



Release Notes

3.4.1 | July 2015 | 3725-69999-008B2

# Polycom<sup>®</sup> RealPresence<sup>®</sup> Desktop for Windows<sup>®</sup>



---

Copyright© 2013-2015, Polycom, Inc. All rights reserved. No part of this document may be reproduced, translated into another language or format, or transmitted in any form or by any means, electronic or mechanical, for any purpose, without the express written permission of Polycom, Inc.

6001 America Center Drive  
San Jose, CA 95002  
USA

**Trademarks** Polycom®, the Polycom logo and the names and marks associated with Polycom products are trademarks and/or service marks of Polycom, Inc. and are registered and/or common law marks in the United States and various other countries.



All other trademarks are property of their respective owners. No portion hereof may be reproduced or transmitted in any form or by any means, for any purpose other than the recipient's personal use, without the express written permission of Polycom.

**End User License Agreement** By installing, copying, or otherwise using this product, you acknowledge that you have read, understand and agree to be bound by the terms and conditions of the End User License Agreement for this product. The EULA for this product is available on the Polycom Support page for the product.

**Patent Information** The accompanying product may be protected by one or more U.S. and foreign patents and/or pending patent applications held by Polycom, Inc.

**Open Source Software Used in this Product** This product may contain open source software. You may receive the open source software from Polycom up to three (3) years after the distribution date of the applicable product or software at a charge not greater than the cost to Polycom of shipping or distributing the software to you. To receive software information, as well as the open source software code used in this product, contact Polycom by email at [OpenSourceVideo@polycom.com](mailto:OpenSourceVideo@polycom.com).

**Disclaimer** While Polycom uses reasonable efforts to include accurate and up-to-date information in this document, Polycom makes no warranties or representations as to its accuracy. Polycom assumes no liability or responsibility for any typographical or other errors or omissions in the content of this document.

**Limitation of Liability** Polycom and/or its respective suppliers make no representations about the suitability of the information contained in this document for any purpose. Information is provided "as is" without warranty of any kind and is subject to change without notice. The entire risk arising out of its use remains with the recipient. In no event shall Polycom and/or its respective suppliers be liable for any direct, consequential, incidental, special, punitive or other damages whatsoever (including without limitation, damages for loss of business profits, business interruption, or loss of business information), even if Polycom has been advised of the possibility of such damages.

**Customer Feedback** We are striving to improve our documentation quality and we appreciate your feedback. Email your opinions and comments to [DocumentationFeedback@polycom.com](mailto:DocumentationFeedback@polycom.com).

**Polycom Support** Visit the [Polycom Support Center](#) for End User License Agreements, software downloads, product documents, product licenses, troubleshooting tips, service requests, and more.

---

# Contents

What's New in Release 3.4.1	5
Support for Cloud Services	5
What's New in Release 3.4	5
Profile Photo and Virtual Business Card	6
Support for Audio Mute Shortcut Keys	6
Support for Polycom NoiseBlock™	6
In-call Toolbar User Interface Enhancements	7
Mid-string Search of Favorites	8
Provision the migration of CMA Desktop to RealPresence Desktop using RealPresence Resource Manager	8
Windows Platform Support Changes	8
Silent Installation of RealPresence Desktop with Options Enabled	8
Test Features	9
Release History	10
Hardware and Software Requirements	11
Products Tested with this Release	12
Install RealPresence Desktop	13
Installation Notes	13
Importing Data from Polycom CMA® Desktop With Easy Upgrade	13
Install RealPresence Desktop in Standalone Mode	14
Install RealPresence Desktop in Managed Mode	14
Upgrade RealPresence Desktop	15
Upgrade RealPresence Desktop using msixexec Command	15
Upgrade RealPresence Desktop through RealPresence Resource Manager	15
Uninstall RealPresence Desktop using msixexec Command	16
System Capabilities and Constraints	17
Protocols	17
Resolutions	17
Algorithms	18
Inbound and Outbound Ports	18
Interoperability Issues	19
Known Issues	21

---

Resolved Issues .....	21
Enterprise Scalable Video Coding (SVC) Mode .....	22
Access Media Statistics .....	23
About AES Encryption .....	25
AES Encryption in H.323 Calls .....	25
AES Encryption in SIP Calls .....	25
Prepare Your Device for Mutual Transport Layer Security .....	25
Get Help .....	28
The Polycom Community .....	28
Notices .....	29
Open Source Licenses .....	29
OpenSSL LICENSE .....	29
Original SSLeay License .....	29
ares LICENSE .....	30
Expat LICENSE .....	30
JpegLib NOTICE .....	31
LEGAL ISSUES .....	31
Libxml2 LICENSE .....	32
OpenLDAP LICENSE .....	32
CyrusSASL LICENSE .....	33
DotNetZip LICENSE .....	33
LibSRTP LICENSE .....	34
Log4cxx LICENSE .....	34
NAudio LICENSE .....	36
SQLite LICENSE .....	37

---

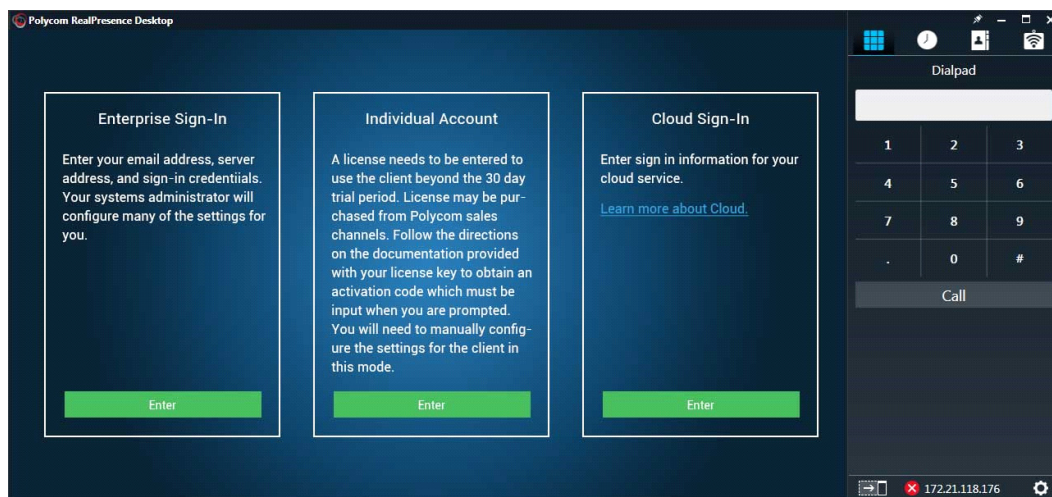
## What's New in Release 3.4.1

Polycom announces the 3.4.1 release of the Polycom® RealPresence® Desktop software. This release includes one new feature—support for Cloud Service deployments.

### Support for Cloud Services

In Cloud Service environments, the RealPresence Desktop client connections are enabled, authenticated, provisioned, and monitored by a Service Provider system.

Once the Cloud Service is enabled by the provisioning service, the Cloud Sign-In option is enabled and users can sign-in with their Cloud account, which is normally an email address.



## What's New in Release 3.4

The Polycom Polycom® RealPresence® Desktop 3.4 release includes these new features:

- [Profile Photo and Virtual Business Card](#)
- [Support for Audio Mute Shortcut Keys](#)
- [Support for Polycom NoiseBlock™](#)
- [In-call Toolbar User Interface Enhancements](#)
- [Provision the migration of CMA Desktop to RealPresence Desktop using RealPresence Resource Manager](#)
- [Mid-string Search of Favorites](#)
- [Windows Platform Support Changes](#)
- [Silent Installation of RealPresence Desktop with Options Enabled](#)



**Get the latest product information from the Polycom Support site**

To view the latest Polycom product documentation, visit the [Polycom Support site](#).

---

## Profile Photo and Virtual Business Card

During a call, RealPresence Desktop can display the speaker's profile information—a virtual business card—as part of the speaker's video. The virtual business card can include the following profile information:

- Name
- Title
- Work Location


RealPresence Desktop can also be configured to display the profile photo of the speaker, along with the virtual business card, when the speaker is on video mute. The following constraints apply to this feature:

- This feature is not supported in SVC multipoint conferences.
- In standalone mode, the profile information displayed is provided by the user; in managed mode the profile information is provided by the provisioning system.
- Users must always provide the profile photo, and the photo must be at least 240p x 240p

**To enter profile information, a profile photo, and enable the virtual business card:**

- 1 Go to **Settings > Profile**.

The **Virtual Business Card** page appears. In managed mode, the profile information is pre-populated.

- 2 If not in managed mode, enter the profile information to display on your virtual business card.
- 3 Click  and browse to and select a profile photo.
- 4 Check both **Virtual Business Card** and **Profile Photo** and then click **OK**.

## Support for Audio Mute Shortcut Keys

RealPresence Desktop supports shortcut keys to mute or unmute your microphone during a call.

- Use Ctrl + m to mute your audio.
- Use Ctrl + u to unmute your audio.

## Support for Polycom NoiseBlock™

When enabled, Polycom NoiseBlock specifies whether the system mutes audio from the microphone when keyboard tapping sounds or other extraneous noises are detected, but no one is talking. NoiseBlock unmutes the system when speech is detected, regardless of the presence of background noise.

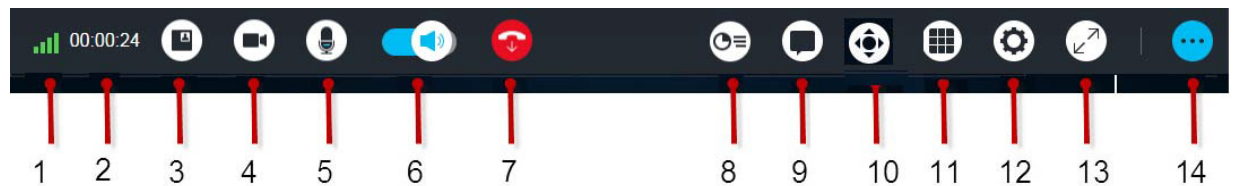
## To enable NoiseBlock:

- 1 Go to **Settings > Audio Device**.
- 2 Check **Enable NoiseBlock** and click **OK**.

## In-call Toolbar User Interface Enhancements

RealPresence Desktop 3.4 has a newly designed in-call toolbar. During a call, this in-call toolbar is displayed at the bottom of the application.

### In-call toolbar



### In-call Toolbar Icons

Icons	Description
1	Network connection and encryption status
2	Call duration
3	Hide or display local self-view
4	Mute or unmute your video
5	Mute or unmute your microphone You can also use Ctrl + m to mute your audio and Ctrl + u to unmute audio.
6	Adjust the volume or adjust the volume to the minimum to mute your speaker.
7	End the current call
8	Share content
9	Start a chat session with another person during a call
10	Enable or disable Far End Camera Control (FECC)
11	Show or hide the keypad
12	Change call settings
13	Maximize or restore the screen
14	Hide or show the menu icons

---

## Mid-string Search of Favorites

In standalone mode, RealPresence Desktop users can search for local contacts in their Favorites list by typing in any string of characters from the contact's name.

In managed mode, this kind of mid-string search for local and LDAP contacts is enabled when the provisioning RealPresence Resource Manager system is configured to allow mid-string searches. This feature is not available for searches of the corporate Active Directory, because in those instances the RealPresence Resource Manager system uses the standard Active Directory search functionality.

## Provision the migration of CMA Desktop to RealPresence Desktop using RealPresence Resource Manager

Polycom CMA Desktop version 5.2.2 or greater can be migrated to RealPresence Desktop version 3.4 using the RealPresence Resource Manager system and the migration packaged developed specifically for this purpose. For more information on this, visit the [Polycom CMA Desktop support page](#).

## Windows Platform Support Changes

RealPresence Desktop adds support for Windows 8 Surface Pro 3 tablet with limited touch screen support (i.e., multi-touch is not supported). Also, RealPresence Desktop is not supported in Metro mode.

## Silent Installation of RealPresence Desktop with Options Enabled

By creating a Microsoft Windows Installer (`msiexec.exe`), an administrative user can distribute the RealPresence Desktop installation file (called `RPDesktop.msi`) as a group policy object (GPO) to a location on client systems.

As part of that `msiexec.exe`, the administrator can include a command line statement to set configuration parameter that affect the user interface.

The format of this silent installation with options command line statement is:

```
msiexec /qn /i <setup>.msi  
CMDLINE="<<parameterkey1>=<parametervalue1>;<parameterkey2>=<parametervalue2>;..." /1*v  
log
```

### How to set default callrate to 512k when using silent installation:

```
msiexec /qn /i <setup>.msi CMDLINE="DEFAULT_CALL_RATE= CALLRATE512" /1*v log
```

### How to enable shorten SDP feature when using silent installation:

```
msiexec /qn /i <setup>.msi CMDLINE="SUPPORT_SIMPLE_SDP= true" /1*v log
```

### How to enable single sign on feature when using silent installation:

```
msiexec /qn /i <setup>.msi  
CMDLINE="ENTRANCE_MODE=1;ENABLE_CMA=true;CMA_SERVER_ADDRESS=pctcgk.polycom.com;CM  
A_INTEGRATED_LOGIN=true" /1*v log
```



The following table identifies some of the RealPresence Desktop configuration parameters that can be set as part of the silent installation:

Feature	Parameter Keys	Possible Parameter Values
Set default call rate	DEFAULT_CALL_RATE	AUDIOONLY= 64 CALLRATE256 = 256 CALLRATE384 = 384 CALLRATE512 = 521 CALLRATE768 = 768 CALLRATE1024 = 1024 CALLRATE1920 = 1920
Enable Smartpairing	ENABLE_PPCIP	TRUE or FALSE
Enable Simple Session Description Protocol (SDP) size adjustment feature for SIP	SUPPORT_SIMPLE_SDP	TRUE or FALSE
Enable Managed mode	ENTRANCE_MODE	0 = Stand alone mode 1 = Managed mode
Enable provisioning server	ENABLE_CMA	TRUE or FALSE
Identify provisioning server	CMA_SERVER_ADDRESS	
Enable single sign on	CMA_INTEGRATED_LOGIN	TRUE or FALSE

For more on the RealPresence Desktop silent installation process, see the [Install RealPresence Desktop](#) section of this document.

## Test Features

You can enable test features and evaluate them a non-production environment.



### Test features are not tested or supported

Test features are neither tested nor supported. These features might, or might not, become official features in a future release.

### To enable the test features:

- 1 In the web interface, go to **Settings > Test Features**.
- 2 Enter the password, 456 and click **OK**.
- 3 Enable the test feature or features you wish to trial and click **OK**.

---

## Release History

The following table shows the release history of the Polycom RealPresence Desktop.

### Release History

Release	Release Date	Features
3.4	June 2015	Profile Photo and Virtual Business Card Support for Audio Mute Shortcut Keys Support for Polycom NoiseBlock™ In-call Toolbar User Interface Enhancements Provision the migration of CMA Desktop to RealPresence Desktop using RealPresence Resource Manager Mid-string Search of Favorites Windows Platform Support Changes Silent Installation of RealPresence Desktop with Options Enabled
3.3	December 2014	User Interface Improvements Support for Calling SIP Users Directly Directory Search Enhancements Instant Messaging Enhancement Support for selected test features The <b>SDP Size Adjustment</b> feature has been moved out. To enable or disable this feature, enter #001# from the Dialpad.
3.2.1	July 2014	Support for DTMF with keyboard input. You can enter a DTMF password using your keyboard without showing the DTMF keypad during a call. Fixed an OpenSSL security vulnerability (CVE-2014-0224).
3.2	June 2014	Support for user profile import and export Support for Quality of Service (QoS) in managed mode Support for setting dialing preference Support for the Czech language Directory enhancements as follows: Support for selected test features Operation system and device support changes

---

## Hardware and Software Requirements

The following hardware and software requirements were determined based on test scenarios. Your system's actual performance may vary based on software or hardware configurations.

### Hardware and Software Requirements

Hardware or Software	Requirement
Windows	Windows 7: 32-bit and 64-bit Windows 8 and 8.1 Standard, Pro, and Enterprise: 32-bit and 64-bit
Software	<ul style="list-style-type: none"><li>• Microsoft .Net Framework version 4.0</li><li>• Polycom CMA system version 6.2.5 or later</li><li>• Polycom RealPresence Resource Manager version 8.1 or later</li></ul>
Processor	<p>RealPresence Desktop system's capabilities vary depending on processor performance. The processor types and speeds listed below are intended as reference guides. RealPresence Desktop will have equivalent capabilities on other processors with equivalent performance.</p> <p>Recommended CPU: Intel Core i5, 2.5GHz or higher.</p> <p>Audio only</p> <ul style="list-style-type: none"><li>• Atom CPU or higher</li></ul> <p>Basic Video Transmit (Up to QVGA 30fps send, up to 720P 15fps receive)</p> <ul style="list-style-type: none"><li>• single core</li><li>• dual cores, lower than 2.0 GHz</li><li>• quad cores, lower than 1.3 GHz</li></ul> <p>Premium Video Transmit (Up to VGA 30fps send, up to 720P 30fps receive)</p> <ul style="list-style-type: none"><li>• dual cores, 2.0 GHz or higher</li><li>• quad cores, 1.3 GHz or higher</li></ul> <p>HD Transmit</p> <ul style="list-style-type: none"><li>• dual cores, 2.5 GHz or higher (Up to 720p 15fps send, up to 720P 30fps receive)</li><li>• quad cores, 1.6 GHz or higher (Up to 720p 15fps send, up to 720P 30fps receive)</li><li>• quad cores, 2.0 GHz or higher (Up to 720p 30fps send, up to 720P 30fps receive)</li></ul>
RAM	4 GB
Video memory	Minimum: 256 MB
Hard drive space	200 MB
Camera	Integrated or external
Audio devices	Standard PC97 audio devices
Monitor	Recommended: 16:9, 1920 x 1080 Minimum: 1280 x 720

## Products Tested with this Release

RealPresence Desktop is tested extensively with a wide range of products. The following list indicates the products that have been tested for compatibility with this release, but is not a complete inventory of compatible equipment.



### Upgrade your Polycom systems

Polycom recommends that you upgrade all of your Polycom systems with the latest software Versions, as compatibility issues may already have been addressed by software updates. Go to the [Polycom Support](#) site to see the Current Polycom Interoperability Matrix.

### Products Tested with This Release

Type	Product	Version
Gatekeeper, Gateways, External MCU, Bridges, Call Managers	Polycom Distributed Media Application™ (DMA®) 7000	6.2, 6.3
	Polycom Converged Management Application™ (CMA®) 4000/5000	6.2.5
	Polycom RealPresence Resource Manager	8.3, 8.4
	Polycom RMX® 4000/2000	8.5, 8.6
	Polycom RMX® 1500	8.6
	Polycom RealPresence® Collaboration Server 1800	8.5, 8.6
	Polycom RMX® 1000C	2.5.1
	Polycom RSS™ 4000	8.5.1
	Polycom RealPresence Capture Server	1.8, 2.0
	Broadsoft SIP r19 Server	r19
	Polycom RealPresence CloudAXIS™ Suite	1.6, 1.7
Endpoints	Polycom HDX® Series	3.1.4, 3.1.5
	Polycom RealPresence Mobile	3.3, 3.4 (iOS) 3.3, 3.4 (Android)
	Polycom VVX®	5.0.1
	Polycom CMA® Desktop	5.2.6
	Polycom Telepresence m100	1.0.7
	Polycom RealPresence Desktop	3.3, 3.4 (Windows)
		3.3, 3.4 (Mac)
Polycom RealPresence Group Series	4.2, 4.3	

---

## Products Tested with This Release

Type	Product	Version
NAT/Firewall/Border Controller	ACME Packet Net-Net 3820	Firmware SCX6.3.0 MR-5 Patch 2
	Polycom VBP® 5300-ST	11.2.19
	Polycom VBP-E	11.2.19
	Polycom RealPresence® Access Director™	4.1, 4.2
Other	Polycom People+Content IP	1.3 (PC only)
	Broadsoft environment	r19

## Install RealPresence Desktop

This section discusses how to install RealPresence Desktop in both standalone and managed mode. In standalone mode, you will need a license number and activation key code or license file to activate the product and use it beyond the 30-day trial period.

The RealPresence Desktop installation file is available from the Polycom Support.site in two formats:

- The `.exe` file is intended for easy, interactive installation by end users in standalone mode.
- The `.msi` file is intended for use by experienced Windows administrators to support provisioned and silent installations in managed mode.

## Installation Notes

Here are some things to consider when doing a RealPresence Desktop installation:

- Installation of the RealPresence Desktop application requires that you have Microsoft .Net Framework version 4.0 installed. You can view your Microsoft .Net Framework version in `C:\Windows\Microsoft.NET\Framework`.
- The RealPresence Desktop user interface supports the following languages: English, International Spanish, French, German, Simplified Chinese, Korean, Japanese, Russian, Portuguese, Kazakh, Czech, and Traditional Chinese.
- When installing RealPresence Desktop for the first time, you can select one of the supported languages. The language selected here affects the language display during installation process
- The RealPresence Desktop installation user interface does not support Kazakh because the Windows InstallShield does not support Kazakh.
- You can view the license number of the RealPresence Desktop by clicking  **Polycom RealPresence Desktop** on the application's title bar and selecting the **About** option.

## Importing Data from Polycom CMA® Desktop With Easy Upgrade

When you install RealPresence Desktop for the first time, it can detect if there is a previously installed CMA Desktop version 5.2.2 or greater.

If RealPresence Desktop finds CMA Desktop, RealPresence Desktop displays a message to confirm the back up and to import the application and user data of CMA Desktop. RealPresence Desktop also confirms the uninstall of the CMA Desktop.

---

If you choose yes, RealPresence Desktop will back up and import the following CMA Desktop data:

- Auto-answered incoming calls
- Mute auto-answered calls
- Always check (Call to/H.323/SIP). RealPresence Desktop will import this data on Windows systems.
- Specify sign-in server.
- Automatically start Polycom CMA Desktop at system start.
- Sign in using network login credentials. RealPresence Desktop will not import the network login credentials unless you have chosen this option.
- Maximum call rate.
- Local contacts.

RealPresence Desktop supports this easy upgrade feature only on Windows XP and Windows 7.



#### Limitations of the easy upgrade feature

- If RealPresence Desktop and CMA Desktop are running on the same computer and you use the same account to sign in to both applications, the local contacts may not be synchronized between the two applications. XMPP contacts will be synchronized if they are downloaded from the RealPresence Resource Manager or CMA system.
- After you uninstall CMA Desktop, your CMA Desktop settings will be retained. If you want to install CMA Desktop again, you can import the previous settings on Windows.
- Silent installation for enterprise IT: RealPresence Desktop will import CMA Desktop settings and user data automatically when you install RealPresence Desktop for the first time and the CMA Desktop version is higher than 5.2.2. RealPresence Desktop will not uninstall CMA Desktop. Enterprise IT can uninstall CMA Desktop using other software deployment tools.

## Install RealPresence Desktop in Standalone Mode

The `.exe` file is intended for easy, interactive installation by end users.

### To install RealPresence Desktop using the `.exe` file:

- 1 Download the `.exe` file from the [Polycom Support](#) site.
- 2 Open the file and follow the instructions in the installation procedure.

## Install RealPresence Desktop in Managed Mode

In managed mode, an administrator can distribute the latest version of RealPresence Desktop to all managed systems. To do this, the administrator uploads the RealPresence Desktop distribution package (`.tar.gz`) to the RealPresence Resource Manager system. This process is described in detail in the ***Distribute Polycom Applications*** topic in the *Polycom RealPresence Resource Manager Operations Guide*.

The `.msi` file is intended for use by experienced Windows administrators to support managed, provisioned, and silent installations. These procedures use methods such as group policy objects (GPOs). You should already be familiar with these methods to use the `.msi` installation file.



#### About the .msi file

- Centralized distribution is used by corporate system administrators for software installation or upgrade.
- When you save the .msi file to your local disk, do not rename it.
- Silent installation needs administrator level permission.
- The name of the .msi in your command line should be consistent with the installation package.

#### To install RealPresence Desktop using msiexec command:

- 1 Save the downloaded Polycom .msi installation file to a directory (for example, C:\temp) on the user's local system.
- 2 Build a desktop management or group policy object that will write the .exe installation file to a directory (for example, C:\temp) on the user's local system
- 3 Create the Windows Installer to perform a command line installation of the program.

The following is an example of using the installer from the directory where the Polycom RealPresence Desktop .msi file resides:

```
msiexec /qn /l* RPD_install.txt /i "RPDesktop.msi"
```

When running the installation from a directory other than the directory where the executable file resides, include the full path in the command:

```
msiexec /qn /l* RPD_install.txt /i "c:\temp\ RPDesktop.msi"
```

## Upgrade RealPresence Desktop

This section describes how to upgrade RealPresence Desktop. You have two options:

- [Upgrade RealPresence Desktop using msiexec Command](#)
- [Upgrade RealPresence Desktop through RealPresence Resource Manager.](#)

### Upgrade RealPresence Desktop using msiexec Command

#### To upgrade RealPresence Desktop using the .msi file

» Run this command:

```
msiexec /qn /i <setup>.msi REINSTALLMODE=vomus REINSTALL=ALL /l logfile
```

When you upgrade the RealPresence Desktop application from an older version, you must include this line to your command: REINSTALLMODE=vomus REINSTALL=ALL.

You should not include this line for the first-time installation.

### Upgrade RealPresence Desktop through RealPresence Resource Manager

This section describes how to upgrade RealPresence Desktop when an upgrade package is available on the RealPresence Resource Manager.

---

The RealPresence Resource Manager can schedule and perform limited monitoring of the RealPresence Desktop application as well as manage and provision the application. The CMA system cannot upgrade the RealPresence Desktop application, and the Polycom RealPresence Resource Manager system can upgrade the application only from version 8.0.

For more information on upgrading managed RealPresence Desktop systems, see the **Using Dynamic Software Updates Applications** topic in the *Polycom RealPresence Resource Manager Operations Guide*.

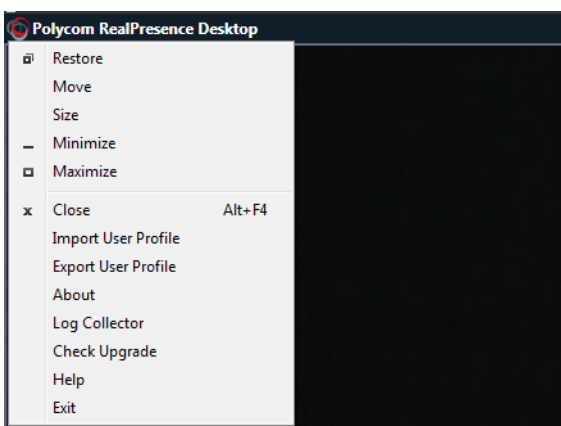


#### Reclaim Inactive RealPresence Software Client Licenses

RealPresence Desktop will consume one more license after upgrading from 3.0 or earlier versions to version 3.1 or later. To release the old license, remove it manually or set the license reclaim cycle to be a small value, such as 5 minutes, on the RealPresence Resource Manager system.

### To upgrade RealPresence Desktop:

- 1 Log in to RealPresence Desktop.
- 2 Click the RealPresence Desktop logo on the application's title bar.



- 3 Click **Check Upgrade**.

If an upgrade is available, you will be prompted to perform the upgrade.

- 4 Click **Yes** to perform the upgrade.

The RealPresence Desktop application will be upgraded to the latest version available on the management system.

## Uninstall RealPresence Desktop using msixec Command

### To uninstall RealPresence Desktop using the .msi file

- » Run this command:

```
msiexec /qn /x <setup>.msi
```



---

## System Capabilities and Constraints

The following protocols, resolutions, algorithms, and ports are supported for RealPresence Desktop.

### Protocols

The following table lists the supported protocols.

Protocol	Description
DNS	Domain Name System
H.235	Security and Encryption
H.239	Token Management
H.281	Far End Camera Control (FECC)
H.323	Signaling
H.460	Firewall/NAT Traversal
LDAP, H.350	Directory Services
NTLMv2	Authentication
Polycom LPR™	Lost Packet Recovery
SIP	Session Initiation Protocol
XMPP	The Extensible Messaging and Presence Protocol

### Resolutions

The following table lists the supported resolutions.

#### Resolution and Frame Rate

Resolution and Frame Rate	Source
Up to 720p / 30 fps	Video sent from camera
Up to 720p / 30 fps	Video received from far end
Up to 720p (1280x720) / 5 fps	Content showing from the computer
Up to 720p (1280x720) / 5 fps	Content received from far end

---

## Algorithms

The following table lists the supported algorithms.

Algorithm Type	Description
Audio	<ul style="list-style-type: none"><li>• G.711<math>\mu</math> or G.711A</li><li>• Siren LPR</li><li>• G.722.1 at 24 kbps and 32 kbps</li><li>• G.722.1 Annex C at 24 kbps, 32 kbps, and 48 kbps</li><li>• G.719 at 32 kbps, 48 kbps, 64 kbps, and 128 kbps</li><li>• G.729</li><li>• SAC</li><li>• Automatic gain control</li><li>• Acoustic echo cancellation</li></ul>
Video	<ul style="list-style-type: none"><li>• H.261</li><li>• H.263/H.263+</li><li>• H.264 AVC</li><li>• H.264 SVC</li><li>• H.264 high profile</li><li>• Content over H.264/H.263/H.263+</li><li>• Video LPR</li></ul>
Encryption	AES-128 media encryption TLS/SRTP supported in SIP calls

## Inbound and Outbound Ports

The following tables list the supported inbound and outbound ports.

### Inbound Ports

Port	Function
1720 (TCP)	H.323 Call Signaling (H.225)
1719 (UDP)	H.323 Registration, Admission, and Status (RAS)
3230 - 3250 (TCP)	H.323 Call Control (H.245)
3230 - 3250 (UDP)	Media (RTP/RTCP)
3238 (UDP and TCP)	BFCP
5060 (UPD and TCP)	SIP

---

## Outbound Ports

Port	Function
443 (TCP)	Provisioning, Monitoring, Help Files, HTTPS
389 (TCP)	LDAP
5060 (UDP and TCP)	SIP
5061 (TCP)	SIP TLS signaling
5222 (TCP)	XMPP
1720 (TCP)	H.323 Signaling (H.225)
1719 (UDP)	H.323 Registration, Admission, and Status (RAS)
3230 - 3250 (TCP)	H.323 Call Control (H.245)
3230 - 3250 (UDP)	Media (RTP/RTCP)
3238 (UDP and TCP)	BFCP

## Interoperability Issues

You may encounter the following issues when using RealPresence Desktop with other products or on specific operating systems.

### Interoperability Issues

Limitation Type	Description	Solution
Limitations Related to Operating System and Third-party Software	On a 64-bit Windows 7 operating system, selecting <b>Polycom CX5000 Panoramic Video</b> as video device displays a blue screen.	On 64-bit Windows 7, use other video device.
	On 32-bit Windows 7, when you share a Microsoft PowerPoint 2007 file and expand it to full screen, the content share control bar is covered by the RealPresence Desktop application. To display the content control bar, you need to minimize or restore the screen.	To display the content control bar, you need to minimize or restore the screen.

## Interoperability Issues

Limitation Type	Description	Solution
Limitations Related to Other Polycom Products	In a motion mode conference, RealPresence Desktop receives video with a large delay because the video is 60 fps.	Set a conference with sharpness mode on MCU.
	If you create a Continuous Presence (CP) only conference call on Polycom RMX 4000/2000 system and Polycom RealPresence Collaboration Server 800s version 8.1 with default content settings (Content Settings: HiResGraphics and Content Protocol: H.264 HD), the RealPresence Desktop application cannot send or receive content if call rate is set as 384 kbps or below.	In this case, you need to do the following: <ul style="list-style-type: none"> <li>• Change the RMX <b>Content Settings</b> to <b>Graphics</b>, and <b>Content Protocol</b> to <b>H.263 &amp; H.264 Auto Selection</b>.</li> <li>• Set the call rate on RPM to above 384 kbps.</li> </ul>
	RealPresence Desktop supports using only English user names and passwords to sign into the Polycom CMA server and RealPresence Resource Manager, or to register to a gatekeeper or an SIP server.	Use English user names and passwords.
	If you use an MPM+ media card in a call with an RMX system, a blue edge is displayed at the bottom of the video window.	Use only an MPMX media card with the RMX system.
	When RealPresence Desktop and m100 are not in the same local network, RealPresence Desktop fails to call m100.	Let m100 call RealPresence Desktop.
	When you enable mutual TLS (Transport Layer Security) from RealPresence Resource Manager, RealPresence Desktop will fail to upgrade from RealPresence Resource Manager.	Disable mutual TLS.
	With NoiseBlock on, when a participant speaks after a long period of silence, the participant's first syllables may not be heard.	None
	In some MCU conference templates, the virtual business card is truncated.	None
	RealPresence Desktop SIP call transfers by VVX systems may fail when the endpoints are not registered with a DMA system.	Register the endpoints

---

## Known Issues

The following table lists the known issues for this release.

Issue ID	Description	Workaround
SWEP-7605	The video mute picture is distorted in mixed conferences	None

## Resolved Issues

The following table lists the resolved issues for this release.

Issue ID	Description
SWEP-7600	RealPresence Desktop may crash when provisioned through a VBP 7301.
SWEP-7572	Guest Book directory entries are not being passed correctly to the endpoints.
SWEP-7559	RealPresence Desktop may crash when dialing into the RMX on an external network. The Unhandled Exception reported is ACCESS_VIOLATION in ntdll.dll-
SWEP-7348	RealPresence Desktop does not show local video when using a Jedmed Horus Scope (UVC) camera. The same camera seems to work in RealPresence Desktop v.3.2.
SWEP-7314	RealPresence Desktop may stop responding and crash after a call disconnects.
SWEP-7203	AGC may lower the microphone volume when the user speaks loudly, but doesn't readjust when the user speaks softly.
SWEP-7164	RealPresence Desktop erroneously displays a yellow exclamation point warning to users when XMPP messaging is purposely off. This was not the case previously.
SWEP-7163	Receiving a call on RealPresence Desktop sets the Presence Status to Available regardless if the call is answered, rejected or ignored.
SWEP-7100	RealPresence Desktop calls to RMX, all uppercase letters in the name of the RealPresence Desktop are displayed in lower case on the RMX-
SWEP-7001	RealPresence Desktop gets only 640x360 resolution in conference calls with RMX and point-to-point calls when using internal laptop camera
SWEP-6998	RealPresence Desktop offers G729A ahead of G711 but selects G711. RFC 3264 recommends to use first media format listed in the answer

The following table lists the resolved issues in the RealPresence Desktop 3.4 release.

Issue ID	Description
SWEP-6405	[PPCIP] Sometimes RealPresence Desktop crashes when sharing content by PPCIP in Smart Pairing

---

## Enterprise Scalable Video Coding (SVC) Mode

The Enterprise Scalable Video Coding (SVC) mode is an alternative to the AVC mode that has traditionally been supported. Differences between the two modes are listed in the following table.

### SVC and AVC Mode

SVC Mode	AVC Mode
Each participant in the conference call is received by the client as a separate video stream.	The composite video image is determined by the bridge based on administrator configuration.
A Caller ID is indicated by text in the appropriate window, which remains on display throughout the call.	Caller ID information is displayed intermittently.
Double-clicking or tapping on a participant's video, content video, or local preview expands that video to full screen. Double-clicking or tapping again reverts the display to the composite image.	Layout may be controlled by dialing ** and then selecting a format. Double-clicking or tapping on the remote video, content video, or local preview expands that video to full screen. Double-clicking or tapping again reverts the display to the composite image.

The SVC mode provides the following features:

- Video sends and receives up to 720p resolution.
- Frame rates of 7.5/15/30.
- Support for AVC content.
- Support for SVC auto layouts for video streams of up to nine far-end participants.  
Last active speakers, resolution, bandwidth, and number of participants are adjusted based on network bandwidth and processor capabilities.



#### **Incorrect screen layouts**

When using SIP UDP in an SVC call and there is more than 10percent Packet Loss, the screen layout may display incorrectly. Changing to SIP TLS or TCP is recommended.

- Supported layouts of 1x1 and 1+1 through 1+10.  
The maximum layout of 1+10 comprises 9 remote participants plus 1 content sharing frame, and 1 local preview frame.
- Support for SAC with at least two quality layers, for example, 48 kbps and 10 kbps.
- Support for mixing up to three different audio streams from the MCU.
- Support for combining up to nine different SVC video streams (call rate at 1920 kbps) from the MCUs.

SVC conference calls currently do not support the following:

- Far-end Camera Control (FECC)
- Recording with RealPresence Capture Server


- H.323 calls.



#### **SVC call disconnection**

In a poor network connection, sometimes a participant disconnects automatically from an SVC call. This can result in a frozen video stream of the participant. The RMX system will clear the frozen stream in 30 minutes.

## **Access Media Statistics**

To access media statistics, click the antenna icon  on the in-call toolbar during a call.

<b>Value</b>	<b>Description</b>
Call Type	SIP or H.323 call type.
Call Encryption	Indicates whether your call is encrypted.
Far Site Name	Name of the far site.
Far Site System	Type of video conferencing system at the far end and the software version.
Call Speed	Negotiated speed (bandwidth) for the call, which is usually the combined video and audio speeds in the call.
Video Protocol	ITU-C video algorithm and annexes used in the current call. The video protocol used depends on the capabilities of the system at the far end as well as on your system's configuration.
Video Format	Picture size currently in use.
Audio Protocol	Audio algorithm and annexes used in the current call. The audio protocol used depends on the capabilities of the system at the far end as well as on your system's configuration.
Audio Rate	Bandwidth specified for the audio portion of the call. The proportion of the audio rate to the video rate depends on the protocol used.
Video Rate	Bandwidth specified for the video portion of the call. The proportion of the video rate to the audio rate depends on the protocol used.
Video Rate Used	Actual bandwidth being used for the video portion of the call. This is a real-time measurement, which normally fluctuates.
Video Frame Rate	Rate your system uses to update the picture seen at the far end. The system can send up to 15 frames per second. If the camera picks up large, continuous, or frequent motions, the software takes longer to assemble the data into video frames, and the frame rate drops. Changes in lighting also reduce the frame rate.
Video Packets Loss Percentage	Total video packet loss as a percentage of the total number of video packets transmitted by your system and those transmitted by the far end.
Video Jitter	Percentage of variation in the video transmission rate.
Audio Packet Lost	Number of audio data packets lost during the call, including transmitted packets and incoming packets. Packet loss indicates congestion or other problems on the network.
Audio Packets Loss Percentage	Total audio packet loss as a percentage of the total number of audio packets transmitted by your system and those transmitted by the far end.

<b>Value</b>	<b>Description</b>
Audio Jitter	Percentage of variation in the audio transmission rate.
Content Protocol	Format used for the recording, compression, and distribution of the content.
Content Format	Display resolution of the content.
Content Rate	Rate your system uses in content transmission.
Content Rate Used	Actual bandwidth being used for the content transmission.
Content Frame Rate	Rate your system uses in content frame transmission.
Content Packets Lost	Number of content data packets lost during the call, including transmitted packets and incoming packets. Packet loss indicates congestion or other problems on the network.
Content Packets Loss Percentage	Total audio packet loss as a percentage of the total number of content packets transmitted by your system and those transmitted by the far end.



---

## About AES Encryption

The following are requirements for using AES encryption in calls.

### AES Encryption in H.323 Calls

To use AES encryption in H.323 calls, both you and the far end must satisfy the following requirements:

- Enable AES encryption.

When working in the managed mode, the AES encryption of the RealPresence Desktop application is configurable through its provisioning server.

When working in the standalone mode, the AES encryption of the RealPresence Desktop application works as “When available” and is not guaranteed.

- Both you and your far end must support, or be compatible with, the same Key exchange and encryption method (H.235v3 w, or AES 128bit CBC).

### AES Encryption in SIP Calls

To use AES encryption in SIP calls, both you and the far end must satisfy the following requirements:

- Enable AES encryption.
- Enable TLS for SIP transport.
- Support for SDES over TLS key exchange.
- Support for AES 128 bit CBC mode over SRTP.



#### **Difference between managed mode and standalone mode**

- When working in the managed mode, the AES encryption of the RealPresence Desktop application is configurable through its provisioning server.
- When working in the standalone mode, the AES encryption of the RealPresence Desktop application works as “When available” and is not guaranteed.

## Prepare Your Device for Mutual Transport Layer Security

You can establish secure communications using Mutual Transport Layer Security (MTLS) with provisioning servers such as Polycom DMA, CMA, or RealPresence Resource Manager systems.

To establish MTLS connections, the client and server need to hold certificates issued from the same Certificate Authority (CA) and the root certificate of this CA.

To import certificates, you need to generate a Certificate Request (CSR) first by using a computer that has installed the OpenSSL tool

#### **To generate and import your certificate on a PC:**

- 1 Make sure you have OpenSSL installed and configured.
- 2 Open the CMD console window from your PC.

---

**3** Generate the private key *client.key*. For example:

```
C:\OpenSSL-Win32\bin> openssl genrsa -out client.key 1024
```

**4** Generate the certificate request *client.csr*. For example:

```
C:\OpenSSL-Win32\bin> openssl req -new -key client.key -out client.csr
For som-----
Country Name (2 letter code) [GB]:cn ---CSR info.
State or Province Name (full name) [Berkshire]:bj ---CSR info.
Locality Name (eg, city) [Newbury]:bj ---CSR info.
Organization Name (eg, company) [My Company Ltd]:plcm ---CSR info.
Organizational Unit Name (eg, section) []:caqa ---CSR info.
Common Name (eg, your name or your server's hostname) []:caqa ---CSR info.
Email Address []:pp@pp.com ---CSR info.
```

Enter the following extra attributes to be sent with your certificate request. Write down the challenge password. You will need it later in the procedure.

```
A challenge password []:1234 -----see [Notel]
```

```
An optional company name []:poly
```

**5** Submit the certificate request to your CA:

- a** View the content of the file *client.csr* using the following command: Select and copy its content (from ---BEGIN CERTIFICATE REQUEST to END CERTIFICATE REQUEST---):

```
C:\OpenSSL-Win32\bin> type client.csr
```

- b** Go to your CA's web interface <http://<CA's IP address>/certsrv/>, and then choose **Request a certificate**.

- c** Click **Advanced certificate request**.

- d** Click **Submit a certificate request by using a base-64-encoded CMC or PKCS #10 file, or Submit a renewal request by using a base-64-encoded PKCS #7 file**.

- e** Paste the content of the file *client.csr* to the text field in the **Saved Request** text field, and click **Submit**.

- f** Choose **Base 64 encoded** and click **Download certificate**.

The file is saved as *certnew.cer* by default in the **Downloads** folder.

**6** Move the generated *certnew.cer* file to your current directory.

**7** Convert the file *certnew.cer* to a .p12 file by using the OpenSSL tool. The export password should be the same as the challenge password you set in step 4. For example:

```
C:\OpenSSL-Win32\bin> openssl pkcs12 -export -in certnew.cer -inkey
client.key -out client.p12 -name testp12
```

```
Enter Export Password:
```

```
Verifying - Enter Export Password:
```

**8** Encrypt the challenge password you set in Step 4:

- a** Go to **Convert String**.

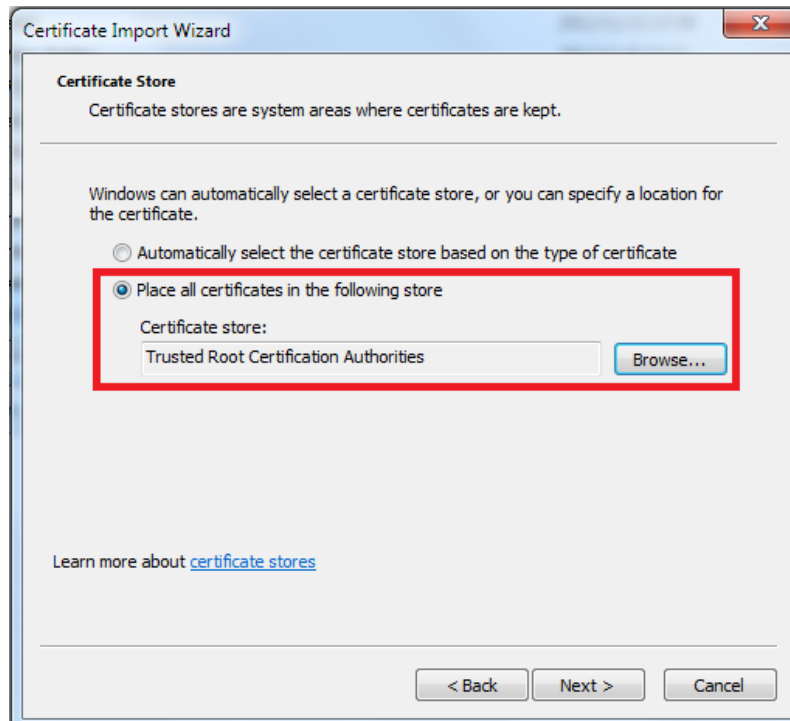
- b** Enter the challenge password in the text field, and click **Base64 Encode!**.

- c** Copy the encoded text from the following text field, and save it as a .pwd file. For example: *client.pwd*.

- 
- 9 Open the RPD appdata folder `%appdata%\RealPresence Desktop\`, and then copy the files `client.p12` and `client.pwd` to the folder.

### To import the root certificate of your CA:

- 1 Go to your CA's web address <http://<CA's IP address>/certsrv/>, click **Download a CA certificate, certificate chain, or CRL**.
- 2 Select **Base 64**, and click **Download CA Certificate**.
- 3 Right-click the CA file, and select **Install Certificate**. Follow the Certificate Import Wizard. Be sure to install it to **Trusted Root Certificate Authorities**.



---

## Get Help

For more information about installing, configuring, and administering Polycom products, refer to Documents and Downloads on the [Polycom Support](#) site.

To find all Polycom partner solutions, see the [Polycom Global Strategic Partner Solutions](#) site.

For more information on solution with this Polycom partner, see the partner site at [Polycom Global Strategic Partner Solutions](#).

## The Polycom Community

The [Polycom Community](#) gives you access to the latest developer and support information. Participate in discussion forums to share ideas and solve problems with your colleagues. To register with the Polycom Community, create a Polycom online account. When logged in, you can access Polycom support personnel and participate in developer and support forums to find the latest information on hardware, software, and partner solutions topics.

---

## Notices

### Open Source Licenses

Some of the third party software listed below may be licensed under an open source license that gives you the right to request the original source code of that software. To request such source code, send a specific request to [opensourcevideo@polycom.com](mailto:opensourcevideo@polycom.com) that includes this product's name and version number, and the name of the software whose source code you are requesting.

### OpenSSL LICENSE

Copyright (c) 1998-2008 The OpenSSL Project. All rights reserved. Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. All advertising materials mentioning features or use of this software must display the following acknowledgment:  
"This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit.  
(<http://www.openssl.org/>)"
4. The names "OpenSSL Toolkit" and "OpenSSL Project" must not be used to endorse or promote products derived from this software without prior written permission. For written permission, please contact [openssl-core@openssl.org](mailto:openssl-core@openssl.org).
5. Products derived from this software may not be called "OpenSSL" nor may "OpenSSL" appear in their names without prior written permission of the OpenSSL Project.
6. Redistributions of any form whatsoever must retain the following acknowledgment: "This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit (<http://www.openssl.org/>)"

THIS SOFTWARE IS PROVIDED BY THE OpenSSL PROJECT ``AS IS" AND ANY EXPRESSED OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE OpenSSL PROJECT OR ITS CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

This product includes cryptographic software written by Eric Young ([ey@cryptsoft.com](mailto:ey@cryptsoft.com)). This product includes software written by Tim Hudson ([tjh@cryptsoft.com](mailto:tjh@cryptsoft.com)).

### Original SSLeay License

Copyright (C) 1995-1998 Eric Young ([ey@cryptsoft.com](mailto:ey@cryptsoft.com))

All rights reserved.

This package is an SSL implementation written by Eric Young ([ey@cryptsoft.com](mailto:ey@cryptsoft.com)). The implementation was written so as to conform with Netscapes SSL. This library is free for commercial and non-commercial use as long as the following conditions are adhered to. The following conditions apply to all code found in this distribution, be it the RC4, RSA, lhash, DES, etc., code; not just the SSL code. The SSL documentation included with this distribution is covered by the same copyright terms except that the holder is Tim Hudson ([tjh@cryptsoft.com](mailto:tjh@cryptsoft.com)). Copyright remains Eric Young's, and as such any Copyright notices in the code are not to be removed. If this package is used in a product, Eric Young should be given attribution as the author of the parts of the library used.

---

This can be in the form of a textual message at program startup or in documentation (online or textual) provided with the package. Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. All advertising materials mentioning features or use of this software must display the following acknowledgement: "This product includes cryptographic software written by Eric Young (eay@cryptsoft.com) The word 'cryptographic' can be left out if the routines from the library being used are not cryptographic related :-)."
4. If you include any Windows specific code (or a derivative thereof) from the apps directory (application code) you must include an acknowledgement: "This product includes software written by Tim Hudson (tjh@cryptsoft.com)"

THIS SOFTWARE IS PROVIDED BY ERIC YOUNG "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

The licence and distribution terms for any publically available version or derivative of this code cannot be changed. i.e. this code cannot simply be copied and put under another distribution licence [including the GNU Public Licence.]

## ares LICENSE

Copyright 1998 by the Massachusetts Institute of Technology.

Permission to use, copy, modify, and distribute this software and its documentation for any purpose and without fee is hereby granted, provided that the above copyright notice appear in all copies and that both that copyright notice and this permission notice appear in supporting documentation, and that the name of M.I.T. not be used in advertising or publicity pertaining to distribution of the software without specific, written prior permission.

M.I.T. makes no representations about the suitability of this software for any purpose. It is provided "as is" without express or implied warranty.

## Expat LICENSE

Copyright (c) 1998, 1999, 2000 Thai Open Source Software Center Ltd and Clark Cooper

Copyright (c) 2001, 2002, 2003, 2004, 2005, 2006 Expat maintainers.

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

---

## JpegLib NOTICE

This product includes use of the Independent JPEG Group's JPEG software.

This software is used subject to the following:

## LEGAL ISSUES

In plain English:

1. We don't promise that this software works. (But if you find any bugs, please let us know!)
2. You can use this software for whatever you want. You don't have to pay us.
3. You may not pretend that you wrote this software. If you use it in a program, you must acknowledge somewhere in your documentation that you've used the IJG code.

In legalese:

The authors make NO WARRANTY or representation, either express or implied, with respect to this software, its quality, accuracy, merchantability, or fitness for a particular purpose. This software is provided "AS IS", and you, its user, assume the entire risk as to its quality and accuracy.

This software is copyright (C) 1991-2010, Thomas G. Lane, Guido Vollbeding.

All Rights Reserved except as specified below.

Permission is hereby granted to use, copy, modify, and distribute this software (or portions thereof) for any purpose, without fee, subject to these conditions:

(1) If any part of the source code for this software is distributed, then this README file must be included, with this copyright and no-warranty notice unaltered; and any additions, deletions, or changes to the original files must be clearly indicated in accompanying documentation.

(2) If only executable code is distributed, then the accompanying documentation must state that "this software is based in part on the work of the Independent JPEG Group".

(3) Permission for use of this software is granted only if the user accepts full responsibility for any undesirable consequences; the authors accept NO LIABILITY for damages of any kind.

These conditions apply to any software derived from or based on the IJG code, not just to the unmodified library. If you use our work, you ought to acknowledge us.

Permission is NOT granted for the use of any IJG author's name or company name in advertising or publicity relating to this software or products derived from it. This software may be referred to only as "the Independent JPEG Group's software".

We specifically permit and encourage the use of this software as the basis of commercial products, provided that all warranty or liability claims are assumed by the product vendor.

ansi2knr.c is included in this distribution by permission of L. Peter Deutsch, sole proprietor of its copyright holder, Aladdin Enterprises of Menlo Park, CA. ansi2knr.c is NOT covered by the above copyright and conditions, but instead by the usual distribution terms of the Free Software Foundation; principally, that you must include source code if you redistribute it. (See the file ansi2knr.c for full details.) However, since ansi2knr.c is not needed as part of any program generated from the IJG code, this does not limit you more than the foregoing paragraphs do.

The Unix configuration script "configure" was produced with GNU Autoconf. It is copyright by the Free Software Foundation but is freely distributable. The same holds for its supporting scripts (config.guess, config.sub, ltmain.sh). Another support script, install-sh, is copyright by X Consortium but is also freely distributable.

The IJG distribution formerly included code to read and write GIF files. To avoid entanglement with the Unisys LZW patent, GIF reading support has been removed altogether, and the GIF writer has been simplified to produce "uncompressed GIFs". This technique does not use the LZW algorithm; the resulting GIF files are larger than usual, but are readable by all standard GIF decoders.

We are required to state that

"The Graphics Interchange Format(c) is the Copyright property of CompuServe Incorporated. GIF(sm) is a Service Mark property of CompuServe Incorporated."

---

## Libxml2 LICENSE

Except where otherwise noted in the source code (e.g. the files hash.c, list.c and the trio files, which are covered by a similar licence but with different Copyright notices) all the files are: Copyright (C) 1998-2003 Daniel Veillard. All Rights Reserved. Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions: The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE DANIEL VEILLARD BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Except as contained in this notice, the name of Daniel Veillard shall not be used in advertising or otherwise to promote the sale, use or other dealings in this Software without prior written authorization from him.

## OpenLDAP LICENSE

The OpenLDAP Public License

Version 2.8, 17 August 2003

Redistribution and use of this software and associated documentation ("Software"), with or without modification, are permitted provided that the following conditions are met:

1. Redistributions in source form must retain copyright statements and notices,
2. Redistributions in binary form must reproduce applicable copyright statements and notices, this list of conditions, and the following disclaimer in the documentation and/or other materials provided with the distribution, and
3. Redistributions must contain a verbatim copy of this document.

The OpenLDAP Foundation may revise this license from time to time. Each revision is distinguished by a version number. You may use this Software under terms of this license revision or under the terms of any subsequent revision of the license.

THIS SOFTWARE IS PROVIDED BY THE OPENLDAP FOUNDATION AND ITS CONTRIBUTORS "AS IS" AND ANY EXPRESSED OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE OPENLDAP FOUNDATION, ITS CONTRIBUTORS, OR THE AUTHOR(S) OR OWNER(S) OF THE SOFTWARE BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

The names of the authors and copyright holders must not be used in advertising or otherwise to promote the sale, use or other dealing in this Software without specific, written prior permission. Title to copyright in this Software shall at all times remain with copyright holders.

OpenLDAP is a registered trademark of the OpenLDAP Foundation.

Copyright 1999-2003 The OpenLDAP Foundation, Redwood City, California, USA. All Rights Reserved. Permission to copy and distribute verbatim copies of this document is granted.



---

## CyrusSASL LICENSE

Copyright (c) 1994-2003 Carnegie Mellon University. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. The name "Carnegie Mellon University" must not be used to endorse or promote products derived from this software without prior written permission. For permission or any legal details, please contact

Office of Technology Transfer

Carnegie Mellon University

5000 Forbes Avenue

Pittsburgh, PA 15213-3890

(412) 268-4387, fax: (412) 268-7395

tech-transfer@andrew.cmu.edu

4. Redistributions of any form whatsoever must retain the following acknowledgment:

"This product includes software developed by Computing Services at Carnegie Mellon University (<http://www.cmu.edu/computing/>)."

CARNEGIE MELLON UNIVERSITY DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE, INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS, IN NO EVENT SHALL CARNEGIE MELLON UNIVERSITY BE LIABLE FOR ANY SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

## DotNetZip LICENSE

Copyright © Dino Chiesa 2006 - 2009

Portions Copyright (c) 2006, 2007, 2008, 2009 Dino Chiesa and Microsoft Corporation.

Portions Copyright (c) 2006-2009 Microsoft Corporation. All rights reserved.

Microsoft Public License (Ms-PL)

This license governs use of the DotNetZip library and tools ("the software"). If you use the software, you accept this license. If you do not accept the license, do not use the software.

### 1. Definitions

The terms "reproduce," "reproduction," "derivative works," and "distribution" have the same meaning here as under U.S. copyright law.

A "contribution" is the original software, or any additions or changes to the software.

A "contributor" is any person that distributes its contribution under this license.

"Licensed patents" are a contributor's patent claims that read directly on its contribution.

### 2. Grant of Rights

(A) Copyright Grant- Subject to the terms of this license, including the license conditions and limitations in section 3, each contributor grants you a non-exclusive, worldwide, royalty-free copyright license to reproduce its contribution, prepare derivative works of its contribution, and distribute its contribution or any derivative works that you create.

---

(B) Patent Grant- Subject to the terms of this license, including the license conditions and limitations in section 3, each contributor grants you a non-exclusive, worldwide, royalty-free license under its licensed patents to make, have made, use, sell, offer for sale, import, and/or otherwise dispose of its contribution in the software or derivative works of the contribution in the software.

### 3. Conditions and Limitations

(A) No Trademark License - This license does not grant you rights to use any contributor's name, logo, or trademarks.

(B) If you bring a patent claim against any contributor over patents that you claim are infringed by the software, your patent license from such contributor to the software ends automatically.

(C) If you distribute any portion of the software, you must retain all copyright, patent, trademark, and attribution notices that are present in the software.

(D) If you distribute any portion of the software in source code form, you may do so only under this license by including a complete copy of this license with your distribution. If you distribute any portion of the software in compiled or object code form, you may only do so under a license that complies with this license.

(E) The software is licensed "as-is." You bear the risk of using it. The contributors give no express warranties, guarantees or conditions. You may have additional consumer rights under your local laws which this license cannot change. To the extent permitted under your local laws, the contributors exclude the implied warranties of merchantability, fitness for a particular purpose and non-infringement.

## LibSRTP LICENSE

Copyright (c) 2001-2006 Cisco Systems, Inc. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.

Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

Neither the name of the Cisco Systems, Inc. nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS

"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDERS OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

## Log4cxx LICENSE

Apache License

Version 2.0, January 2004

<http://www.apache.org/licenses/>

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions. "License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document. "Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License. "Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such

---

entity. "You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License. "Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files. "Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types. "Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below). "Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof. "Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution." "Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

a. You must give any other recipients of the Work or Derivative Works a copy of this License; and

b. You must cause any modified files to carry prominent notices stating that You changed the files; and

c. You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

d. If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License. You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

---

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "[]" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright 1999-2005 The Apache Software Foundation

Licensed under the Apache License, Version 2.0 (the "License"); you may not use this file except in compliance with the License. You may obtain a copy of the License at <http://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

## **NAudio LICENSE**

Copyright (C) 2001-2011 Mark Heath

Portions of this code Copyright (C) 2002-2004 Idael Cardoso.

Microsoft Public License (Ms-PL)

This license governs use of the accompanying software. If you use the software, you accept this license. If you do not accept the license, do not use the software.

### 1. Definitions

The terms "reproduce," "reproduction," "derivative works," and "distribution" have the same meaning here as under U.S. copyright law.

A "contribution" is the original software, or any additions or changes to the software.

A "contributor" is any person that distributes its contribution under this license.

---

"Licensed patents" are a contributor's patent claims that read directly on its contribution.

## 2. Grant of Rights

(A) Copyright Grant- Subject to the terms of this license, including the license conditions and limitations in section 3, each contributor grants you a non-exclusive, worldwide, royalty-free copyright license to reproduce its contribution, prepare derivative works of its contribution, and distribute its contribution or any derivative works that you create.

(B) Patent Grant- Subject to the terms of this license, including the license conditions and limitations in section 3, each contributor grants you a non-exclusive, worldwide, royalty-free license under its licensed patents to make, have made, use, sell, offer for sale, import, and/or otherwise dispose of its contribution in the software or derivative works of the contribution in the software.

## 3. Conditions and Limitations

(A) No Trademark License- This license does not grant you rights to use any contributors' name, logo, or trademarks.

(B) If you bring a patent claim against any contributor over patents that you claim are infringed by the software, your patent license from such contributor to the software ends automatically.

(C) If you distribute any portion of the software, you must retain all copyright, patent, trademark, and attribution notices that are present in the software.

(D) If you distribute any portion of the software in source code form, you may do so only under this license by including a complete copy of this license with your distribution. If you distribute any portion of the software in compiled or object code form, you may only do so under a license that complies with this license.

(E) The software is licensed "as-is." You bear the risk of using it. The contributors give no express warranties, guarantees or conditions. You may have additional consumer rights under your local laws which this license cannot change. To the extent permitted under your local laws, the contributors exclude the implied warranties of merchantability, fitness for a particular purpose and non-infringement.

# SQLite LICENSE

Portions of this file copyright (c) Microsoft Corporation