



Release Notes

3.2.2 | December 2014 | 3725-69925-003/C

Polycom[®] RealPresence[®] Desktop for Mac[®] OS X



Copyright© 2014, 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



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.



Java is a registered trademark of Oracle America, Inc., and/or its affiliates.

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.

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.

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

Release History	1
Hardware and Software Requirements	3
Multi-language UI Support	3
Interoperability	4
Polycom CMA and RealPresence Resource Manager Systems	4
Products Tested in This Release	4
Installation and Upgrade Notes	6
Install RealPresence Desktop	6
Upgrade RealPresence Desktop	6
New Features in Previous Releases	7
Release 3.2.1	7
Release 3.2	7
Support for User Profile Import and Export	8
Support for QoS in Managed Mode	8
Support for Setting Dialing Preference	8
Support for the Czech Language	8
Directory Enhancements	8
Support for Keyboard Noise Suppression	9
Support for New Test Features	9
Release 3.1	9
Release 3.0	11
Firewall and NAT Support	12
Work with Content	12
Supporting for Far-End Camera Control	12
SmartPairing	12
Other Features Supported on RealPresence Desktop.	13
System Capabilities and Constraints	14
Protocols	14
Resolutions	14
Algorithms	14
Inbound and Outbound Ports	15
Interoperability Issues	16

Known Issues	18
Resolved Issues	19
Enterprise Scalable Video Coding (SVC) Mode	21
Access Media Statistics	23
Feature Overview	25
About AES Encryption	28
Prepare Your Device for Mutual Transport Layer Security	29
Get Help	32
The Polycom Community	32
Notices	33
Open Source Licenses	33
OpenSSL LICENSE	33
Original SSLeay License	33
ares LICENSE	34
Expat LICENSE	34
JpegLib NOTICE	35
Libxml2 LICENSE	36
OpenLDAP LICENSE	36
CyrusSASL LICENSE	36
DotNetZip LICENSE	37
LibSRTP LICENSE	38
Log4cxx LICENSE	38
NAudio LICENSE	40
SQLite LICENSE	41

Polycom is pleased to announce an update release of the RealPresence Desktop application. RealPresence Desktop is a standards-based application that enables you to meet and collaborate face-to-face with anyone from anywhere—improving teamwork, collaborative decision-making, and productivity with colleagues, customers, and business partners.

RealPresence Desktop offers features and user experiences similar to the Polycom RealPresence Mobile application. It is easily installed and configured, supports both standalone and managed modes, and enables sharing of the desktop and content. In standalone mode, the application requires a license to operate beyond the 30-day trial period.

The release notes describes important information to assist you in installing and using the RealPresence Desktop application.

Release History

The following table shows the release history of RealPresence Desktop.

Release History

Release	Release Date	Features
3.2.2	December 2014	Fixed the RealPresence Desktop password security issue (VIDESC-13226).
3.2.1	July 2014	<p>Support for DTMF with keyboard input. You can enter a DTMF password using your keyboard without showing the DTMF keypad during a call.</p> <p>This feature works only when the RealPresence Desktop DTMF keypad is not shown. When you open the DTMF keypad, you can use the keypad only to enter the password.</p> <p>Fixed an OpenSSL security vulnerability (CVE-2014-0224).</p>
3.2	June 2014	<p>Support for user profile import and export</p> <p>Support for Quality of Service (QoS) in managed mode</p> <p>Support for keyboard noise suppression</p> <p>Support for setting dialing preference</p> <p>Support for the Czech language</p> <p>Directory enhancements as follows:</p> <ul style="list-style-type: none"> • Hide the H.323 and SIP technical terms from the GUI. • Support for display device model. • Add the Contacts and Organization buttons under the Contacts tab and support for the Multi-tier directory. <p>Support for the following test features:</p> <ul style="list-style-type: none"> • Polycom Acoustic Bubble™ • Automatic SDP Size Adjustment • Automatic Face Brightness Adjustment

Release History

Release	Release Date	Features
3.1	January 2014	<ul style="list-style-type: none">• Support for Instant Messaging and Presence• Support for SmartPairing• NAT and Firewall Enhancement in standalone mode• Support for Easy Upgrade from Polycom CMA® Desktop• Support for the Kazakh language• Support for the New Mac OS X 10.9
3.0	July 2013	Initial release.

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
Mac OS X	Lion (10.7) Mountain Lion (10.8) Mavericks (10.9)
Software	<ul style="list-style-type: none"> • Polycom CMA Management Application Version 6.2.5 or later • Polycom RealPresence Resource Manager Version 8.1 or later
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>Basic Video Transmit (Up to QVGA 30fps send, up to 720P 15fps receive)</p> <ul style="list-style-type: none"> • single core • dual cores, lower than 2.0 GHz • quad cores, lower than 1.3 GHz <p>Premium Video Transmit (Up to VGA 30fps send, up to 720P 30fps receive)</p> <ul style="list-style-type: none"> • dual cores, 2.0 GHz or higher • quad cores, 1.3 GHz or higher <p>HD Transmit</p> <ul style="list-style-type: none"> • dual cores, 2.5 GHz or higher (Up to 720p 15fps send, up to 720P 30fps receive) • quad cores, 1.6 GHz or higher (Up to 720p 15fps send, up to 720P 30fps receive) • quad cores, 2.0 GHz or higher (Up to 720p 30fps send, up to 720P 30fps receive)
RAM	4 GB
Video memory	Minimum: 256 MB
Hard drive space	200 MB
Camera	Integrated or external

Multi-language UI Support

RealPresence Desktop UI supports English, International Spanish, French, German, Simplified Chinese, Korean, Japanese, Russian, Portuguese, Kazakh, Czech, and Traditional Chinese.. The language used for RealPresence Desktop depends on the Mac OS language setting.

Interoperability

This section explains the Interoperability of RealPresence Desktop and other applications.

Polycom CMA and RealPresence Resource Manager Systems

The RealPresence Desktop application can register to the Polycom CMA server and Polycom RealPresence Resource Manager server. The CMA Server and RealPresence Resource Manager systems can schedule and perform limited monitoring of the RealPresence Desktop application, and also fully manage, provision, and update the application. The Polycom CMA server cannot upgrade the application, and Polycom RealPresence Resource Manager server can only upgrade the application from version 8.0.

Products Tested in This Release

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



Note: Upgrade Polycom System

You are encouraged to upgrade all your Polycom systems with the latest software before contacting Polycom support to ensure that the issue has not already been addressed by vendor software updates. Go to the [Polycom Support](#) to find the current Polycom Supported Products matrix.

Products Tested in This Release

Type	Product	Tested Versions
NAT/Firewall/Border Controller	ACME Packet Net-Net 3820	Firmware SCX6.3.0 MR-5 Patch 2
	Polycom VBP® 5300-ST	11.2.17
	Polycom VBP-E	11.2.17
	Polycom RealPresence® Access Director™	4.0, 3.1

Products Tested in This Release

Type	Product	Tested Versions
Gatekeeper, Gateways, External MCU, Bridges, Call Managers	Polycom Distributed Media Application™ (DMA®) 7000	6.1.0, 6.0.4
	Polycom Converged Management Application™ (CMA®) 4000/5000	6.2.5
	Polycom RealPresence Resource Manager	8.2, 8.1
	Polycom RMX® 4000/2000	8.4, 8.3
	Polycom RealPresence® Collaboration Server 1800	8.4, 8.3
	Polycom RMX® 1000C	2.5.1
	Polycom RSS™ 4000	8.5.1
	Polycom RealPresence Capture Server	1.6
	Broadsoft SIP r19 Server	r19
Endpoints	Polycom HDX® Series	3.1.3, 3.1.2
	Polycom RealPresence Mobile	3.2, 3.1(iOS) 3.2, 3.1(Android)
	Polycom VVX®	5.0.1
	Polycom CMA® Desktop	5.2.5
	Polycom Telepresence M100	1.0.6
	Polycom RealPresence Desktop	3.2, 3.1(Windows)
		3.2, 3.1(Mac)
Polycom RealPresence Group Series	4.1.3, 4.1.1	

Installation and Upgrade Notes

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

Install RealPresence Desktop

To install this product, download the installation file from [Polycom Support](#) and follow the Installer Wizard instructions for installation.

To view the license number of RealPresence Desktop:

- 1 Click **Polycom RealPresence Desktop** on the top menu.
- 2 Click **About RealPresence Desktop**.

Upgrade RealPresence Desktop

In managed mode, you can upgrade RealPresence Desktop to the latest version that you upload on RealPresence Resource Manager. The RealPresence Desktop distribution package (.tar.gz) is usually uploaded and managed by an administrator on RealPresence Resource Manager.



Note: Consume one more license after upgrade

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

To upload a RealPresence Desktop distribution package:

- 1 Download the latest RealPresence Desktop distribution package from [Polycom Support](#). You need to download the compressed package.
- 2 Log into the RealPresence Resource Manager portal.
- 3 From the top menu, go to **ENDPOINT > Dynamic Management > Upload Software Updates**.
- 4 Select the product for which you want to upload the package—for example RealPresence Desktop (PC) or RealPresence Desktop (Mac OS).
- 5 From the left menu in the **ACTIONS** panel, click **Upload Software Update**.
- 6 In the **Upload Software Update** dialog, specify the **Software Update File** field by browsing to the RealPresence Desktop compressed package (.tar.gz).
- 7 (Optional) Enter the description.
- 8 Select the uploaded version to use.
- 9 Click **Update**.

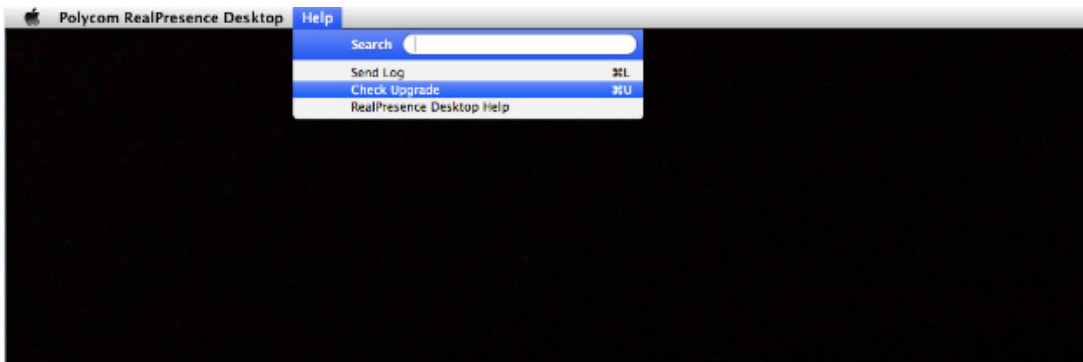
After you upload the latest distribution package to RealPresence Resource Manager, RealPresence Desktop reminds you to upgrade your RealPresence Desktop to the latest version that you uploaded when you logged into RealPresence Desktop in managed mode. You can also display the notice manually to do the upgrade.

To upgrade RealPresence Desktop:

- 1 Log in to RealPresence Desktop.
- 2 Click **Help** on the Mac menu, as shown in the following figure.
- 3 Click **Check Upgrade**.
- 4 In the next dialog, click **Yes** to perform the upgrade.

The RealPresence Desktop application will be upgraded to the latest version that you uploaded to RealPresence Resource Manager.

Checking the upgrade



New Features in Previous Releases

This section describes the new features in the previous releases.

Release 3.2.1

The RealPresence Desktop 3.2.1 application includes the features and functionality of previous releases and includes the following new features:

- Support for DTMF with keyboard input.
You can enter a DTMF password using your keyboard without showing the DTMF keypad during a call.
This feature works only when the RealPresence Desktop DTMF keypad is not shown. When you open the DTMF keypad, you can use the keypad only to enter the password.
- Fixed an OpenSSL security vulnerability (CVE-2014-0224).

Release 3.2

Release 3.2 includes the following new features:

- [Support for User Profile Import and Export](#)
- [Support for QoS in Managed Mode](#)
- [Support for Setting Dialing Preference](#)
- [Support for the Czech Language](#)

- [Directory Enhancements](#)
- [Support for Keyboard Noise Suppression](#)
- [Support for New Test Features](#)

Support for User Profile Import and Export

With this feature, you can import user data of Polycom CMA Desktop, Telepresence m100, or another RealPresence Desktop system. You also can export the user data to another RealPresence Desktop system. This feature is available in both managed mode and standalone modes.



Note: User data import and export

- The user data configured on CMA Desktop and Telepresence m100 that also works on RealPresence Desktop can be imported, for example, auto-answered incoming calls, specified sign-in server, SIP registration settings.
- Some CMA Desktop and Telepresence m100 user data cannot be imported to RealPresence Desktop. For example, group in local contact, auto sign in, chat state, presence auto accept invitation, configured on CMA Desktop, cannot be imported.
- For RealPresence Desktop, LDAP contacts saved in the local contacts and local contacts can be imported and exported. Test features are also exported and imported.
- Dialing preferences cannot be imported and exported.

Support for QoS in Managed Mode

RealPresence Desktop has the potential to improve the video and audio user experience. This feature supports the capability to mark the transmitted media traffic with the appropriate QoS value. This feature is available in managed mode only.

Support for Setting Dialing Preference

You can select the preferred protocol used for making calls by going to **Settings > General > Dialing Preference**. When SIP is preferred, RealPresence Desktop will make SIP calls first. If the far end cannot be reached by SIP, RealPresence Desktop will change to H.323. By default, SIP Preferred is selected.

Support for the Czech Language

RealPresence Desktop UI supports Czech from this release..The language for RealPresence Desktop depends on the Mac OS language setting.

Directory Enhancements

RealPresence Desktop 3.2 implements the following directory enhancements.

- RealPresence Desktop 3.2 hides the H.323 and SIP technical terms from the GUI, which include the following changes:
 - Removes the H.323 and SIP technical protocol indicator from the main window.
 - Removes the H.323 or SIP call type from the device list displayed for contacts or directory search results.
- Under the Contacts tab, two new buttons were added:
 - **Contacts** Contacts are divided into two groups:

- ◆ **Frequently Used** Your frequently used contacts are listed here automatically.
- ◆ **Favorites** Favorites are contacts that you add to the Favorites list. You also can edit a contact or remove a contact from the Favorites list.
- **Organization** See the hierarchy of your organization. This feature is available only in managed mode and if you have permission to view the address on the server.
- RealPresence Desktop 3.2 lists the device model on the detail page of a contact or directory search result rather than display the device alias. When you click a contact or an entry of a directory search result, the devices belonging to this contact are displayed. For example, when the contact that you choose uses RealPresence Desktop for Windows for Mac, RealPresence Desktop will be returned and displayed as the device of this contact.

Support for Keyboard Noise Suppression

RealPresence Desktop can mask your keyboard noise during a call.

To mask keyboard noise:

- 1 Go to **Settings > Device**.
- 2 Select the **Enable Keyboard Noise Suppression** check box.

Support for New Test Features

RealPresence Desktop 3.2 supports several new test features. Polycom recommends you try these features and send feedback via [Polycom Support](#).

- **USB Headset Acoustic Bubble** Masks background noise during a call.
- **Automatic SDP Size Adjustment** Adjusts Session Description Protocol (SDP) size automatically to avoid call failure caused by SDP size limitation for some users.



Note: Content sharing, FECC, and SVC cannot be used

When you enable Automatic SDP Size Adjustment, content sharing, FECC, and SVC cannot be used.

- **Automatic Face Brightness Adjustment** Detects your face to adjust the video brightness automatically.

To configure these features:

- 1 Go to **Settings > Test Features**.
- 2 Enter the password: **456**.
- 3 Select the features that you want to enable.

Release 3.1

Release 3.1 includes the following new features.

- [Support for Easy Upgrade from Polycom CMA® Desktop](#)
- [Support for Instant Messaging and Presence](#)
- [Support for SmartPairing](#)

- [NAT and Firewall Enhancement](#)

Support for Easy Upgrade from Polycom CMA® Desktop

When you install RealPresence Desktop for the first time, RealPresence Desktop can detect the installed CMA Desktop which version is equal or higher than 5.2.2 on your computer. If RealPresence Desktop finds CMA Desktop, RealPresence Desktop will ask if you want to back up and import the application and user data of CMA Desktop and if you want to uninstall 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, but will not import this data on Mac.
- 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.
- Video and Audio device settings on Mac.

RealPresence Desktop supports the easy upgrade feature only on Mac 10.7 and 10.8.



Note: Limitations of this feature

- When RealPresence Desktop and CMA Desktop are running on the same computer and you use the same account to sign in, the local contacts will not be synchronized between RealPresence Desktop and CMA Desktop after you add a local contact to RealPresence Desktop manually. XMPP contacts will be synchronized because XMPP contacts will be downloaded from CMA or RealPresence Resource Manager.
- After you uninstall CMA Desktop, your CMA Desktop settings will not be retained.
- 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.

Support for Instant Messaging and Presence

This features is supported only in managed mode. After you log in to the RealPresence Desktop and register to CMA successfully, you can view your name and set your presence status. You can also chat with anyone on your contacts list. RealPresence Desktop enables you use both chat and video at the same time.



Note: Limitations of this feature

- RealPresence Desktop, CMA Desktop, HDX, RealPresence Group Series exchange presence information only when they are provisioned by the same server.
- The instant messaging and presence feature works properly on RealPresence Resource Manager 8.0 or higher and CMA 6.2.5 or higher.
- If you sign in from different RealPresence Desktop, for example you first sign in on RealPresence Desktop Windows and later sign in on RealPresence Desktop Mac, RealPresence Desktop will always post your latest presence status. You are forced to sign out from the previous RealPresence Desktop. If you sign in CMA Desktop and RealPresence Desktop from different computers, you will not be forced to sign out.

Support for SmartPairing


You can pair your Mac with a Polycom HDX or RealPresence Group Series system and use RealPresence Desktop as its remote control. Then you can use the paired Polycom HDX or RealPresence Group Series system, for example, to place a call, to adjust the call volume, or to end the call, using the RealPresence Desktop application.

NAT and Firewall Enhancement

NATs and firewalls provide security for your network by limiting outside access to your internal network. This release adds support for NAT in the standalone mode.

Other Enhancements

This release also offers the following enhancements:

- When you search contacts, only the people and endpoints that can be called from RealPresence Desktop are returned.
- When you minimize the RealPresence Desktop during a call by clicking , you will see the In a call notice on the RealPresence Desktop icon.



Release 3.0

RealPresence Desktop 3.0 is the initial release for Mac OS X. RealPresence Desktop offers the following key features compared to Polycom Telepresence m100 and Polycom CMA Desktop systems:

- Support for the new SVC codec technology when used in conjunction with the Polycom Real Presence platform.
- Enhanced Content Send capability.

The following features offered by the CMA Desktop client are not available with this release of RealPresence Desktop:

- Support for Presence display.
- Support for IM and chat.
- Detailed QoS reporting.

Firewall and NAT Support

RealPresence Desktop provides firewall and Network Address Translator (NAT) traversal ability without the need to log in to a VPN. The following features are supported:

- Ability to keep Real-time Transport Protocol (RTP) NAT mapping alive during live streaming.
- Support for guest user dialing.
- Ability to support Secure Real-time Transport Protocol (SRTP) and Transport Layer Security (TLS) for the secure transmission of media.
- Ability to support Binary Floor Control Protocol (BFCP) over both TCP and UDP links (UDP preferred). Control signaling can now be forwarded using the best-effort traffic class in firewall and NAT traversal.
- Support for the following dial strings when you place calls without registering to a server.
 - H.323
 - ◆ name@domain
 - ◆ name@IP
 - ◆ extension@domain
 - ◆ extension@IP
 - ◆ IP##extension
 - SIP
 - ◆ <name>@<domain>
 - ◆ <name>@<ipAddress:port>
 - ◆ <extension>@<domain>
 - ◆ <extension>@<ipAddress:port>
- Ability to verify server certificates by using installed root certificates (SIP, HTTPS, and LDAP) when establishing TLS connections.
- Ability to interoperate with Acme Session Border Controller (SBC) systems and Polycom® RealPresence Access Director™.
- Support for SIP signaling FW/NAT traversal over TCP/TLS as defined in RFC5626.
- Ability to switch to a backup SIP server when the primary server fails.

Work with Content

Your RealPresence Desktop application enables you to view content sent by others in the call, and share your desktop or running applications with participants at the far end. The shared video and content you receive display in separate windows.

Supporting for Far-End Camera Control

In a point-to-point call, if the far-end system is configured to allow control, you can pan, tilt, and zoom the far-end Pan Tilt Zoom (PTZ) camera.

SmartPairing

You can pair your device with a Polycom HDX or RealPresence Group Series system and share your monitor or application with the system.

Other Features Supported on RealPresence Desktop.

The following features are also supported:

- Support for H.264 high-profile calls (outgoing and incoming).
- Support for answering incoming calls automatically. When you enable this feature, you can choose to mute the audio or video of auto-answered calls.
- Enables you to hide or display local self-view.
- Enables you to change call settings during the call.
- Enables you to collect and e-mail log files.

System Capabilities and Constraints

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

Protocols

The following table lists the supported protocols.

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.

Resolutions

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 / 5 fps	Content showing from the computer
Up to 720p / 5 fps	Content received from far end

Algorithms

The following table lists the supported algorithms.

Algorithms

Algorithm Type	Description
Audio	<ul style="list-style-type: none"> G.711μ or G.711A Siren LPR G.722.1 at 24 kbps and 32 kbps G.722.1 Annex C at 24 kbps, 32 kbps, and 48 kbps G.719 at 32 kbps, 48 kbps, 64 kbps, and 128 kbps G.729 SAC Automatic gain control Acoustic echo cancellation
Video	<ul style="list-style-type: none"> H.261 H.263/H.263+ H.264 AVC H.264 SVC H.264 high profile Content over H.264/H.263/H.263+ Video LPR
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 Signaling (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

Outbound Ports

Port	Function
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 Signaling (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 Limitations

Platform/Product Name	Description	Solution
Limitations Related to the Mac Operating System	When the CPU type is single or dual core and the Mac version is 10.7 or 10.8, RealPresence Desktop only sends half frame rate of expected per second.	Upgrade Mac to 10.9.2.
	On Mac Air with CPU Intel Core 2 Duo, RealPresence Desktop has performance issues, for example, large delay.	This issue is due to CPU limitation. The recommended CPU is Intel Core i5, 2.5 GHz or higher.

Interoperability Limitations

Platform/Product Name	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"> • Change the RMX Content Settings to Graphics, and Content Protocol to H.263 & H.264 Auto Selection. • Set the call rate on RPM to above 384 kbps.
	RealPresence Desktop only supports using English user name and password to sign in Polycom CMA server and RealPresence Resource Manager, or register to a gatekeeper or an SIP server.	Use English user name and passwords.
	When RealPresence Desktop and m100 are not in the same local network.	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.

Known Issues

The following table lists the known issues for this release. If a workaround is available, it is noted in the table.

Category	Issue ID	Description	Workaround
Audio	SWEP-6365	If you pull out your earphone or USB headset during a call, other participants will hear echoes.	Plug your earphone or headset back in.
Content	SWEP-6290	You might see mosaic screen when RealPresence Desktop joins a RMX conference which enables content transcoding, and there is packet loss to the H.264 content stream.	Disable content transcoding on RMX.
SVC	SWEP-6350	RealPresence Desktop may stop working after joining an SVC conference with more than 100 SVC participants.	None.

Resolved Issues

The following table lists the corrected Issues in Version 3.2.2

Category	Issue ID	Description
Security	VIDESC-13226	When signing in RealPresence Desktop, certain debug configuration operations might have inadvertently displayed sensitive information.

The following table lists the corrected Issues in Version 3.2

Category	Issue ID	Description
Other	DSTC-1541	When you are trying to sign in RealPresence Desktop, RealPresence Desktop may incorrectly display a certificate warning for the intermediate CA issued certificate.
Upgrade	SWEP-4478	The RealPresence Desktop for Mac OS X cannot be upgraded by the RealPresence Resource Manager server if it registers to the server through the Polycom RealPresence Access Director, Polycom VBP-ST, or Acme Session Border Controller.
Video	SWEP-5592	The RealPresence Desktop received video is stretched when RealPresence Desktop is inter operating with VSX® Visual Concert™.

The following table lists the corrected Issues in Version 3.1

Category	Issue ID	Description
Audio	SWEP-4361	When an Airplay device is detected in the network, the MAC Book speaker automatically changes from built in output to Airplay, then you cannot hear audio in a call using RealPresence Desktop.
Call Control	SWEP-4446	The RealPresence Desktop application can only send 180p video on MacBook Air. This issue has been fixed.
Call Control	SWEP-4493	The Hang up icon is unintuitive after you hang up a call. This issue has been fixed.
Call Control	SWEP-4495	Under Broadsoft environment, the RealPresence Desktop application can only send 180 p video to the RealPresence Group Series system. This issue has been fixed.
Call Control	SWEP-4531	When H.323 name is null, the connection cannot be reached.
Contacts	SWEP-4362	The search result is incorrect when you enter a key word to find a contact. This issue has been fixed.
Contacts	SWEP-4545	RealPresence Desktop does not allow you to enter the ## characters in the IP Address field in the Contact list. This has been fixed.
Contacts	EXT-5302	When you are trying to call some one in your recent calls list, the SIP or H.323 number is displayed instead of the user ID of this person. This issue has been fixed.

Release Notes

Category	Issue ID	Description
Other	SWEP-4502	RealPresence Desktop always cancels Mac OS restart requests. This has been fixed.
SIP	SWEP-4517	If SIP call is not available, it should be inactive. This has been fixed.

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.



Note: Incorrect screen layouts

When using SIP UDP in an SVC call and there is more than 10percent Packet Loss, the screen layout may appear 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.



Note: 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.

Media Statistics

Value	Description
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.
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.

Media Statistics

Value	Description
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.

Feature Overview

This table compares features available in CMA Desktop, m100, and RealPresence Desktop.

Feature Overview

Features	CMA Desktop	m100	RealPresence Desktop (Windows/Mac)
AVC H.323 calls (outgoing and incoming)	✓	✓	✓
AVC H.264 high profile calls (outgoing and incoming)			✓
AVC SIP calls (outgoing and incoming)	✓	✓	✓
SVC SIP calls (outgoing and incoming)			✓
SVC high profile calls			✓
H.239/BFCP Content receive	✓	✓	✓
H.239/BFCP Content send	✓	✓	✓
Automatic gain control	✓	✓	✓
Acoustic echo cancellation	✓	✓	✓
Call with audio only devices	✓	✓	✓
H.261	✓	✓	✓
H.263/H.263+	✓	✓	✓
Video LPR	✓	✓	✓
720p30 transmit	✓		✓
720p30 receive	✓	✓	✓
VGA transmit/receive	✓	✓	✓
SirenLPR	✓	✓	✓
G.719 at 32 kbps, 48 kbps, 64 kbps, 128 kbps	✓	✓	✓
G.722.1 at 24 kbps and 32 kbps	✓	✓	✓
G.722.1 Annex C at 24 kbps, 32 kbps, 48 kbps	✓	✓	✓
Siren 14 at 24 kbps, 32 kbps and 48kbps	✓	✓	
G.711 μ or G.711A	✓	✓	✓
Video mute	✓	✓	✓
Audio mute	✓	✓	✓

Feature Overview

Features	CMA Desktop	m100	RealPresence Desktop (Windows/Mac)
Volume control	✓	✓	✓
DTMF - (inband tones)	✓	✓	✓
DTMF - RFC 2833 (out of band events)	✓	✓	✓
Call statistics	✓	✓	✓
Camera selection (in call)	✓	✓	✓
PIP	✓	✓	✓
FECC (H323 & SIP)	✓	✓	✓
Dual monitor support	✓	✓	✓
Application level content share			✓
Region content share	✓	✓	
Windowed mode	✓	✓	✓
Full Screen mode	✓	✓	✓
Minimized running mode			✓
SVC auto layout			✓
Polycom RealPresence Resource Manager monitoring and reporting	✓		✓
Polycom RealPresence Resource Manager provisioning	✓		✓
Software update	✓		✓
Stand Alone mode		✓	✓
Call history (recent call list)	✓	✓	✓
Local contact list	✓	✓	✓
Directory service	✓ (LDAP)	✓ (LDAP, GAB)	✓ (LDAP)
XMPP Presence	✓		✓
Instant Message	✓		✓
Localization	✓		✓
Log retrieval tool	✓	✓	✓
AES encryption	✓	✓	✓

Feature Overview

Features	CMA Desktop	m100	RealPresence Desktop (Windows/Mac)
H.460 firewall traversal	✓		✓
Acme SBC Interoperability	✓		✓
SIP outbound (RFC 5626)			✓
Certificates for TLS connection			✓
BFCP over UDP			✓
BFCP over TCP	✓	✓	✓
Secure RTP/RTCP (SDES)			✓
Symmetric RTP	✓	✓	✓
Configurable fixed ports for RTP/RTCP	✓	✓	✓
Network adapter selection - Automatic	✓	✓	✓
Annex O	✓	✓	✓

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 12 bit CBC mode over SRTP.



Note: 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:

- 1 Open the Terminal window from your Mac. (**Applications > Utilities > Terminal.app**)

- 2 Go to the **Documents** folder and generate the private key client.key. For example:

```
localhost$ cd documents
localhost$ openssl genrsa -out client.key 1024
```

- 3 Generate the certificate request client.csr. For example:

```
localhost$ openssl req -new -key client.key -out client.csr
```

The requested information is incorporated into your certificate request. Enter a distinguished name (DN) and other information into the following fields (you can leave some blank).

```
-----
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 the note below.
An optional company name []:poly
```

- 4 Submit the certificate request to your CA:

- a View the content of the file client.csr using the following command:

```
localhost > more client.csr
```

Select and copy its content from BEGIN CERTIFICATE REQUEST to END CERTIFICATE REQUEST.

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

- c Choose **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 in the field **Saved Request** text field, and click **Submit**.

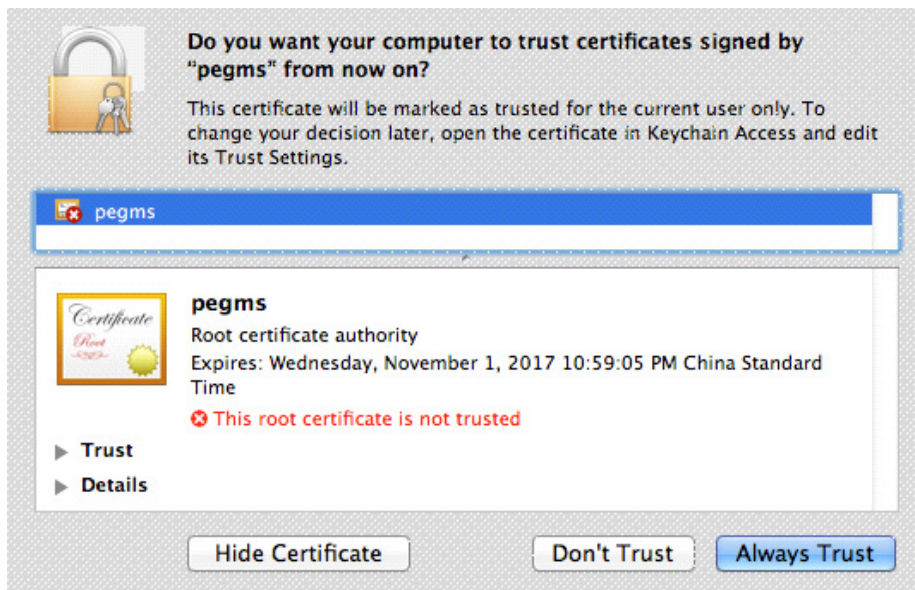
- f** Choose **Base 64 encoded** and then click **Download certificate**.
The file is saved as `certnew.cer` by default in the folder **Downloads**.
- 5** Move the generated `certnew.cer` file to the **Documents** folder.
- 6** Convert the file `ccertnew.cer` to a `.p12` file by using the openSSL tool. Note that the export password should be the same as the challenge password you set in Step 4. For example:

```
localhost$ openssl pkcs12 -export -in certnew.cer -inkey client.key -out client.p12 -name testp12
```

Enter Export Password:
Verifying - Enter Export Password:
- 7** Encrypt the challenge password you set:
 - a** Go to **Covert 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`.
- 8** Open the **Documents/Polycom RealPresence Desktop** folder, 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/>, and click **Download a CA certificate, certificate chain, or CRL**.
- 2** Select **Base 64**, and click **Download CA Certificate**.
- 3** Double-click the CA file, and select **Always Trust**. If you see the Add Certificates message, click **Add** before you click **Always Trust**.





Get Help

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

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

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 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.
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). This product includes software written by Tim Hudson (tjh@cryptsoft.com).

Original SSLeay License

Copyright (C) 1995-1998 Eric Young (ey@cryptsoft.com)

All rights reserved.

This package is an SSL implementation written by Eric Young (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). 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