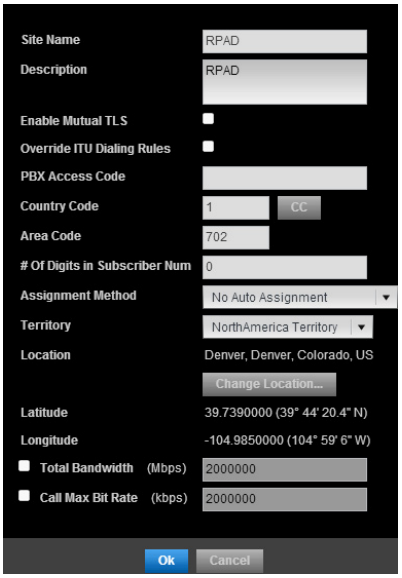
RealPresence Access Director, Virtual Edition is designed to be configured using RealPresence Resource Manager, Virtual Edition's provisioning service by extending the Site Topology to include the RealPresence Access Director, Virtual Edition. In this step, you'll create a new Site and specify a network segment or subnet that is specifically enabled for RealPresence Access Director, Virtual Edition.

To add a site to the RealPresence Resource Manager, Virtual Edition

1 Click **Network Topology > Sites**.

2 Populate the following fields:

- Site Name – This is an arbitrary value
- Description – This is required field
- Country Code – Country Code
- Area Code – Area Code
- Territory – Choose the territory to which the site belongs



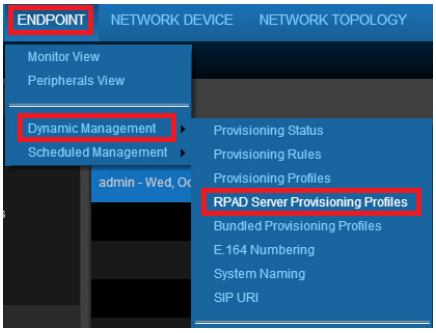
3. Click **Specify Location** and fill in the country and city, and the RealPresence Resource Manager, Virtual Edition will populate the location field.
4. Leave the default settings for **H323 Routing** and **SIP Routing**.
5. Click the **Subnets** option and then click **Add**.
6. Populate the following fields and click **OK**:
   - IP Address – The IP address of the RealPresence Access Director, Virtual Edition
   - Mask Length – The length of Subnet Mask. With a single IP, enter a Mask Length of 32
   - Total Bandwidth/Call Max Bit Rate – The Mbps allowed within this Subnet

Create RealPresence Access Director, Virtual Edition Server Provisioning Profiles Provision

RealPresence Resource Manager, Virtual Edition provisions the configuration settings for the RealPresence Access Director, Virtual Edition through a custom RealPresence Access Director, Virtual Edition Provisioning Profile. In this step, you'll create the RealPresence Access Director, Virtual Edition Provisioning Profile that contains the IP Address information for the RealPresence DMA, Virtual Edition and RealPresence Resource Manager, Virtual Edition.

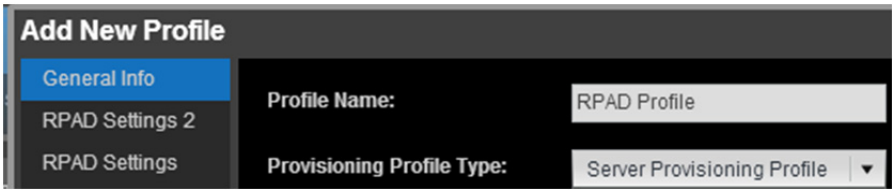
To provision the provisioning profile:

1. Go to **ENDPOINT>Dynamic Management>RPAD Server Provisioning Profiles**.



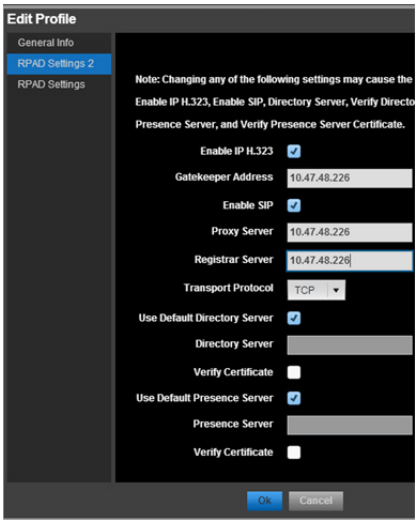
2 Click **Actions>Add**.

3 On the **General Info** section, enter a Profile Name and select **Server Provisioning Profile**.

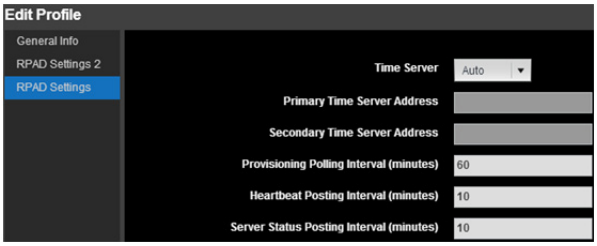


4 Click **RPAD Settings 2** and populate the following fields:

- Enable IP H.323 – Enable checkbox to enable H.323 calls
- Gateway Address – IP Address of RealPresence DMA, Virtual Edition
- Enable SIP – Enable checkbox to enable SIP calls
- Proxy Server – IP Address of RealPresence DMA, Virtual Edition
- Registrar Server – IP Address of RealPresence DMA, Virtual Edition
- Transport Protocol – TCP or Auto



5 Keep the RealPresence Access Director, Virtual Edition Settings default values and click **OK**.

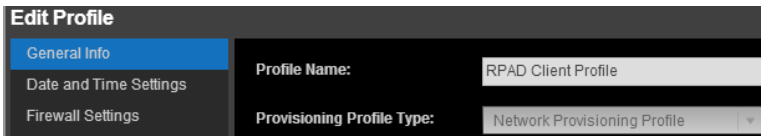


Create Network Provisioning Profile for Endpoints that Connect to RealPresence Access Director, Virtual Edition

In the last step, you created a Provisioning Profile that defined the connection information the RealPresence Access Director, Virtual Edition uses to connect to the RealPresence DMA, Virtual Edition and RealPresence Resource Manager, Virtual Edition. This step is similar, but instead of defining the connection settings for the RealPresence Access Director, Virtual Edition, you'll define the connection information for the endpoints that connect to the RealPresence Access Director, Virtual Edition.

To create a network provisioning profile:

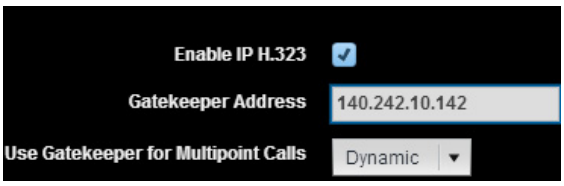
1. Navigate to **ENDPOINT>Dynamic Management>Provisioning Profiles**.
2. Click **Actions>Add**.
3. Add a Profile Name and set Provisioning Profile Type to **Network Provisioning Profile**.



Dynamically managed endpoints that connect to the RealPresence Access Director, Virtual Edition must be provisioned with the RealPresence Access Director, Virtual Edition's system IP address for all network settings. In the next two steps use the external IP address of the RealPresence Access Director, Virtual Edition for the **Gatekeeper** and **SIP Server settings**.

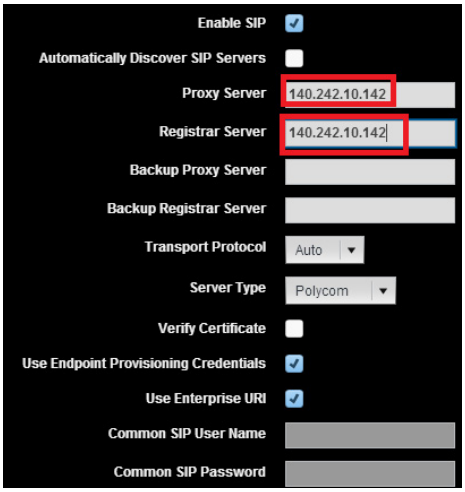
Note: If this were a Network Provisioning Profile for internal endpoints, like you created in Chapter 8, you would use the direct IP address for the RealPresence DMA, Virtual Edition for the Gatekeeper and SIP Server.

4. Select **H.323 Settings** from the left side menu options.
   - Enable IP H.323 – Enable checkbox
   - Gatekeeper Address – Use the external NATTED IP address
   - Use Gatekeeper for Multipoint Calls – Dynamic for Use



5. Click **SIP Settings** from the left side menu options.

- Enable IP H.323 – Enable checkbox
- Gatekeeper Address – Use the external NATTED IP address
- Use Gatekeeper for Multipoint Calls – Dynamic for Use

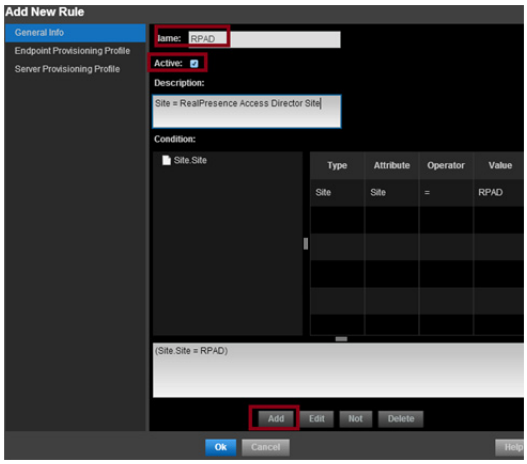


Create Provisioning Rule

So far you have created a new Site for the RealPresence Access Director, Virtual Edition, a new RealPresence Access Director, Virtual Edition Provisioning Profile defining the RealPresence Access Director, Virtual Edition's connection information to the RealPresence DMA, Virtual Edition, and a Network Provisioning Profile for endpoints connecting to the RealPresence Access Director, Virtual Edition. However the new Site for the RealPresence Access Director, Virtual Edition hasn't been linked to the Endpoint Provisioning Profile.

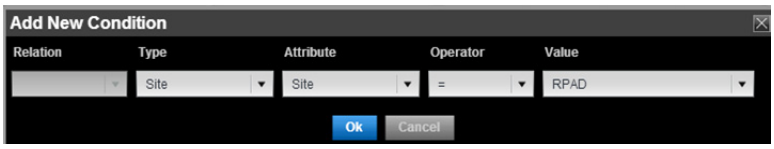
To create a new provision rule:

1. Select **ENDPOINT >Dynamic Management>Provisioning Rules**.
2. Under **General Info**, fill in a value for the **Name**, enable the **Active** checkbox and click **Add**.

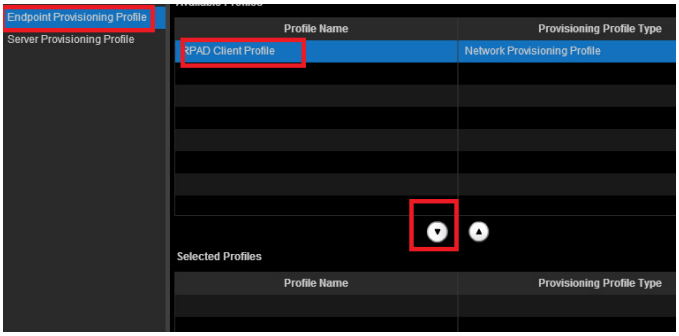


3. Select the following options for Add New Condition and click **OK**:

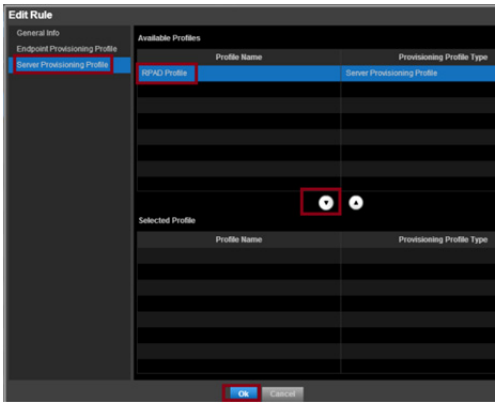
- Type – Site
- Attribute – Site
- Operator – =
- Value – RPAD



4 Click **Endpoint Provisioning Profile** and move the RealPresence Access Director, Virtual Edition Endpoint Profile to Selected Profile using the arrow, and then click **OK**.



5 Click **Server Provisioning Profile** and move the RealPresence Access Director, Virtual Edition Profile to Selected Profile using the arrow, and then click **OK**.



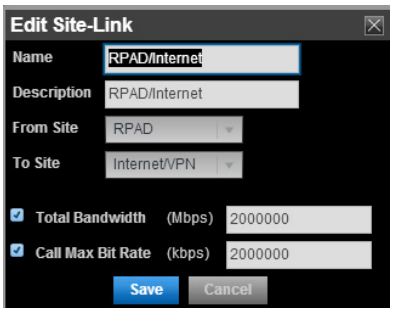
6 Verify the rule was added to the list of Rules and the Status has green checkmark.

Configure Site Links to Connect RealPresence Access Director, Virtual Edition Site with Existing Topology

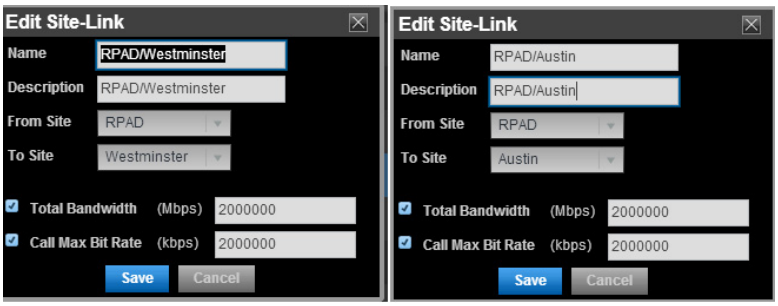
The RealPresence Access Director, Virtual Edition is almost fully configured and accessible by endpoints, but with the current Site Topology, external endpoints connecting to the RealPresence Access Director, Virtual Edition Site won't be able establish calls to local sites. In the next step, you'll create a Site-Link that will allow connections between the internal Sites and the RealPresence Access Director, Virtual Edition Site.

To create a site link:

1. In the RealPresence Resource Manager, Virtual Edition Web UI, navigate to **NETWORK TOPOLOGY>Site-Links**.
2. Click **Site Link Actions>Add**.
3. Edit Site Link to connect the RealPresence Access Director, Virtual Edition with Internet/VPN.



4. Follow the same steps to link RealPresence Access Director, Virtual Edition to other Sites. For example, to Westminster and Austin.



Modify RealPresence Access Director, Virtual Edition Proxy Settings

It is important to understand the proxy feature of the RealPresence Access Director, Virtual Edition that provides firewall/NAT traversal and reverse proxy functionality for HTTPS, LDAP, XMPP, and TCP traffic. For example, when the RealPresence Access Director, Virtual Edition receives a log-in and provisioning request from an external endpoint, the system sends the request to the HTTPS server specified in the RealPresence Resource Manager, Virtual Edition. Likewise, the access proxy forwards requests for LDAP and XMPP services to the internal LDAP or XMPP server.

The majority of access proxy settings are already provisioned through the configuration changes you made to the RealPresence Resource Manager, Virtual Edition earlier. In the final step, you'll check the Access Proxy Settings to verify the connection information and security.

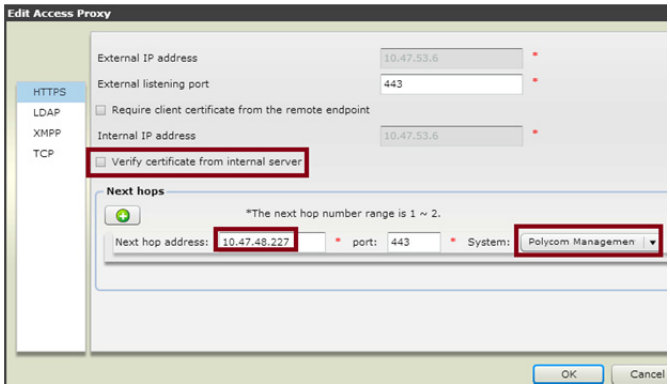
To check the Access Proxy settings:

1. Navigate to **Configuration>Access Proxy Settings**.
2. Ensure the **Next hop** column contains the RealPresence DMA, Virtual Edition IP address

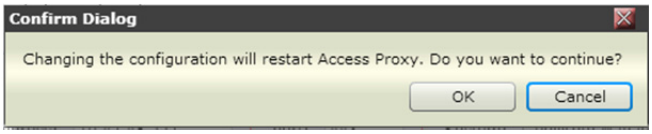
Protocol	External IP	Check client certificate	Internal IP	Next hop
HTTPS	10.47.53.6	FALSE	10.47.53.6	
LDAP	10.47.53.6	FALSE	10.47.53.6	10.47.48.227
XMPP	10.47.53.6	FALSE	10.47.53.6	10.47.48.227
TCP	10.47.53.6	N/A	10.47.53.6	

3. Click **Actions>Edit**.
4. Disable the **Verify certificate from internal server** checkbox. No certificates have been exchanged between the RealPresence Resource Manager, Virtual Edition and RealPresence Access Director, Virtual Edition, and those certificates must be exchanged before you can enable this checkbox, or endpoint login will fail.

   This guide doesn't cover this process, but it can be configured any time in the future for enhanced security.



5. Click **OK** to restart the Access Proxy.



6. The RealPresence Access Director, Virtual Edition is now configured.

Test the Solution

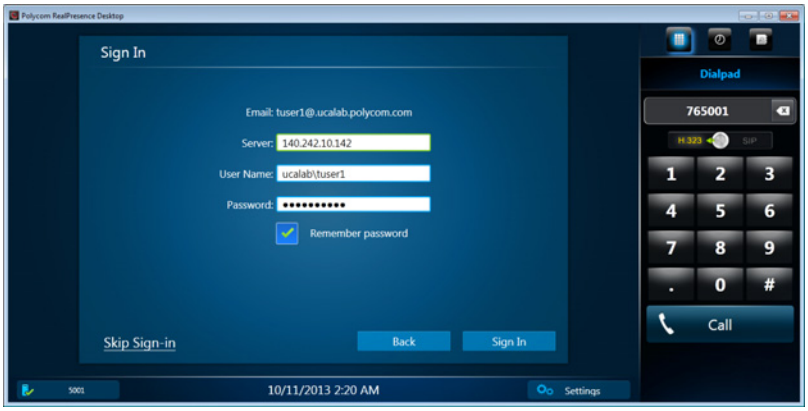
External participants should now be able to enter their email address information into the endpoint to automatically discover the RealPresence Access Director, Virtual Edition's IP address. Next, they should be able to login using their Active Directory credentials and automatically receive the RealPresence

Access Director, Virtual Edition Provisioning Profile, including the correct H.323 and SIP servers along with the appropriate SIP URI and E.164 Number.

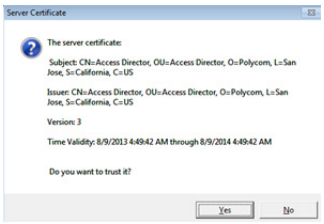
To test the solution:

1. Launch the RealPresence Desktop client.
2. Click **Settings**.
3. Enter your email address in the **Email Address** field and click **Next**.

   RealPresence Desktop should automatically detect the public NATTED IP of the RealPresence Access Director, Virtual Edition. If you didn't add the DNS SRV Record, this step will fail, but the **Server** field is editable and you can manually enter the public NATTED IP.



4. Accept the Server Certificate warning if the dialog box appears.



5. Test the call functionality for multipoint and point-to-point calls:
   - To verify multipoint calls, dial into one of the VMRs you created earlier using either the SIP or the H.323 protocol.
   - To verify point-to-point calls, browse the directory and start a video call with another person who is connected to one of the internal Sites.

All endpoints connecting through the RealPresence Access Director, Virtual Edition will be associated with the RealPresence Access Director, Virtual Edition Site and contain the RealPresence Access Director, Virtual Edition's IP address.

To verify the endpoint connection:

» Login to the RealPresence Resource Manager, Virtual Edition web interface and navigate to **ENDPOINT >Monitor View** to see the endpoint connection.

At this point, connecting from the Internet should provide the same functionality as connecting from the LAN.

You can modify the Site-Links on the RealPresence Resource Manager, Virtual Edition if you want to block calls from the RealPresence Access Director, Virtual Edition to one of the other Sites like Austin or Westminster. To do this, simply delete the Site-Link between the RealPresence Access Director, Virtual Edition and Site you want to block.

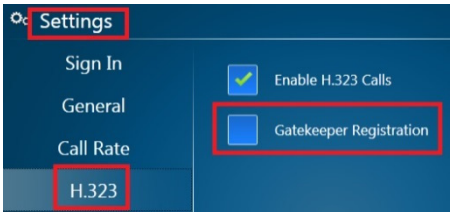
Unregistered Endpoint Dialing

You also need to test B2B and B2C scenarios where endpoints don't have credentials to register. The RealPresence Access Director, Virtual Edition is configured to allow SIP guests to dial into a Virtual Meeting Room (VMR).

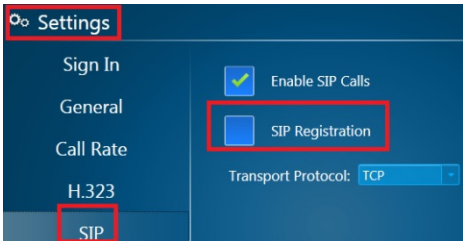
The last test is to confirm that unregistered SIP endpoints are able to dial into a VMR.

To test unregistered SIP guest connections:

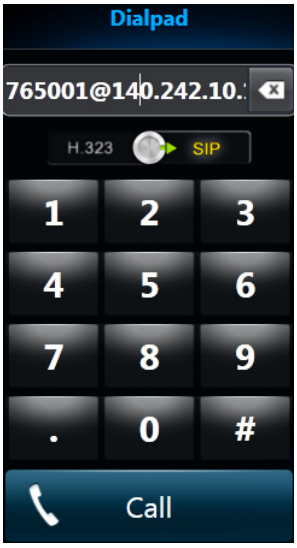
1. From the RealPresence Desktop client, click **Logout**.
2. Click **Settings**, and on the login screen, click **Skip Sign-In**.
3. Click **Settings** again and navigate to **H.323** and uncheck **Gatekeeper Registration**.



4. Click **SIP** and uncheck **SIP Registration**. Click **OK**.



5. Enter the dial string in the format of **VMR@PublicIPaddress** and click **Call**.



If the external SRV record is in place, guests can dial using the DNS address instead of the public IP address: **VMR@video.company.com**.

Summary

The RealPresence Access Director, Virtual Edition is now configured, but as is the case with the other chapters, this solution guide provides only an example of a basic configuration. There are more configuration options available to enhance the features and functions available through the RealPresence Access Director, Virtual Edition. For example:

- Federate divisions or enterprises by connecting a SIP trunk or H.323 neighbored gatekeeper
- Modify the port range that is open on the firewall
- Configure RealPresence Access Director, Virtual Edition to use two IPs, one for the LAN side and one for the WAN side
- Configure two RealPresence Access Director, Virtual Editions to provide a tunneled solution through the firewall
- Modify rules to allow H.323 Guests to connect to RealPresence Access Director, Virtual Edition
- Exchange certificates with the RealPresence Resource Manager, Virtual Edition to enhance security

Advanced Features

Polycom RealPresence Platform, Virtual Edition offers some advanced configuration and feature support for the four RealPresence Platform, Virtual Edition applications.

High Availability

Polycom RealPresence Platform hardware appliances differ from their VMware counterparts in how they provide or support High Availability (HA).

Polycom High Availability Support

Polycom RealPresence Platform hardware appliances offer the following options for HA:

- RealPresence DMA and RealPresence Resource Manager provide inherent local redundancy.
  - RealPresence DMA superclustering allows for RealPresence DMA resiliency and also supports a mix of hardware appliances and software instances.
- RealPresence Access Director does not inherently provide redundancy at this time, but it is a committed feature for the hardware appliance in the future.
- RealPresence Collaboration Server does not have an inherent mechanism for local failover; however, RealPresence DMA is able to provide resiliency via its bridge virtualization feature.

VMware High Availability Support

Polycom RealPresence Platform, Virtual Edition software instances offer the following options for HA:

- RealPresence Resource Manager, Virtual Edition and RealPresence Access Director, Virtual Edition support the use of the VMware High Availability (HA) feature which can protect against host failures in a VMware cluster (analogous with a server hardware failure).
  - Only basic Host Monitoring is supported.
  - Polycom does not support additional VM Monitoring, App Monitoring, or VMware Fault Tolerance (FT) features.
- RealPresence DMA, Virtual Edition does not support VMware HA at this time, but it is being considered as a feature in the future.
- RealPresence Collaboration Server, Virtual Edition does not support VMware HA for host failures; however, RealPresence DMA is able to provide resiliency via its bridge virtualization feature.

It is beyond the scope of this documentation to discuss various parameters of the VMware HA feature set. A VMware administrator must ensure that the environment can tolerate and give priority to Polycom RealPresence Platform, Virtual Edition products during host failures.

Backup, Upgrade, and Restore

RealPresence DMA, RealPresence Resource Manager, and RealPresence Access Director provide backup, upgrade, and restore capabilities within the hardware appliances—the VMware versions support the same procedures as the hardware appliances. RealPresence Collaboration Server, Virtual Edition provides backup and restore capabilities using the VMware utilities, but upgrading requires a side-by-side upgrade process in conjunction with the inherent VMware utilities.

Polycom does not currently recommend VMware capabilities such as Snapshots or Cloning to provide backup/restore features for Polycom RealPresence Platform, Virtual Edition components; however, snapshots may provide a means to return to the instance for upgrade scenarios.

Note: VMware Snapshot

After a VMware Snapshot is taken, any data or configuration changes after the Snapshot will be lost.

To upgrade RealPresence DMA, Virtual Edition, RealPresence Resource Manager, Virtual Edition, and RealPresence Access Director, Virtual Edition:

1. Backup the system using the inherent VMware Backup Utility.
2. Take a VM Snapshot for rollback.
3. Upgrade the system using the inherent VMware upgrade facility. You can obtain the upgrade file from support.polycom.com.
4. Restore the system using the inherent VMware Restore Utility.

To upgrade RealPresence Collaboration Server, Virtual Edition:

1. Note the current instance UUID.
2. Backup the system using the inherent Backup Utility
3. Power down the system.
4. Install the new VM instance using the updated OVA file.
5. Modify the UUID of the new instance to match that of the old instance.
6. Enter the original CFS activation key into the new instance.
7. Use the inherent Restore Utility to migrate the configuration from the old instance to the new instance.

For a complete description of the upgrade process, please refer to the individual guides and release notes for the Polycom RealPresence Platform, Virtual Edition application being upgraded.

Hardware to Software Migration

Polycom does not currently support hardware appliance to virtual edition migrations. It is a future consideration at this time.

Appendix A: RealPresence DMA, Virtual Edition Setup Worksheet

Before you begin your RealPresence DMA, Virtual Edition system setup, fill out the applicable fields in the **My System Values** column of the following worksheet.

Caution: Appliance vs VM Network Configuration

Network configuration of an appliance (hardware-based) DMA system involves options and settings not relevant in a virtual deployment, including dual-server configuration and split management and signaling networks. Although those settings are present in the DMA management interface's Network Settings page, they must not be used in a VM deployment. They are clearly identified in the following worksheet.

Table 10: RealPresence DMA, Virtual Edition Setup Worksheet

Configuration Information	*My System Values*	*Description*
System IP type		Specify whether the system should support IPv4, IPv6, or both. If both, complete all the IP address information below. If only IPv4 or IPv6, complete only the corresponding fields below.
System server configuration	One server configuration	VM deployments *must* be single-server systems.
System split network setting	Combined network interfaces	VM deployments *must* combine the system's management and signaling interfaces.
Server 1		Only the Server 1 settings are used for VM deployments.
Management host name		Local host name of the Polycom DMA server's combined interface. Host names may contain only letters, numbers, and internal dashes (hyphens), and may not include a domain. The reserved values appserv* and dmamgk-* may not be used for host names. The host name is combined with the domain name specified under **General System Network Settings** to form the fully qualified domain name (FQDN).
Management IPv4		Static, physical IP address for the server's combined interface.
Management IPv6		

Configuration Information	*My System Values*	*Description*
Signaling IPv4		Not used for VM deployments.
Signaling IPv6		
Server 2		These settings are not used for VM deployments.
Shared Management Network Settings		In the combined network configuration required for VM deployments, users accessing the management interface are on the same network as endpoints and other devices communicating with the DMA system, and these settings are used for both management and signaling.
Virtual management host name		For a two-server system or a single-server system in IPv6-only mode, the local host name of the virtual management host. Not used for a single-server system with IPv4 enabled. Host names may contain only letters, numbers, and internal dashes (hyphens), and may not include a domain. The reserved values appserv* and dmamgk-* may not be used for host names. The host name is combined with the domain name specified under General System Network Settings to form the fully qualified domain name (FQDN).
Virtual management IPv4		For a single-server system in IPv6 only mode, the IP address(es) of the virtual management host. Not used for a single-server system with IPv4 enabled.
Virtual management IPv6		
Subnet mask		IPv4 network mask that defines the subnetwork of the system's management interface.
IPv6 prefix length		IPv6 CIDR (Classless Inter-Domain Routing) prefix size value (the number of leading 1 bits in the routing prefix mask) that defines the subnetwork of the system's management interface.
IPv4 gateway		IP address of the gateway server used to route network traffic outside the subnet.
Auto-negotiation		Yes or no. If no, indicate speed and full or half duplex. Note: Auto-negotiation is required if your network is 1000Base-T.

Configuration Information	*My System Values*	*Description*
LAN Security Settings Enable 802.1x		These settings are not used for VM deployments. **Do not select Enable 802.1x**.
Shared Signaling Network Settings		These settings are not used for VM deployments. Combined network configuration is required, so all traffic (signaling and management) uses the management network settings.
General System Network Settings		
DNS search domains		Space- or comma-separated list of fully qualified domain names to query on the DNS servers to resolve host names (optional). The system domain is added automatically; you don’t need to enter it.
DNS 1		IP address of the primary Domain Name System server. At least one DNS server is required. Your Polycom DMA system must be accessible by its host name(s), not just its IP address(es), so you (or your DNS administrator) must create A (address) resource records (RRs) for IPv4 and/or AAAA records for IPv6 on your DNS server(s). A/AAAA records that map each physical host name to the corresponding physical IP address and each virtual host name to the corresponding virtual IP address are mandatory.
DNS 2		IP address of a second DNS server (optional, but recommended).
DNS 3		IP address of a third DNS server (optional).
Domain		The domain for the system. This is combined with the host name to form the fully qualified domain name (FQDN). For instance: Host name: dma1 Domain: callservers.example.com FQDN: dma1.callservers.example.com

Configuration Information	*My System Values*	*Description*
Signaling DSCP		The Differentiated Services Code Point value (0–63) to put in the DS field of IP packet headers on outbound packets associated with signaling traffic. The DSCP value is used to classify packets for quality of service (QoS) purposes. If you're not sure what value to use, leave the default of 0.
Management DSCP		The Differentiated Services Code Point value (0–63) to put in the DS field of IP packet headers on outbound packets associated with management traffic. The DSCP value is used to classify packets for quality of service (QoS) purposes. If you're not sure what value to use, leave the default of 0.
Default IPv6 gateway		The IPv6 gateway's address and the interface used to access it, generally eth0, specified as: <IPv6_address>%eth0
Default IPv4 gateway		Not used for VM deployments, which must combine the system's management and signaling interfaces and thus have only one IPv4 gateway specified.
System Time		
Time zone		Time zone in which the system is located. We strongly recommend selecting the time zone of a specific geographic location (such as America/Denver), not one of the generic GMT offsets (such as GMT+7). If you really want to use a generic GMT offset (for instance, to prevent automatic daylight saving time adjustments), note that they use the Linux/Posix convention of specifying how many hours ahead of or behind local time GMT is. Thus, the generic equivalent of America/Denver (UTC-07:00) is GMT+07, not GMT-07.
NTP server #1		IP address of the primary NTP time server. Use of time servers is strongly recommended. All the devices in your video conferencing deployment should use the same time servers to avoid potential problems caused by time differences among devices.

Configuration Information	*My System Values*	*Description*
NTP server #2		IP address of a second NTP time server (optional, but strongly recommended).
NTP server #3		IP address of a third NTP time server (optional, but strongly recommended).
Routing Configuration		Special routing rules are generally not needed in the combined network configuration required in VM deployments, where users accessing the management interface are on the same network as endpoints and other devices communicating with the DMA system; the operating system's underlying routing configuration is generally sufficient. If you aren't sure, consult the appropriate IT staff or network administrator for your organization.
Destination host/network		The IP address of the destination network host or segment.
Prefix length		The CIDR (Classless Inter-Domain Routing) value that, together with the destination host/network address, defines the subnet for this route. For IPv4, a prefix length of 24 is equivalent to specifying a subnet mask of 255.255.255.0. A prefix length of 16 is equivalent to specifying a subnet mask of 255.255.0.0.
Interface		Specify the interface for this route. In the combined network configuration required in VM deployments, this is eth0.
Via		IP address of router for this route. Optional and only needed for non-default routers.

Appendix B: RealPresence Resource Manager, Virtual Edition Setup Worksheet

Before you begin your RealPresence Resource Manager, Virtual Edition system setup, fill out the applicable fields in the **My System Values** column of the following worksheet.

Table 11: RealPresence Resource Manager, Virtual Edition Setup Worksheet

Configuration Information	*My System Values*	*Factory-Set Default Values*	*Description*
System Network Settings (from Admin > Server Settings > Network)			
System Name		PLCM_RPRM	System name of the RealPresence Resource Manager system. Can be up to 32 characters long; dashes and underscores are valid characters.
DSCP Marker			Allows the administrator to configure the Quality of Service level of the RealPresence Resource Manager. Set the level between 0–63.
IPv6 Address			IPv6 global address
IPv6 Default Gateway			The IPv6 address of the gateway server/router. For IPv6 networks only.
IPv6 Link Local Address			Read-only field. The RealPresence Resource Manager system generates a value for this field when IPv6 is enabled.
IPv4 Address		192.168.1.254	Static, physical IP address for the system server on an IPv4 network. 192.168.1.254 is the default value that needs to be changed according to your own network.
IPv4 Subnet Mask		255.255.255.0	Network subnet mask of the system server. For IPv4 networks only
IPv4 Default Gateway		192.168.1.1	IP address of the gateway server/router. For IPv4 networks only. 192.168.1.1 is the default value. You need to change this to match the gateway IP for your network

Configuration Information	*My System Values*	*Factory-Set Default Values*	*Description*
DNS Domain			This is the DNS domain name suffix for the network in which the domain name server and the system server reside. For example polycom.com, not the fully qualified path of <hostname>.polycom.com.
Preferred DNS Server			IP address of the domain name server.
Alternate DNS Server			IP address of an alternate domain name server. Must be in the same IP address format as the preferred DNS server.
Enable 802.1.x		Disabled	Enable 802.1.x if your network requires this type of authentication. 802.1.x is required in maximum security environments.
User Name			The user name for the 802.1.x account.
Password			The password for the 802.1.x account
Confirm Password			Confirm the password for the 802.1 x account.
Key Management Protocol			Select the appropriate Key Management Protocol for your environment.
EAP Method			Select the appropriate EAP Method for your environment.
Phase2 Protocol			Select the appropriate Phase2 Protocol for your environment.
System Time Information (from Admin > Server Settings > System Time)			
System Time Zone			
Current Date			
Current Time			
External NTP Server			IP address of external NTP time server (optional).
Information Required for Polycom Customer Support (from Admin > Server Settings > Licenses)			
Serial number			
License number			

Appendix C: RealPresence Resource Manager DNS/Certificate information

Set up DNS Host and Service Records

Before installing a RealPresence Resource Manager, Virtual Edition system, you should consider configuring your DNS servers to:

- Resolve queries for the RealPresence Resource Manager system by host name.
- Resolve reverse lookup queries for the RealPresence Resource Manager system.
- Identify the RealPresence Resource Manager system as a service on the network.

The first function requires a DNS host record and optionally a reverse lookup pointer record. The second function requires a DNS service record. The DNS should also have entries for your Active Directory server, mail server, and gatekeeper.

DNS Host Record

To allow your DNS servers to resolve queries for the RealPresence Resource Manager system by host name, you must enter a DNS host record in your DNS file. The format of this record depends on the format of your network addressing.

- If you use IPv4 addressing, enter a DNS A record in the required format.
- If you use IPv6 addressing, enter a DNS AAAA record in the required format.

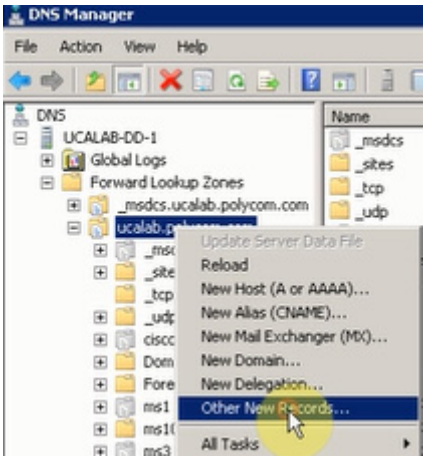
To allow your DNS servers to resolve queries for the RealPresence Resource Manager, Virtual Edition system by reverse lookup, you must enter a DNS pointer (PTR) record in your DNS file.

Service Record

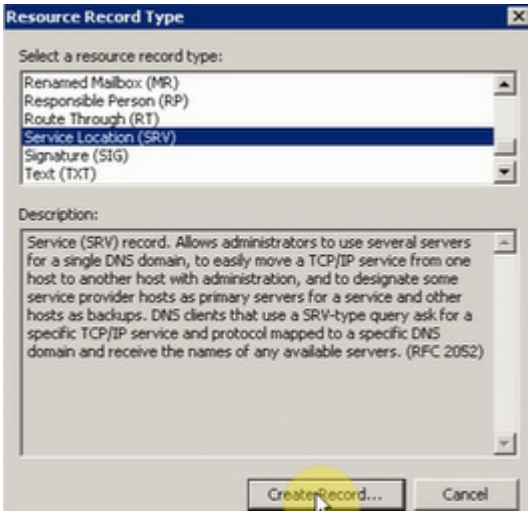
To dynamically manage endpoints (which includes dynamic provisioning, dynamic software update, and presence) right out-of-the-box, they must be able to automatically discover the RealPresence Resource Manager, Virtual Edition system. This means you must add the DNS service record (SRV record) for the RealPresence Resource Manager, Virtual Edition. The lookup key for this service record is **_cmaconfig._tcp**.

To add the SRV record for RealPresence Resource Manager, Virtual Edition:

1. Right click on ucalab.polycom.com and select **Other New Records…**

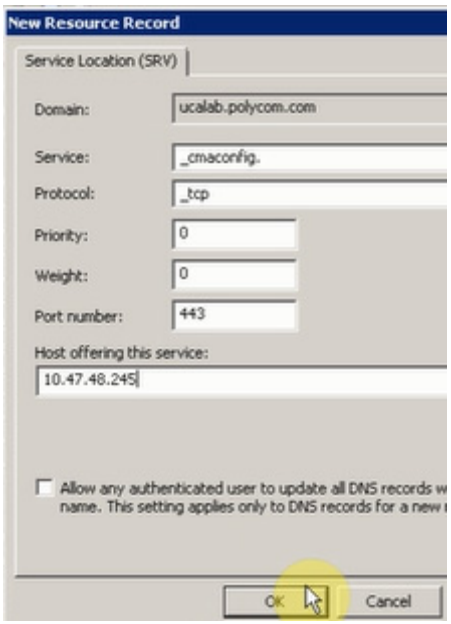


2 Select Service Location (SRV) and click CreateRecord….

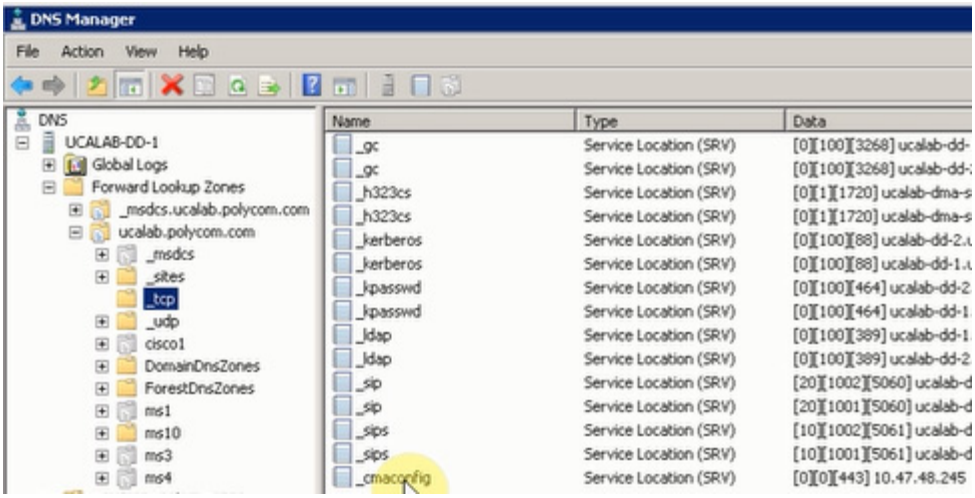


3 Enter the following information in the New Resource Record box and click **OK**:

- Service: _cmaconfig.
- Protocol: _tcp
- Priority: 0
- Weight: 0
- Port number: 443
- Host offering this service: [your domain IP]



4 To verify the record was created, right click on **_tcp** in the **ucalab.polycom.com** file menu.



The record will resemble the following: **_cmaconfig._tcp.customerdomain.com 86400 IN SRV 0 0 443 Access5.customerdomain.com**.

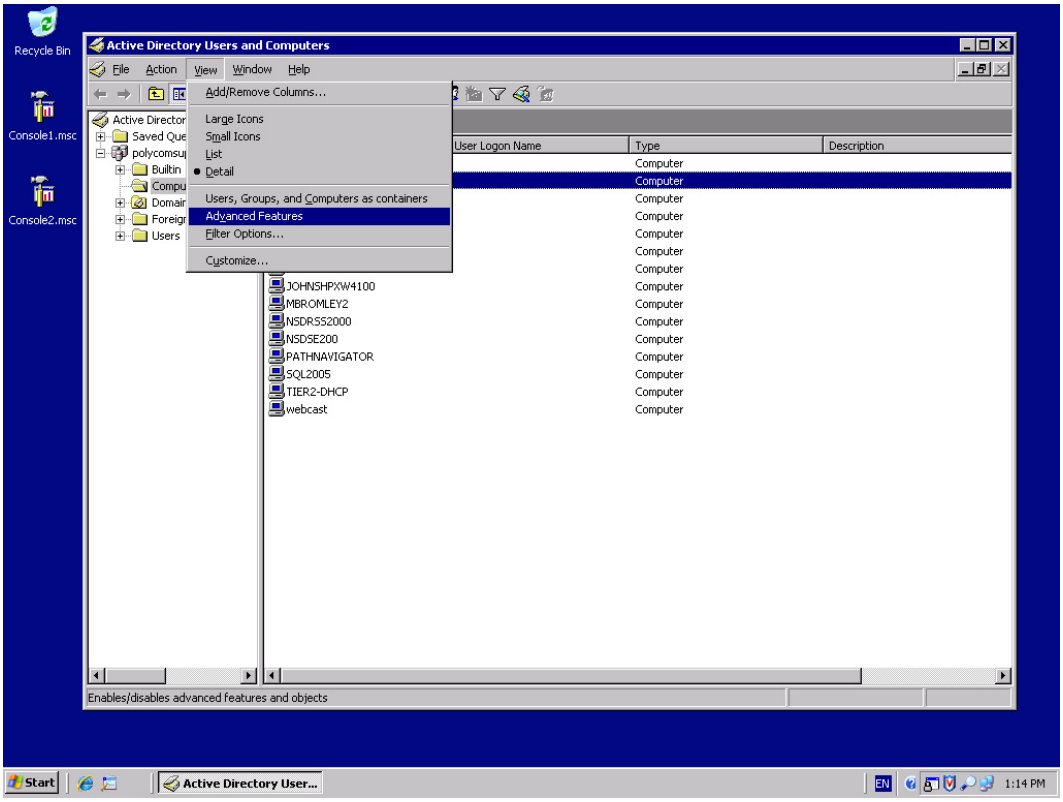
For more information about DNS, DNS records, and how DNS works, see Microsoft Technet.

Appendix D: Pre-Stage Computer Account for Active Directory Integration

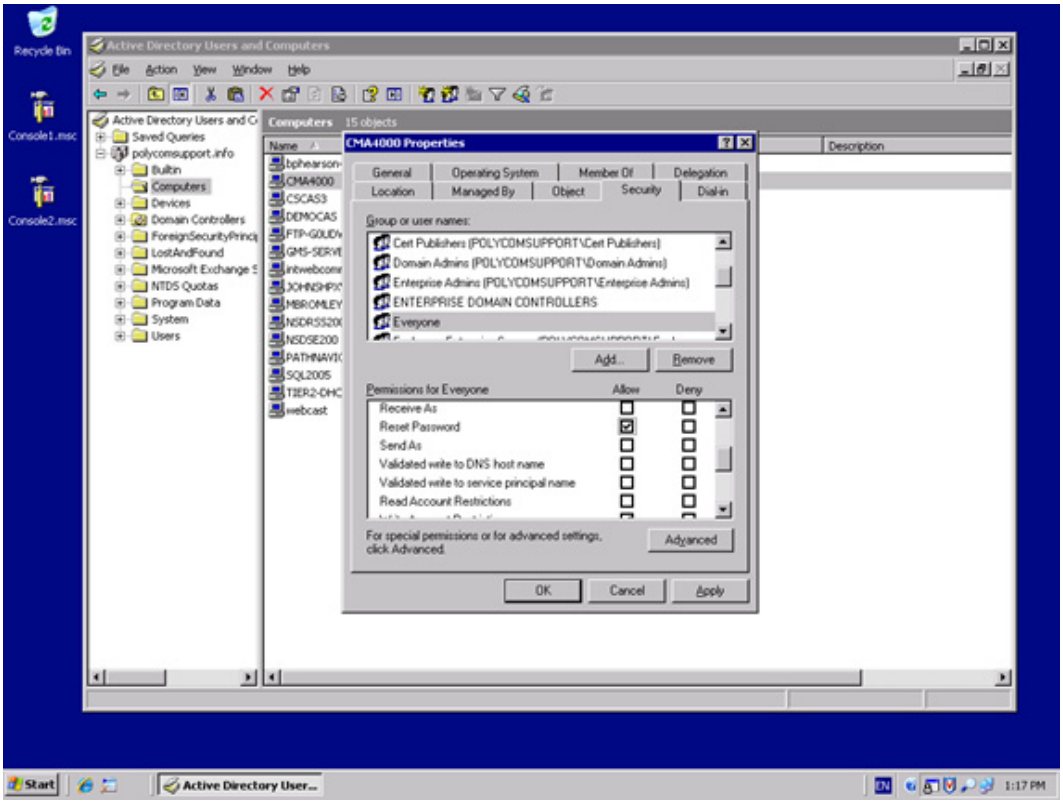
To enable the **Use Single Signon** option, which allows endpoint users who are included in the Active Directory (AD) to securely log into their dynamically-managed endpoint without typing in credentials, an AD administrator must first pre-stage an AD machine account (“computer” account, not a “user” account) for use by RealPresence Resource Manager, Virtual Edition. You can create the machine (computer) account in any desired organizational unit (OU).

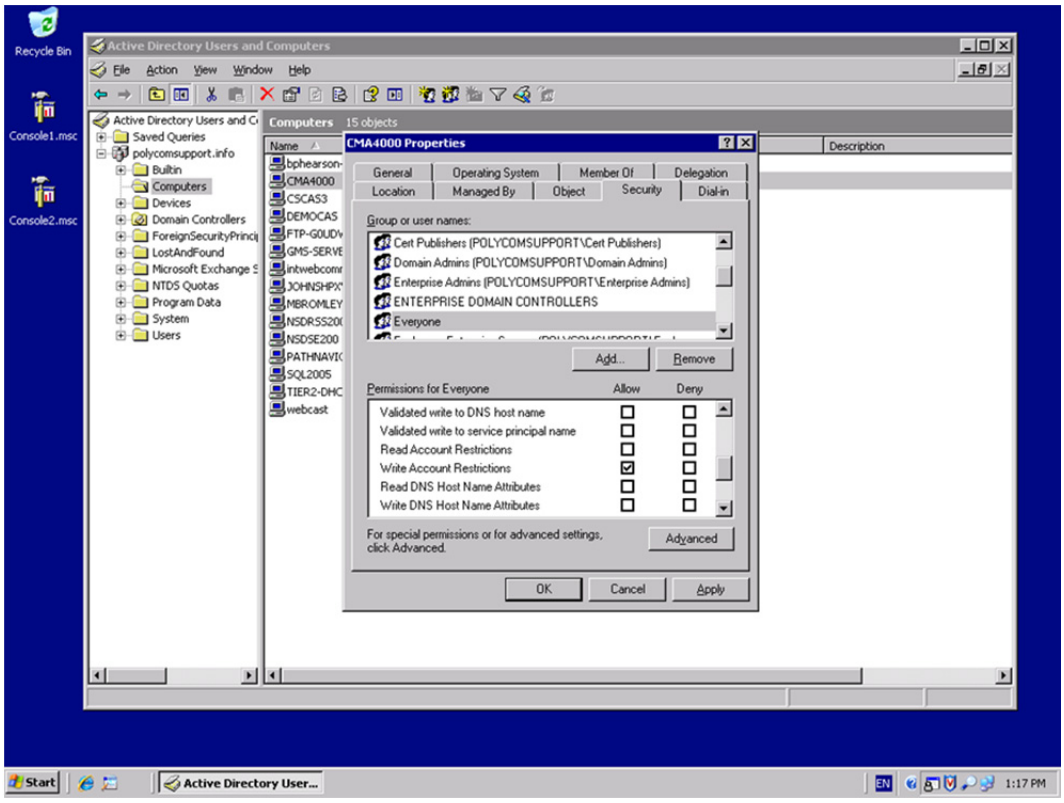
To pre-stage a machine account using the Microsoft Active Directory Users and Computers Microsoft Management Console (MMC):

1. Open the MMC. Highlight the name of the RealPresence Resource Manager, Virtual Edition instance you want to configure. In this example, the name is CMA4000.
2. Click on **View**, then select **Advanced Features.**



3. Click on the **Security** tab of the computer properties dialog box that opens. The machine account object must have **Reset Password** and **Write Account Restrictions** permissions.

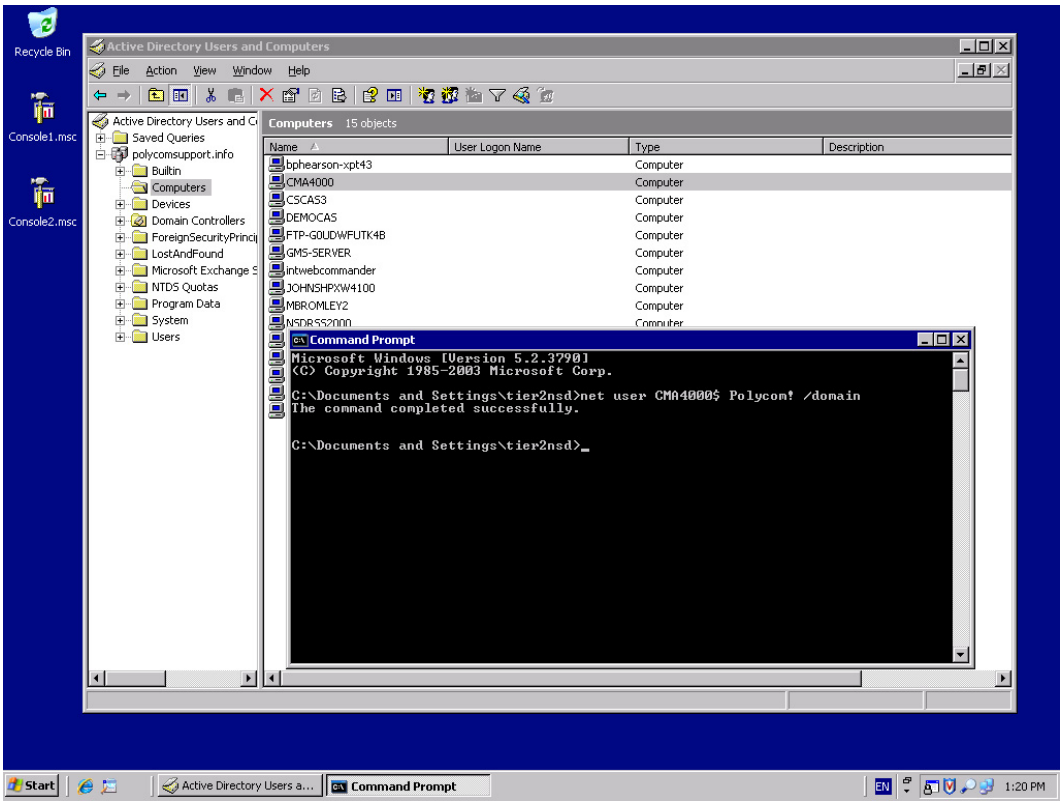

Active Directory Users and Computers
File Action View Window Help
Active Directory Users and Computers
Saved Queries
polycomsupport.info
Builtin
Computers
Devices
Domain Controllers
ForeignSecurityPrincipals
LostAndFound
Microsoft Exchange System Objects
NTDS Quotas
Program Data
System
Users
Computers 15 objects
Name
Description
CMA4000 Properties
General
Operating System
Member Of
Delegation
Location
Managed By
Object
Security
Dial-in
Group or user names:
Cert Publishers (POLYCOMSUPPORT\Cert Publishers)
Domain Admins (POLYCOMSUPPORT\Domain Admins)
Enterprise Admins (POLYCOMSUPPORT\Enterprise Admins)
ENTERPRISE DOMAIN CONTROLLERS
Everyone
Add...
Remove
Permissions for Everyone
Allow
Deny
Receive As
Reset Password
Send As
Validated write to DNS host name
Validated write to service principal name
Read Account Restrictions
For special permissions or for advanced settings, click Advanced.
Advanced
OK
Cancel
Apply
Start
Active Directory User...
1:17 PM


Active Directory Users and Computers
File Action View Window Help
Active Directory Users and Computers
Saved Queries
polycomsupport.info
Builtin
Computers
Devices
Domain Controllers
ForeignSecurityPrincipals
LostAndFound
Microsoft Exchange System Objects
NTDS Quotas
Program Data
System
Users
Computers 15 objects
Name
Description
CMA4000 Properties
General
Operating System
Member Of
Delegation
Location
Managed By
Object
Security
Dial-in
Group or user names:
Cert Publishers (POLYCOMSUPPORT\Cert Publishers)
Domain Admins (POLYCOMSUPPORT\Domain Admins)
Enterprise Admins (POLYCOMSUPPORT\Enterprise Admins)
ENTERPRISE DOMAIN CONTROLLERS
Everyone
Add...
Remove
Permissions for Everyone
Allow
Deny
Validated write to DNS host name
Validated write to service principal name
Read Account Restrictions
Write Account Restrictions
Read DNS Host Name Attributes
Write DNS Host Name Attributes
For special permissions or for advanced settings, click Advanced.
Advanced
OK
Cancel
Apply
Start
Active Directory User...
1:17 PM

4 From a command window on the Domain Controller, type:

net user <machine name>$ <Password> /domain

- <machine name>: RealPresence Resource Manager, Virtual Edition name selected in the AD in Step 1
- <Password>: the desired temporary password to be used during integration
- /domain: **/domain** (do not substitute with a domain name

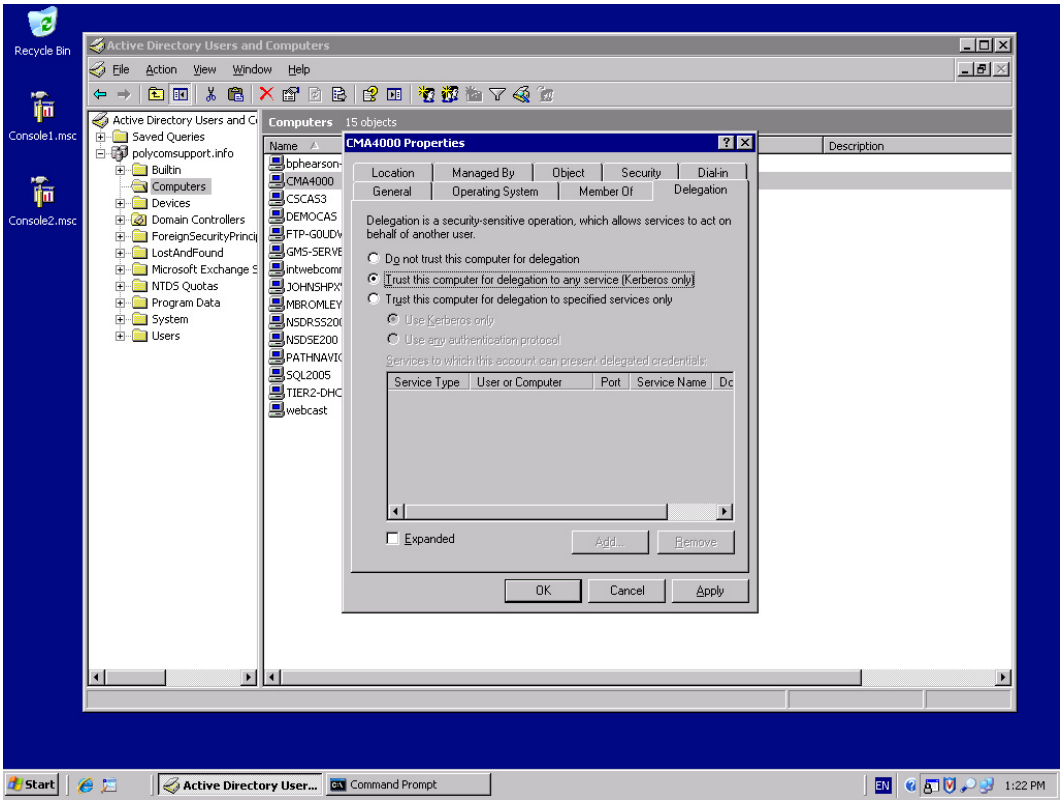


RealPresence Resource Manager, Virtual Edition will change its machine account password immediately upon successful integration.

For more information on the net user command, see the Microsoft Knowledge Base.

You have now configured a machine account that you can use for integrated Windows authentication.

5 Edit the properties of the machine account under the **Delegation** tab and select **Trust computer for delegation to any service**.


Recycle Bin
Console1.msc
Console2.msc
Active Directory Users and Computers
File Action View Window Help
Active Directory Users and C
Saved Queries
polycomsupport.info
Builtin
Computers
Devices
Domain Controllers
ForeignSecurityPrincip
LostAndFound
Microsoft Exchange S
NTDS Quotas
Program Data
System
Users
Computers 15 objects
Name
Description
bphearson-
CMA4000
CSCAS3
DEMOCAS
FTP-G0UDV
GMS-SERVE
intwebcomr
JOHNSHPX
MBROMLEY
NSDRSS20
NSDSE200
PATHNAVIC
SQL2005
TIER2-DHC
webcast
CMA4000 Properties
Location
Managed By
Object
Security
Dial-in
General
Operating System
Member Of
Delegation
Delegation is a security-sensitive operation, which allows services to act on behalf of another user.
Do not trust this computer for delegation
Trust this computer for delegation to any service (Kerberos only)
Trust this computer for delegation to specified services only
Use Kerberos only
Use any authentication protocol
Services to which this account can present delegated credentials:
Service Type
User or Computer
Port
Service Name
Dc
Expanded
Add...
Remove
OK
Cancel
Apply
Start
Active Directory User...
Command Prompt
EN
1:22 PM

Appendix E: Workstation Requirements for Connecting to RMX Administration Interface

Installation Requirements

The Collaboration Server Web Client and RMX Manager applications can be installed in an environment that meets the following requirements:

Minimum Hardware	Intel® Pentium® III, 1 GHz or higher,1024 MB RAM, 500 MB free disk space.
Workstation Operating System	Microsoft® Windows® XP, Vista®, Windows® 7.
Network Card	10/100 Mbps.
Web Browser	Microsoft® Internet Explorer® Version 7 or 8.

Requirements to note:

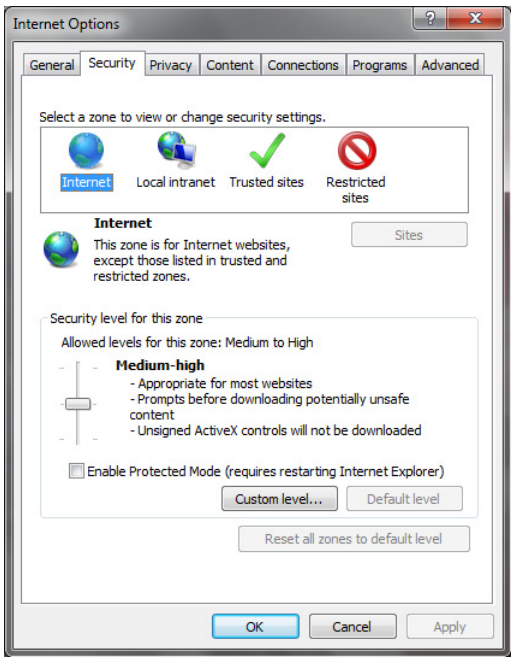
- Collaboration Server Web Client and RMX Manager are optimized for display at a resolution of 1280 x 800 pixels and a magnification of 100%.
- .Net Framework 2.0 is required and will install automatically.
  - If ActiveX installation is blocked please see the RealPresence Collaboration Server (RMX) 1500/2000/4000 Administrator's Guide, "ActiveX Bypass" on page 20-55.
- Collaboration Server Web Client does not support larger Windows text or font sizes. It is recommended to set the text size to **100% (default)** or **Normal** in the Display settings in Windows Control Panel on all workstations. Otherwise, some dialog boxes might not appear properly aligned.
  - To change the text size, select **Control Panel>Display**.
    - For Windows XP, click the Appearance tab, select **Normal** for the Font size and click **OK**.
    - For Windows 7, click the Smaller - 100% option and click **OK**.
- When installing the Collaboration Server Web Client, **Windows Explorer >Internet Options> Security Settings** must be set to **Medium** or less.
- It is not recommended to run Collaboration Server Web Client and Polycom CMAD applications simultaneously on the same workstation.

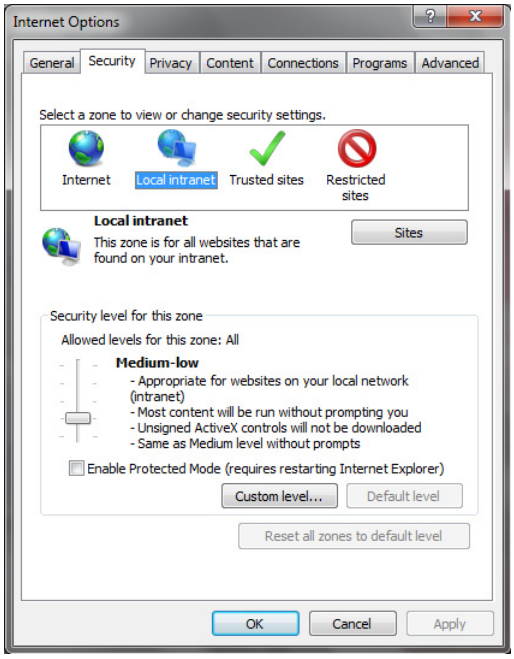
Microsoft Windows 7™ Security Settings

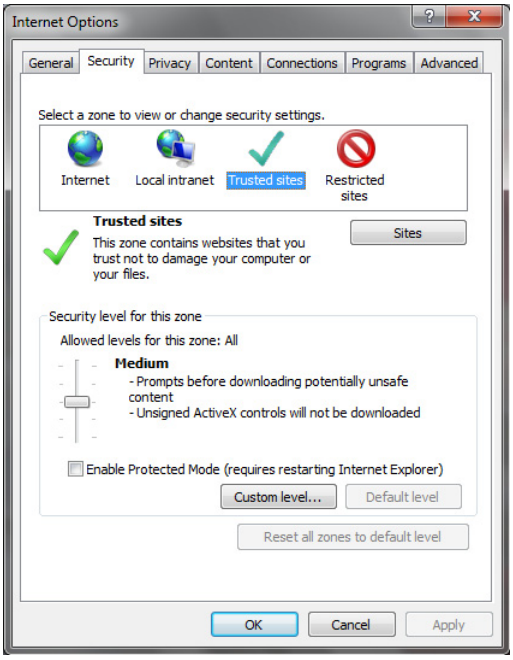
If Windows 7 is installed on the workstation, Protected Mode must be disabled before downloading the software to the workstation.

To disable Protected Mode:

1. In the Internet Explorer menu bar select **Tools > Internet Options**.
2. In the Internet Options dialog box, click the **Security** tab.
3. Clear the **Enable Protected Mode** checkbox for each of the following tabs:
   - Internet
   - Local intranet
   - Trusted sites







4 After successful connection to Collaboration Server, you can re-enable the **Enable Protected Mode** checkboxes for the following tabs:

- Internet
- Local intranet

5 Click **OK** to save the changes and close the Internet Options dialog box.

Internet Explorer 8 Configuration

When using Internet Explorer 8 to run the RealPresence Collaboration Server Web Client or RMX Manager applications, it is important to configure the browser according to the following procedure.

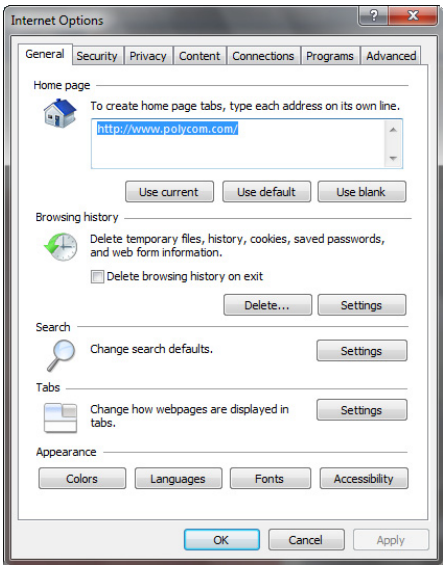
To configure Internet Explorer 8:

1 Close all browsers running on the workstation.

2 Use the Windows Task Manager to verify that no iexplore.exe processes are running on the workstation. If any processes are found, use the End Task button to end them.

3 Open Internet Explorer but do not connect to the MCU.

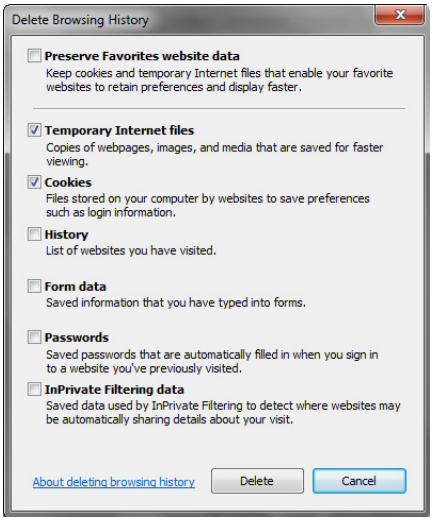
4 In the Internet Explorer menu bar select **Tools > Internet Options**.



The Internet Options dialog box opens with the General tab displayed.

5 In the Browsing history section, click **Delete…**.

The Delete Browsing History dialog box displays

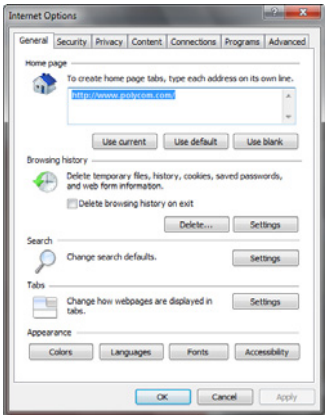


6 Enable the **Temporary Internet files** and **Cookies** checkboxes.

7 Click **Delete**.

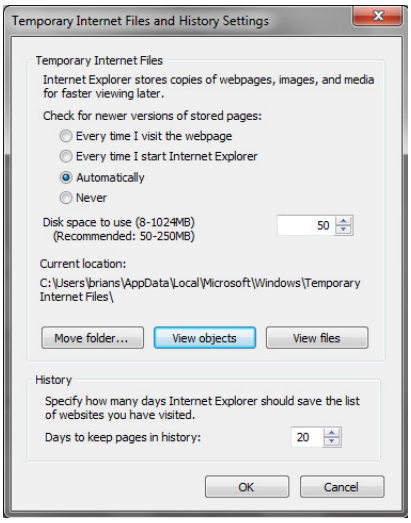
The Delete Browsing History dialog box closes and the files are deleted.

8 In Browsing history section of the Internet Options dialog box, click **Settings**.



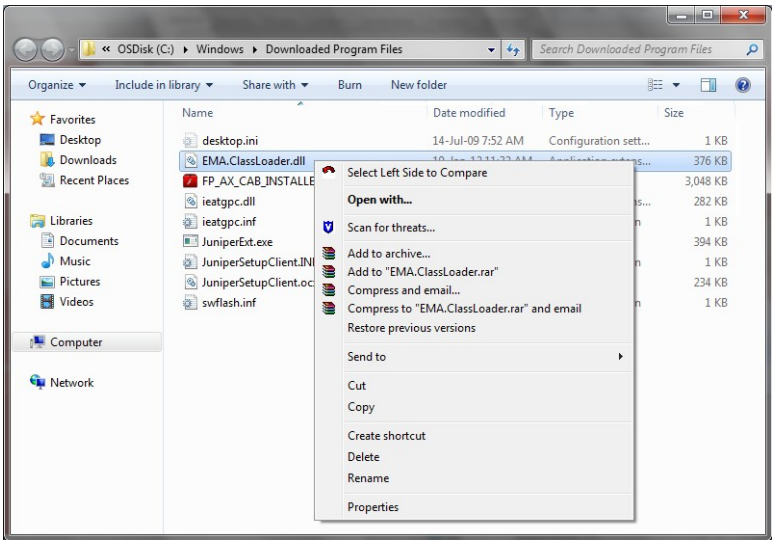
The Temporary Internet Files and History Settings dialog box displays.

9 Click **View objects**.



The Downloaded Program Files folder containing the installed program files displays.

10 Select the **EMAClassLoader.dll** file and press the **Delete** key on the workstation or right-click the **EMA.ClassLoader.dll file** and click **Delete**.



11 Close the Downloaded Program Files folder and the Temporary Internet Files and History Settings dialog box.

12 In the Internet Options dialog box, click **OK** to save the changes and close the dialog box.

Appendix F: RealPresence Access Director, Virtual Edition Setup Worksheet

Before you begin your RealPresence Access Director, Virtual Edition system setup, fill out the applicable fields in the **My System Values** column of the following worksheet.

Table 12: RealPresence Access Director, Virtual Edition Setup Worksheet

Configuration Information	*My System Values*	*Description*
Hostname		The hostname of your system. Hostname must begin with a letter and contain only letters, numbers, and internal hyphens.
DNS Address		The IP address of the Domain Name Server for the network to which your system connects.
Domain Name		The name of the domain in which your system operates. **<Host Name>.<Domain>**
IPv4 Address		The static IPv4 address for your RealPresence Access Directorm Virtual Edition system. For initial configuration, this is the IP address for eth0. If your RealPresence Access Director, Virtual Edition system server has more than one NIC, you can configure the IP addresses for eth1, eth2, and/or eth3 after the initial configuration.
IPv4 Subnet Mask		The IPv4 subnet mask for the network to which your system connects.
IPv4 Default Gateway		The default gateway for the network to which your system connects.