



Arc Pro

Compatibility and Performance Guide

Version 6.3.1



Enghouse
Interactive

Terms of use

Any software ("Software") that is made available by Enghouse Interactive Inc. ("Enghouse"), together with any User Documentation ("User Documentation") is the copyrighted work of Enghouse. Use of the Software is governed by the terms of a Master Purchase Agreement, End User License Agreement, or similar software license agreement ("License Agreement"). End users are not legally authorized to install any Software that is accompanied by or includes a License Agreement unless he or she first agrees to the License Agreement terms.

The Software is made available for installation solely for use by users according to the License Agreement. Any reproduction or redistribution of the Software not in accordance with the License Agreement is expressly prohibited by law and may result in severe civil and criminal penalties. Violators will be prosecuted to the maximum extent possible.

WITHOUT LIMITING THE FOREGOING, COPYING OR REPRODUCTION OF THE SOFTWARE TO ANY OTHER SERVER OR LOCATION FOR FURTHER REPRODUCTION OR REDISTRIBUTION IS EXPRESSLY PROHIBITED, UNLESS SUCH REPRODUCTION OR REDISTRIBUTION IS EXPRESSLY PERMITTED BY THE LICENSE AGREEMENT ACCOMPANYING SUCH SOFTWARE.

THE SOFTWARE IS WARRANTED, IF AT ALL, ONLY ACCORDING TO THE TERMS OF THE LICENSE AGREEMENT. ENGHOUSE HEREBY DISCLAIMS ALL OTHER NON-EXPRESS WARRANTIES AND CONDITIONS WITH REGARD TO THE SOFTWARE, INCLUDING ALL IMPLIED WARRANTIES AND CONDITIONS OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, TITLE, AND NON-INFRINGEMENT.

Enghouse grants a nonexclusive license to customer for use of the User Documentation. The User Documentation contains copyrighted and other proprietary materials. By accepting the User Documentation, recipients agree that they will not transmit, reproduce, or make available to any external third-party this User Documentation or any information contained herein. Copying, reverse-engineering, or reselling any part of the Software or User Documentation is strictly prohibited.

The information contained in the User Documentation furnished by Enghouse is based on the most accurate information available at the time of printing. No representation or warranty is made by Enghouse as to the accuracy or completeness of such information or any ongoing obligation to update such information. Enghouse reserves the right to change the information contained in this document without notice.

Registered trademarks

Syntellect®, Voyager®, Continuum®, MediaVoice®, Apropos®, Envox®, Envox® Activecall, Envox CT ADE®, Envox CT Connect®, Dynamic Application Discovery®, Interaction Vault® CT Impact®, SmartDialer®, SmartVoice®, SmartCollect®, SmartSupport®, Zeacom®

Enghouse Global End User License Agreement (EULA)

THIS END USER LICENSE AGREEMENT ("AGREEMENT") GOVERNS THE USE OF PROPRIETARY SOFTWARE AND THIRD PARTY PROPRIETARY SOFTWARE LICENSED THROUGH ENGHOUSE. READ THIS AGREEMENT CAREFULLY, IN ITS ENTIRETY, BEFORE INSTALLING, DOWNLOADING OR USING THE SOFTWARE. BY INSTALLING, DOWNLOADING OR USING THE SOFTWARE, OR AUTHORIZING OTHERS TO DO SO, YOU, ON BEHALF OF YOURSELF AND THE ENTITY FOR WHOM YOU ARE DOING SO (HEREINAFTER INTERCHANGEABLY REFERRED TO AS "YOU", "YOUR" OR "CUSTOMER"), AGREE TO THIS AGREEMENT AND CREATE A BINDING CONTRACT BETWEEN YOU AND ENGHOUSE INTERACTIVE, INC. OR THE APPLICABLE ENGHOUSE AFFILIATE THROUGH WHICH THE SOFTWARE WAS DISTRIBUTED TO YOU ("ENGHOUSE"). IF YOU ARE ACCEPTING THIS AGREEMENT ON BEHALF OF A COMPANY OR OTHER LEGAL ENTITY, YOU REPRESENT THAT YOU HAVE THE AUTHORITY TO BIND SUCH ENTITY TO THESE SOFTWARE LICENSE TERMS. IF YOU DO NOT HAVE SUCH AUTHORITY OR DO NOT WISH TO BE BOUND BY THESE SOFTWARE LICENSE TERMS, SELECT THE "DECLINE" BUTTON AT THE END OF THIS AGREEMENT AND/OR RETURN THE SOFTWARE TO ENGHOUSE IMMEDIATELY UPON REJECTION, WITHOUT INSTALLING, COPYING, OR USING THE SOFTWARE FOR A REFUND THEREOF. A REFUND MAY ONLY BE GIVEN WITHIN 30 DAYS FOLLOWING DELIVERY OF THE SOFTWARE. YOUR USE OF THE SOFTWARE, EVEN IF OBTAINED IN CONTRAVENTION OF THIS LICENSE AGREEMENT OR OBTAINED OTHERWISE THAN THROUGH ENGHOUSE OR AN ENGHOUSE RESELLER, INDICATES YOUR AGREEMENT TO ALL OF THESE TERMS.

1. DEFINITIONS

"**Affiliate**" – means any entity that is, directly or indirectly, controlling, controlled by, or under common control with Enghouse Interactive, Inc. or is a subsidiary of Enghouse Systems Limited. For the purposes of this definition, "control" means the power to direct the management and policies of such party, directly or indirectly, whether through ownership of voting securities, by contract or otherwise, and the terms "controlling" and "controlled" have meanings correlative to the foregoing.

"**Enghouse Reseller**" – a reseller, distributor, direct partner, service provider or other partner authorized by Enghouse to provide Software to end users in applicable territory.

"**Software**" – shall mean the collective reference to Enghouse's proprietary software and any third party proprietary software which Enghouse or Enghouse Reseller may distribute to Customer on the basis of resell or other transfer. Such Software includes any product documentation and any upgrades, updates, new releases or other modification thereto made generally available by Enghouse in its discretion from time to time. Software shall not include custom development.

2. SCOPE

This Agreement is applicable to anyone, who installs, downloads, and/or uses Software, obtained from Enghouse or an Enghouse Reseller. Customer is not authorized to use the Software if the Software was obtained from anyone other than Enghouse or an Enghouse Reseller authorized to distribute the Software.

3. SOFTWARE LICENSE TERMS AND CONDITIONS

3.1 **Rights Granted to Customer:** The rights granted to Customer shall be subject to Customer's compliance with the terms of this Agreement including, without limitation payment for the Software. If Customer has purchased the Software, Enghouse grants to Customer a non-exclusive, non-transferable license (on a perpetual or subscription basis depending on purchase) to install, use and execute the Software in object code form on a per-license basis at the location specified ("Software License"). The location of the Software use may be changed by Customer from time to time with written notice to Enghouse. Software License is limited to the site(s), number of seats, concurrent users, agents, servers, ports, devices, managed applications, and/or copies as applicable to the Software obtained, not to exceed the number of licenses set forth on applicable orders. The Software License shall become effective upon delivery of the Software and shall remain in force unless terminated due to expiration or breach of these license grant terms or confidentiality. This right does not include permission to grant sub-licenses or otherwise transfer such rights. Customer may make copies of the Software for archival purposes only, provided that it retains or affixes the equivalent of Enghouse's proprietary legend and copyrights to the copy. Additionally, the Customer may make several copies of the system documentation, excluding training manuals and materials, provided that they are for internal use only. Customer may not reverse engineer, disassemble or otherwise translate the Software License provided pursuant to this Agreement. Enghouse, or any third party that owns the Software License, retains exclusive title to and all rights to the Software. The Customer acknowledges that the Software and documentation are the property of Enghouse and that the only right that the Customer obtains to the Software is the right of use in accordance with the terms of this Agreement.

- 3.2 **Governmental Use:** All Software Licenses and documentation furnished pursuant to this Agreement were developed at private expense and are provided with RESTRICTED RIGHTS. Any use, duplication or disclosure by or for any governmental agency of the United States Government or any other jurisdiction shall be subject to the restricted rights applicable to commercial computer software including under FAR Clauses 12.211, 12.212, 52.227-19 or DFARS 227.7202, 252.227-7013 as applicable or any successor provision or any other legal provisions respective of restricted rights for commercial software. Consistent with the above, all Software and third party software as well as commercial computer documentation are licensed to governmental end users only as commercial items and only with those rights as are granted to all other end users under the terms and conditions set forth in this Agreement. Customer may not use or export the Software, third party licensed software, or documentation except as authorized by law and under this Agreement. In particular, but without limitation, the Software may not be exported to any U.S. embargoed country.
- 3.3 **Software Title:** No title to or ownership of the Software or any of its parts, the information it contains or in any applicable rights therein, such as patents, copyrights and trade secrets, is transferred to Customer. Any reference to "sale", "purchase" or "subscription" of the Software shall be deemed to mean, "License on the terms contained in this Agreement." Enghouse considers the information contained in the Enghouse Software owned or created by Enghouse to be trade secrets of Enghouse and any third-party software licenses which Enghouse may resell to Customer to be trade secrets of such third-party licensor. Customer agrees to treat Software as Confidential Information and shall use the same degree of care used by Customer to protect its own Confidential Information. Except as set forth herein, or as may be permitted in writing by Enghouse, Customer will not provide, transmit or otherwise make available, the Software or any part or copy thereof to any third party, reverse engineer, reverse compile or reverse assemble the Software in whole or in part, or attempt to derive the source code, modify, adapt, translate, or create derivative works of the Software or any updates or any part thereof. Notwithstanding the previous sentence, Customer may configure Software to meet Customer's needs and user preferences.
- 3.4 **Restrictions:** Customer may not publish, display, disclose, sell, rent, lease, loan, or distribute the Software, or any part thereof. Customer may not assign, sublicense, convey or otherwise transfer, pledge as security or otherwise encumber the rights and licenses granted hereunder with respect to the Software. Customer may not market, co-brand, private label or otherwise permit third parties to link to the Software, or any part thereof. Customer may not use the Software, or any part thereof, in the operation of a service bureau or for the benefit of any other person or entity. Customer may not cause, assist or permit any third party to do any of the foregoing.
- 3.5 **Third Party Software:** Some third party software (including some imbedded software) are exclusively licensed pursuant to express end user license terms made available at <http://www.enghouse.com/legal/agreements.html> ("Third Party EULA"). To the extent applicable, Customer agrees to be bound by these end-user terms respective of the applicable Third Party EULA provisions. Third party software licenses provided to Customer which are not expressly provided for in the Third Party EULA provisions are provided to Customer pursuant to the terms of this agreement including without limitation this Section 3. All third party software are restricted for use solely in conjunction with the particular Software intended by Licensor to be used therewith or with which Enghouse provides the third party software, and may not be used with any other products, or on a stand-alone basis.

4. WARRANTIES

- 4.1 **Limited Warranty:** Enghouse warrants, for a period of thirty (30) days from date of delivery, that the Software will substantially conform to the published specifications prevailing at the time of purchase or delivery. Enghouse's sole obligation and liability hereunder will be to use reasonable efforts to remedy any such non-conformance which is reported to Enghouse in writing within the warranty period. The exclusive remedy for any breach of the foregoing warranties is for Enghouse to repair, modify, replace or re-perform (as applicable). Notwithstanding the foregoing, if longer warranty periods are mandated under applicable law those periods shall apply for that location only.
- 4.2 **Disclaimer of Warranty:** EXCEPT AS OTHERWISE SPECIFICALLY PROVIDED IN THIS SECTION 4, SOFTWARE IS PROVIDED BY ENGHOUSE AND ACCEPTED BY THE CUSTOMER "AS IS" AND ENGHOUSE GIVES TO THE CUSTOMER NO OTHER REPRESENTATION OR WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, WITH RESPECT TO SOFTWARE OR THE PERFORMANCE OR RESULTS OF USE THEREOF. WITHOUT LIMITING THE FOREGOING, ENGHOUSE DOES NOT WARRANT THAT THE SOFTWARE OR THE OPERATION THEREOF IS OR WILL BE ERROR-FREE OR UNINTERRUPTED OR MEETS OR WILL MEET THE CUSTOMER'S REQUIREMENTS, AND ENGHOUSE GIVES NO IMPLIED WARRANTY OF ANY KIND, INCLUDING, WITHOUT LIMITATION, WITH REGARD TO MERCHANTABILITY, NONINFRINGEMENT OR FITNESS FOR ANY PARTICULAR PURPOSE AND WHETHER ARISING BY USAGE OF TRADE, COURSE OF DEALING OR COURSE OF PERFORMANCE. ENGHOUSE DOES NOT MAKE ANY WARRANTIES OR REPRESENTATIONS TO THE ADEQUACY OR SUFFICIENCY IN COMPLYING WITH THE TELEPHONE CONSUMER PROTECTION ACT ("TCPA"), ANY DECISIONS, DIRECTIONS OR GUIDANCE GIVEN BY OFCOM OR ANY COMMUNICATIONS REGULATORY AUTHORITY IN ANY OTHER APPLICABLE JURISDICTION. THE CUSTOMER ACKNOWLEDGES THAT IT IS CUSTOMER'S EXCLUSIVE LIABILITY TO COMPLY WITH ANY REGULATORY AUTHORITY AND ALL APPLICABLE COMMUNICATIONS LAWS INCLUDING OUTBOUND COMMUNICATIONS AND DO-NOT-CONTACT OBLIGATIONS. IF CUSTOMER PURCHASES OUTBOUND DIALER SOFTWARE OR SERVICES, THE PARTIES ACKNOWLEDGE THAT CELL PHONE DATA CONSTANTLY CHANGES AND AS A RESULT MAY NOT BE ERROR FREE.

5. MAINTENANCE AND SUPPORT

Enghouse has no obligation under this Agreement to provide maintenance/support for the Software. Any maintenance/support purchased for the Software is subject to Enghouse's then-current maintenance/support policies.

6. LIMITATION OF LIABILITY

- 6.1 IN NO EVENT SHALL ENGHOUSE BE LIABLE FOR ANY DAMAGES RESULTING FROM LOSS OF USE, DATA, PROFIT OR BUSINESS OR FOR ANY PUNITIVE, EXEMPLARY, SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES, WHETHER ARISING IN CONTRACT, TORT OR OTHER LEGAL THEORY. ENGHOUSE AND THIRD PARTY SOFTWARE SUPPLIERS' LIABILITY FOR DAMAGES FOR ANY CAUSE WHATSOEVER, AND REGARDLESS OF THE FORM OF ACTION, SHALL BE LIMITED TO THE LESSER OF THE PURCHASE PRICE PAID BY THE CUSTOMER FOR THE PRODUCTS OR SERVICES UNDER THE SPECIFIC ORDER RELATING TO THE CLAIM IN THE PRIOR TWELVE (12) MONTH PERIOD OR ANY OTHER LIMITATION PROVIDED IN ANY SPECIFIC THIRD PARTY EULA AVAILABLE AT [HTTP://WWW.ENGHOUSE.COM/LEGAL/AGREEMENTS.HTML](http://www.ENGHOUSE.COM/LEGAL/AGREEMENTS.HTML). ENGHOUSE SHALL HAVE NO LIABILITY FOR ANY CUSTOM APPLICATION PROGRAMS. NO ACTION ARISING OUT OF OR IN CONNECTION WITH THIS AGREEMENT OR ANY TRANSACTION HEREUNDER MAY BE BROUGHT BY EITHER PARTY MORE THAN TWELVE (12) MONTHS AFTER THE CAUSE OF ACTION HAS ARISEN, EXCEPT FOR AN ACTION FOR NON-PAYMENT.

7. CONFIDENTIAL INFORMATION

Each party acknowledges that, in the course of performing its duties under this Agreement, it may obtain information relating to the other party, which is of a confidential and proprietary nature ("Confidential Information"). Such Confidential Information may include, but is not limited to, this Agreement, pricing and proposals, computer software, trade secrets, know-how, inventions, techniques, processes, programs, schematics, data, customer lists, financial information and sales and marketing plans. Each party shall at all times maintain in the strictest confidence and trust all such Confidential Information, which shall not be less than those measures employed by each party in protecting its own Confidential Information of equivalent value. Customer and its employees agree not to disclose such information to any third party.

The commitments set forth above shall not apply to any Confidential Information which:

- A. is now generally known or available or which hereafter through no act or failure on the part of the receiving party becomes generally known or available;
- B. is legally known to the receiving party at the time of receiving such information;
- C. is hereafter furnished to the receiving party by a third party without restriction on disclosure, where such third party legally obtained such information and the right to disclose it to the receiving party; or
- D. is independently developed by the receiving party without violation of any legal rights which the disclosing party may have in such information.

Both parties agree that all Confidential Information disclosed hereunder shall remain the property of the disclosing party and may only be copied or reproduced as expressly permitted herein. Upon expiration or termination of this Agreement, the receiving party shall return all Confidential Information to the disclosing party along with all copies and portions thereof, or certify in writing that all such Confidential Information has been destroyed. No license, express or implied, in the Confidential Information is granted other than to use the Confidential Information in the manner and to the extent authorized by this Agreement. All Confidential Information disclosed hereunder is provided by the disclosing party without representation or warranty of any kind.

Where the parties have entered into a separate, confidential non-disclosure agreement ("NDA") and the terms of the NDA are inconsistent with the terms contained herein, the terms of the NDA shall take precedence.

8. JURISDICTION

- A. If the Software is going to be used in the United States, South and Central America, or the Caribbean, the Agreement is controlled by and construed under the laws of the State of Arizona, United States of America, notwithstanding any conflicts of law provisions; and the state and federal courts of Arizona shall have exclusive jurisdiction over any claim arising under the Agreement.
- B. If the Software is going to be used in Canada, unless expressly prohibited by local law, the Agreement are controlled by and construed under the laws of the Province of Ontario, Canada, notwithstanding any conflicts of law provisions; and the courts of the Province of Ontario shall have exclusive jurisdiction over any claim arising under the Agreement.
- C. If the Software is going to be used in Europe, the Middle East, Africa, Asia or Oceania (excluding Australia and New Zealand), unless expressly prohibited by local law, the Agreement is controlled by and construed under the laws of England and Wales, notwithstanding any conflicts of law provisions; and the English courts shall have exclusive jurisdiction over any claim arising under the Agreement or Warranties. In addition, if the Agreement is controlled by the laws of England and Wales, no person who is not a party to the Agreement shall be entitled to enforce or take the benefit of any of its terms under the Contracts (Rights of Third Parties) Act 1999.
- D. If the Software is to be used in Australia, unless expressly prohibited by local law, the Agreement is controlled by and construed under the laws of the State of New South Wales, Australia, notwithstanding any conflicts of law provisions; and the State and federal courts of New South Wales shall have exclusive jurisdiction over any claim arising under the Agreement.
- E. If the Software is to be used in New Zealand, unless expressly prohibited by local law, the Agreement is controlled by and construed under the laws of New Zealand, notwithstanding any conflicts of law provisions; and the courts of New Zealand shall have exclusive jurisdiction over any claim arising under the Agreement.
- F. If the Software is to be used in any other country, unless expressly prohibited by local law, the Agreement and Warranties are controlled by and construed under the laws of the State of Arizona, United States of America, notwithstanding any conflicts of law provisions; and the state and federal courts of Arizona shall have exclusive jurisdiction over any claim arising under the Agreement.

9. GENERAL

- 9.1 **Assignment:** The interests of Customer in this Agreement are personal and shall not be assigned, transferred, shared or divided in any manner by Customer without the prior written consent of Enghouse. Enghouse shall be entitled to assign this Agreement and the rights granted hereunder to any affiliate, subsidiary or successor in interest to Enghouse's business.
- 9.2 **Injunctive Relief:** Customer acknowledges that remedies at law may be inadequate to provide Enghouse with full compensation in the event of Customer's material breach of any: (i) license grant hereunder, (ii) confidentiality and nondisclosure obligations herein, or (iii) intellectual property rights of Enghouse, and that Enghouse shall therefore be entitled, without bond or other security obligation, to seek injunctive relief in the event of any such material breach.
- 9.3 **Verification:** At the request of Enghouse, Customer shall furnish Enghouse with a signed statement that the Software is being used pursuant to the terms and conditions of this Agreement. If Enghouse has reason to believe that the Software is not being used in accordance with the terms and conditions of this Agreement, Customer shall permit Enghouse to review your relevant records and inspect your facilities to verify compliance with this Agreement. Enghouse will conduct such inspection during normal business hours in a manner that does not unreasonably interfere with your business operations. In the event such inspection results in fees due to Enghouse, Customer shall immediately pay those fees to Enghouse, and any reasonable inspection costs.
- 9.4 **Exports:** This Agreement is expressly made subject to applicable laws, regulations, orders or other restrictions on the export of the Software or information about such Software which may be imposed from time to time. Customer shall not export the Software, documentation or information about the Software and documentation without complying with such laws, regulations orders or other restrictions. Customer agrees to indemnify Supplier and its licensors against all claims, losses, damages, liabilities, costs and expenses, including reasonable legal fees, to the extent such claims arise out of any breach of this section.
- 9.5 **Severability:** If any provision of this Agreement is determined to be void or unenforceable, in whole or in part, it shall be severable from all other provisions hereof and shall not be deemed to affect or impair the validity of any other provisions, and each such provision is deemed to be separate and distinct.
- 9.6 **Termination:** This Agreement is effective until it is terminated. Customer may terminate this Agreement at any time by destroying or returning all copies of the Software and documentation in your possession or under your control. Upon termination, Customer agrees to destroy or return all copies of the Software and documentation and to certify in writing that all known copies, including archived copies, have been destroyed. All provisions relating to confidentiality, proprietary rights and limitation of liability shall survive the termination of this Agreement.
- 9.7 **Full Agreement:** This Agreement supersedes any and all agreements, either oral or written, between the parties hereto with respect to Enghouse licensing the Software to Customer and contains all the covenants and agreements between the parties with respect to the licensing of such Software. Each party to this Agreement acknowledges that no representations, inducements, promises or agreements, orally or otherwise, have been made by any party, or anyone acting on behalf of any party, that are not embodied herein, and that no other agreement, statement or promise not contained in this Agreement shall be valid or binding.

Contents

About this document	7
Audience	7
Contents	7
Reference materials	7
Document conventions.....	8
Text format.....	8
Notes and cautions	8
Contact information	8
1: Compatibility	9
Cisco Unified Communications Manager compatibility	10
VMWare and VMotion support	10
Moving the environment	11
Hyper-V support.....	11
Remote Desktop connection and Terminal Services support	11
SQL Server support	11
SQL Express support	11
Server and SQL regional settings.....	12
Client regional settings	12
Client OS compatibility	13
Citrix support.....	14
Technologies matrix.....	14
2: System minimum requirements	17
Arc Pro Server	17
Scalable server specifications	18
Anti-virus compatibility.....	18
Cisco UCS Servers	19
Arc Pro Client.....	20
TLS supportability.....	21
TLS 1.2 compliance	21
3: Supported handsets	22
4: Performance and utilization	30
General bandwidth recommendations.....	30
Network latency limitations.....	31
Attendant Console	31
Directory and Busy Lamp	31
Presence integration.....	32
Server.....	32
Database Synchronization with CUCM (Arc 5.1.1 onwards).....	32
LDAP or Equivalent Integration	33
Voice Connect	33

About this document

Supervisor.....	34
Wallboard.....	34

About this document

This chapter contains the following information:

- [Audience](#)
- [Contents](#)
- [Reference materials](#)
- [Document conventions](#)
- [Contact information](#)

Audience

This document describes hardware, operating system, client, virtualization software environment requirements, UC system compatibility and guidelines for use of third party components as well as performance statistics and system sizing guidelines.

Contents

This document contains the following sections:

- [About this document](#) explains who should use this document, what is new in this release, and where to find additional resources and support. It also explains the conventions used in this document.
- [1: Compatibility](#) lists what Arc Pro is compatible with and which kinds of support are available.
- [2: System minimum requirements](#) lists the minimum requirements for the Arc Pro Server and the Arc Pro Client.
- [3: Supported handsets](#) lists all the available handsets and describes whether they are supported or not.
- [4: Performance and utilization](#) gives more detail about how to use Arc Pro.

Reference materials

This document should be read in conjunction with the information and procedures in the following documents or Help:

- *Arc Pro Compatibility Matrix* for the Cisco Unified Communications Manager supported by Arc software versions
- *Arc Pro Design Guide* for best practices and how to plan your deployment
- *Arc Pro Installation Guide* for the individual installation documents for your server component or client applications

- *Arc Pro Configuration Guide* for a comprehensive overview of the configuration of the server component
- *Arc Pro Provisioning Wizard Guide* for using the provisioning wizard to configure the Arc Pro software
- *Arc Pro CUCM Configuration Guide* for a description of the configuration requirements of Cisco Unified Communication Manager versions 9.x to 12.x.

Document conventions

This document uses the following text formats and notation conventions.

Text format

Bold text indicates a button, field, link, option name, or similar function requiring an action.

Italicized text indicates new terms, directory paths, or references to external documents.

Text in this font indicates code.

Notes and cautions

Icons used throughout this document identify additional details or special conditions.

Note

Provides additional information or describes special circumstances.

Caution

Warns of user actions that may cause system failure or irreversible conditions.

Stop

Describes actions that you should only perform under the supervision of Enghouse Customer Support.

Contact information

To submit comments or questions about the content in this document, please open a case in Support.

1: Compatibility

This chapter contains the following information:

- Cisco Unified Communications Manager compatibility
- VMWare and VMotion support
- Hyper-V support
- Remote Desktop connection and Terminal Services support
- SQL Server support
- Server and SQL regional settings
- Client OS compatibility
- Citrix support
- Technologies matrix

This section describes CUCM and OS compatibility in both hardware-based and virtual environments. The virtual environment is VMWare (ESX/ESXi).

CUCM	Server 2003 R1	Server 2003 R2	Server 2008 R1	Server 2008 R2	Server 2012	Server 2012 R2	Server 2016
			32-bit only	64-bit only	64-bit only	64-bit only	64-bit only
7.1(x)	N	N	N	N	N	N	N
8.0(x)	N	N	N	N	N	N	N
8.5(x)	N	N	N	N	N	N	N
8.6(x)	N	N	N	N	N	N	N
9.0(x)	N	N	N	N	N	N	N
9.1(x)	N	N	N	N	N	N	N
10.0(x)	N	N	N	N	N	N	N
10.5(x)	N	N	N	N	Y	Y	N
11.0(x)	N	N	N	N	Y	Y	N
11.5(x)	N	N	N	N	Y ⁽¹⁾	Y ⁽¹⁾	Y ⁽¹⁾
12.0(x)	N	N	N	N	Y	Y	Y

(1) CUCM 11.5.1 Support	Customers using CUCM 11.5(1) will hit issue CSCva87971 when configured devices are within a specific partition. To resolve this issue, partners or customers are advised to request a hot Cisco TSP fix from Cisco TAC against the above-mentioned CDET or upgrade CUCM to 11.5(1.13032-4 or above.
-------------------------	---

Cisco Unified Communications Manager compatibility

Arc Pro version 6.3 is compatible with the Cisco Unified Communication Managers (CUCM) and the respective Cisco TAPI TSP shown in the Compatibility Matrix.

VMWare and VMotion support

Arc supports deployment in VMWare virtual server environments. Arc Pro is supported in a live environment on VMWare ESX and ESXi version 4.x to 6.5 only.

Arc supports VMotion when running in maintenance mode only - by definition VMware VMotion operates on live VMs, but the VM running Arc must be "live but quiescent" (in a maintenance window, not in production and not processing live traffic). This is because during the VMotion cutover, the system is paused, which creates Arc server service interruptions that degrade voice quality for calls in progress.

Moving the environment

If you need to move the environment, you must create a new unique identifier, as described here:
http://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=1541.

Hyper-V support

Arc Pro is not supported in a live environment on the HyperV platform.

Remote Desktop connection and Terminal Services support

The Arc Server is not supported in Remote Desktop (RDP) and Terminal Services (TS) environments, as these can cause problems with the required Wave Driver operation. This is an issue common to all Wave Driver applications and not due to Arc software design.

SQL Server support

SQL	Server 2008 R2 64-bit only	Server 2012 64-bit only	Server 2012 R2 64-bit only	Server 2016 64-bit only
2005 32-bit	N	N	N	N
2008 32-bit	N	N	N	N
2008 64-bit	N	N	N	N
2008 R2 32-bit	N	N	N	N
2008 R2 64-bit	N	N	N	N
2012 (32-bit and 64-bit)	N	Y	Y	Y
2014 (32-bit and 64-bit)	N	Y	Y	Y
2016 (32-bit and 64-bit)	N	Y	Y	Y
2017 (32-bit and 64-bit)	N	Y	Y	Y

SQL Express support

The SQL Server Express product versions listed in the SQL Server Support table are supported with Arc Pro, however they have performance limitations.

In sites where one or more of the following are expected Arc recommends you consider using SQL Server Standard or Enterprise:

- More than 10 operators or agents

- More than 500 calls per user per day
- More than 10,000 contacts in the directory

When a system outgrows a SQL Express deployment, or if you are experiencing issues with SQL Express, you can upgrade to SQL Standard or Enterprise with minimal effort. Consult your Microsoft representative if you are looking to license managed or hosted solutions.

Server and SQL regional settings

Arc does not specifically require an English deployment of Microsoft Windows Server unless support for Stemming is required within the Arc database. Stemming is only supported in the following locales

Language (Locale)	LCID Decimal	LCID Hex	Codepage	Country code (3 digit)	Country code (2 digit)
German (Germany)	1031	0407	1252	DEU	de-de
German (Austria)	3079	0c07	1252	AUT	de-at
German (Liechtenstein)	5127	1407	1252	LIE	de-li

If you are deploying in one of these locales, you can take advantage of Stemming support with your Microsoft SQL Server deployment. Stemming is not supported in the English locale.

Upon installation of Arc Pro, the regional settings of the server will be checked and if a stemming algorithm exists for a locale (as shown in the table above), then the stemming algorithm will be used.

For English language deployments, stemming is not supported and the default Microsoft SQL collation deployed is Latin1_General_CI_AS

For more information on the concept of Stemming, refer to <https://en.wikipedia.org/wiki/Stemming>.

Client regional settings

All Arc Pro clients are available only in English except for the Arc Pro Attendant Console, which is available in the following languages:

English, French, Italian, German, Spanish, Portuguese, Arabic, Cantonese, Catalan, Chinese (simplified), Chinese (traditional), Danish, Dutch, Japanese, Korean, Russian, Swedish, Norwegian, Finnish, Hebrew, Turkish.

Clients can be installed in different languages on the same server.

Client OS compatibility

Arc Pro 6.3 is compatible with the following client Operating Systems.

Operating System	Supported
Windows XP SP3	N
Windows Vista SP2	N
Windows 7 SP1	Y (1) (2)
Windows 8	N
Windows 8.1	Y (1) (3)
Windows 10	Y (1) (3)
Windows 2003 Server SP2	N
Windows 2008 Server SP2	N
Windows 2003 R2 Server SP1	N
Windows 2012 Server	Y (1) (2)
Windows 2012 R2 Server	Y (1) (2) (3)
Windows 2016 R2 Server	Y

Notes on numbered items:

(1)	Support for 32-bit operating systems, WoW 64-bit Emulation and software only.
(2)	Version not part of validation process (latest versions validated, older version compatibility assumed).
(3)	Supported in Desktop and Traditional Mode, not Metro Mode.

Citrix support

Arc Pro 6.3 is compatible with the following Citrix products.

	Fundamentals	Advanced	Enterprise	Platinum
XenApp 7.15	Y	Y	Y	Y
		VDI	Enterprise	Platinum
XenDesktop* 7.15		Y	Y	Y

Testing was performed using Windows 10 64-bit operating system in 'Static' and 'Random' delivery configurations.

Note

The following observations were made during testing:

- XenDesktop 7.15 (Random) is fully functional if the user has Administrative rights. except that user setting changes and logging is lost when the user logs off from XenDesktop
- XenApp 7.15 is supported in following modes:
 - **Local Application Delivery** (Application installed on Server OS will be delivered only)
 - **Hosted Application Delivery via App-V Server** (Server OS Desktop Session is delivered, containing the required application, for that user)
 - Customers running Hosted Application delivery on Windows 2016 would need to run Update KB4034661. For more information see <https://support.citrix.com/article/CTX225819>.

As a second option, multiple users can logon simultaneously on that server and use the same application without having to affect any other users.

Technologies matrix

The following table outlines the compatibility between Arc Pro version 6.3 and other vendor software.

Technology	Arc Pro
Microsoft Presence Integration (Presence)	
Live Communication Server 2005 (LCS)	N
Microsoft Office Communicator 2007 (OCS)	N
Microsoft Office Communicator 2007 R2 (OCS)	N
Microsoft Office Communicator 2010 (OCS)	N
Microsoft Office Communicator 2013 (Lync)	Y (1)
Cisco Unified Presence Server Integration (Presence)	
7.x (7.1.x)	N
8.0 (8.0.x)	N

1: Compatibility

Technology	Arc Pro
8.5 (8.5.x)	N
8.6 (8.6.x)	N
9.0 (9.0.x)	N
9.1 (9.1.x)	N
10.0 (10.0.x)	N
10.5 (10.5.x)	Y (2)
11.0 (11.0.x)	Y (2)
11.5 (11.5.x)	Y (2)
12.0 (12.0.x)	Y (2)
12.5 (12.5.x)	Y (2)
Accessibility	
JAWS v12.x	N
JAWS v13.x	N
JAWS v14.x	N
JAWS v15.x	N
JAWS v16.x	N
JAWS v17.x	Y
JAWS v18.x	Y
Mail Integration (Calendar)	
Microsoft Exchange\Outlook XP (2002)	N
Microsoft Exchange\Outlook 2003	N
Microsoft Exchange\Outlook 2007	N
Microsoft Exchange\Outlook 2010	Y (3)
Microsoft Exchange\Outlook 2013	Y (3)
Microsoft Exchange\Outlook 2016	Y (3)
Mail Integration (Send Email)	
Microsoft Exchange\Outlook XP (2002)	N
Microsoft Exchange\Outlook 2003	N
Microsoft Exchange\Outlook 2007	N
Microsoft Exchange\Outlook 2010	Y
Microsoft Exchange\Outlook 2013	Y

Technology	Arc Pro
Microsoft Exchange\Outlook 2013	Y
Directory Integration	
Microsoft Active Directory (LDAP)	Y (4)
Netscape\iPlanet\SunOne (LDAP)	Y
DC Directory (LDAP)	N
Call Manager User Directory (XML\SOAP)	Y (4)
Microsoft Active Directory Application Mode (ADAM)	Y (4)
Novell eDirectory (LDAP) v8.8	Y
Estos Metadirectory v2/3	Y
Comma-separated Value (FILE)	Y
Call Recording Integration	
Witness Server v7.8.3	Y
QMS (CallRex) 5.x, 6.x, 7.x	Y
Short Message Service (SMS Send)	
HTTP	Y
Email	N
Native\ActiveX	N
Modem	N

Notes on numbered items:

(1)	Presence information is collected by the attendant console application via direct connections to the Microsoft Office Communicator (MOC)/Lync client or the Arc OCS Presence Server. When connecting to the MOC/Lync client, it should be running under the same user profile and platform architecture (32-bit) as the Operator console application.
(2)	Support for SIP connectivity only.
(3)	Calendar information is collected via a direct connection between the Operator console application and Microsoft Office. Redemption is used to work around the Outlook security dialog introduced in Service Pack 2 of Office 2002/2003/2007/2010/2013. The Outlook application should be running under the same user profile and platform architecture (32-bit) as the Operator console application.
(4)	Support for Directories running on supported Server Operating System/CUCM platforms.

2: System minimum requirements

This chapter contains the following information:

- [Arc Pro Server](#)
- [Arc Pro Client](#)
- [TLS supportability](#)

Arc Pro Server

Arc Pro is a client-server application. The server side will need to run on a dedicated PC Server. No other applications must run on this server.

The tables in this section detail the minimum specification required by the Arc Pro Server application.

Applies to:	PC Specification
Hardware Elements	<ul style="list-style-type: none">• 2.40 GHz equivalent CPU with 2 Cores, or better• 4.0 GB RAM• 64-bit Windows 2012 R2 Server (or higher) 100 GB Hard Drive or better Network Card
Software Elements	<ul style="list-style-type: none">• .Net Framework v4.6 (included in installer)• SQL Server Standard or Enterprise 2012, or SQL 2012 Express for smaller installations where resilience is not required.• Microsoft Excel for Directory Exporting• Microsoft Visual C++ 2010 Redistributable 32-bit and 64-bit• Microsoft Visual C++ 2015 Redistributable 32-bit and 64-bit• OpenJDK build <i>1.8.0.191-1</i> (earlier/later builds are not supported) <p>Support for Skype for Business Pre-Requisites Customers deploying Skype for Business (Arc Pro server side integration) need to install the following pre-requisites:</p> <ul style="list-style-type: none">• UCMA 4.0 runtime• OSCore <p>If an Off-box (remote) SQL server is used within your configuration then it must have .Net Framework v3.5 installed. Consult your Microsoft representative if you are looking for license managed or hosted solutions.</p>

Note

- If the listed third-party components are not installed on the PC prior to executing the Arc Pro installer, they will be automatically installed. In case of automatic installation failure, download and install the applications manually.
- The Server should be connected to the network via the TCP/IP protocol.
- The Arc Server will require the appropriate Operating System Licenses.
- The Arc Server is not supported on a domain controller.
- With Windows 2008 Server and above, the Admin, CT Server Manager and LDAP Server Manager must be run as an Administrator to enable them to read and write to the configuration files/registry.

Scalable server specifications

Arc Pro is scalable, providing the following general solutions.

Solution	Operators	Agents	Directory Size	CUCM Connections (Clusters)	Call Traffic (BHCA*)
Small or Mid-Market	10-100	10 -200	10-25,000	Single	Low-Medium (5000)
Enterprise	101 – 250	201 - 500	10-75,000	Single/multiple	Medium (5000 – 15000)
Large Enterprise	251 - 500	500 - 800	10-150,000	Single/multiple	High (15001 - 25000)

*BHCA = Busy Hour Call Attempts

Each of these solutions has different hardware requirements.

Solution	CPU Cores	Memory
Small or Mid-Market	2	4 GB
Enterprise	4	6 GB
Large Enterprise	6	8 GB

If you are unsure which solution you need, always choose the smallest one that satisfies your highest requirement. For example, to support 150 Agents, 50 Operators and 15,000 BHCA, you require an Enterprise Server, because that is the smallest solution that supports that much call traffic.

Anti-virus compatibility

There are many different Anti-Virus products that are supported on an Arc Pro system server. Typically, the most commonly used products are McAfee VirusScan and Norton Anti-Virus.

Both of these products are supported, although any Anti-Virus program is supported on an Arc Pro Server, as long as it is configured as below.

Your Anti-Virus product must support Exclusions - the ability to specify specific files and/or folders that will NOT be scanned by the Anti-Virus program.

The following exclusions should be set when using Anti-Virus on an Arc Pro Server:

File Location	Contains
\\ArcData	System databases
\\Program files (x86)\Arc	Software and application
%ALLUSERSPROFILE%\Arc/Arc Connect/Server	Server application logging folder
\\Apache	Active MQ
\\Temp\CiscoTSP0xxLog	Cisco TSP trace files

Note

The **File Locations** and **File Names** may be changed by your System Administrator.

The files in the above table are constantly being written to and updated during standard operation of the Arc Pro system.

Due to this, these files are permanently being accessed – an Anti-Virus **Scan on access** policy for these files will mean that the files are constantly being scanned for Viruses. This will in turn slow down the operation of the Server. Therefore, excluding these files from being continuously scanned will allow the Server to function as expected

Cisco UCS Servers

Arc Pro supports both UCS-B and UCS-C Servers with the following caveats taken into consideration.

Cisco UCS-B Servers

Cisco UCS-B servers are industry standard platforms featuring a physical chassis with the ability to insert a number of hardware blades, onto which a server operating system (OS) can be deployed. UCS-B features the ability for those server blades to contain a number of Cisco application servers, including Cisco Unified Communications Manager (CUCM) and Unity Messaging. The remaining blades are capable of running standard operating systems and as such it is possible to install third party applications on them. The benefit of a chassis based system is that the blade/server components are connected across a backbone that facilitates high speed and error free communication between each blade.

Arc Solutions offers support in Arc Pro version 5.1.4* and above for Cisco UCS-B servers with the following caveats:

- Support is provided for VMWare ESXi and ESX 4.x and 6.5 with VSphere and VMotion. For more details, see [VMWare and VMotion support](#).
- If Arc is to be deployed on its own blade within the UCS-B, the VMWare image deployed must meet the minimum processor and memory specification as defined by Arc Solutions.
- If Arc Pro Server is installed on the same blade as (is co-resident with) another Cisco application, including Cisco Unified Communications Manager and Unity, the Arc Pro VMWare image must conform to the specifications defined both by Arc Solutions (described in [VMWare and VMotion support](#), and by Cisco Systems, as defined at Cisco's Server Virtualization Guidelines at http://docwiki.cisco.com/wiki/Unified_Communications_Virtualization_Sizing_Guidelines.

Cisco UCS-C Servers

Cisco UCS-C servers are single processor, multi-core, non-chassis machines that are increasingly used to run Cisco Unified Communications Manager. They are available in a number of sizes depending on their application.

Arc Solutions offers support on Arc Pro version 5.1.4* and above for Cisco UCS-C servers with the following caveats:

- Support for Arc Pro on UCS-C servers is allowed by Cisco with CUCM version 9.x and above only, as defined by Cisco Systems.
- The VMWare image deployed must meet the minimum processor and memory specification as defined by Arc Solutions (described in [VMWare and VMotion support](#)) and by Cisco Systems, as defined at Cisco's Server Virtualization Guidelines at http://docwiki.cisco.com/wiki/Unified_Communications_Virtualization_Sizing_Guidelines.

Users experiencing issues with older versions of Arc Pro on a UCS deployment may be asked to upgrade their software to Arc Pro 6.2 or 6.3 if the Arc Pro support team issue diagnosis process dictates it.

Arc Pro Client

The Arc Pro client software is supported in 32-bit and 64-bit (running under WOW64 emulation mode) environments. The tables in this section detail the minimum specification required by the Arc Pro Client applications.

Application	PC Specification
Supervisor	<ul style="list-style-type: none">• 2.2 GHz equivalent CPU or better• 2 GB RAM• 10GB available Hard Drive space (this is not required by the app, but should be unused for healthy running of the system)• Network Card connected to Network via TCP/IP• 1280x1024 or better display card (higher resolution recommended for best results)• Windows 10 recommended
Console Operator	<ul style="list-style-type: none">• 2.2 GHz equivalent CPU or better• 2GB RAM• 10GB available Hard Drive space (this is not required by the app, but should be unused for healthy running of the system)• Network Card connected to Network via TCP/IP• 1280x1024 display card or better (we recommend that the resolution is at least 1600 x 1200)• 19" widescreen monitor highly recommended• USB 1.0/2.0 Port for Arc Console Keyboard (if purchased)• Sound card and speakers• Windows 10 recommended

Application	PC Specification
Arc Wallboard	<ul style="list-style-type: none">• 2.2 GHz equivalent CPU or better• 2GB RAM• 10GB available Hard Drive space (this is not required by the app, but should be unused for healthy running of the system)• Network Card connected to Network via TCP/IP• 1280x1024 display card or better (we recommend that the resolution is at least 1600 x 1200)• 19" widescreen monitor highly recommended• Windows 10 recommended
Arc Agent	<ul style="list-style-type: none">• 2.2 GHz equivalent CPU or better• 2GB RAM• 10GB available Hard Drive space (this is not required by the app, but should be unused for healthy running of the system)• Network Card connected to Network via TCP/IP• 1280x1024 display card or better (higher resolution recommended for best results)• Windows 10 recommended

TLS supportability

Arc Pro 6.3 extends TLS 1.2 compliance.

TLS 1.2 compliance

- HTTPS TLS 1.2 support for Arc Pro Administrator
- AXL communication with Unified Communications Manager on TLS 1.2
 - Arc Pro acts as a TLS client
- XMPP communication with IM&P on TLS 1.2
 - Arc Pro acts as a TLS client
- TAPI communication with Unified Communication Manager CTI Manager supported via Cisco TAPI
 - Arc Pro installs/leverages the plugin as part of its deployment
- LDAP communication with Active Directory
- SQL Server Authentication

Note

For TLS 1.2 supportability for the SQL Server (32-bit and 64-bit installations), please refer to [Microsoft SQL Server documentation](#).







3: Supported handsets

The following phone types are supported as attendant console handsets, or as End Points (display line state and can receive transferred calls).


Note

- Shared lines (multiple lines with the same number) are not supported for attendant console handsets.
- Third-party SIP phones cannot be supported as attendant console handsets or for line state.
- Arc Pro does not support logging on any device that has a duplicate DN, or that uses Extension Mobility.

Y = supported, N = not supported

Model	Image	SIP	SCCP	Console		End Point
				SIP	SCCP	
3905		Y	N	N	N	Y (1)
3911		Y	N	N	N	Y
3951		Y	N	N	N	Y
6901		Y	Y	N	N	Y
6911		Y	Y	N	Y	Y
6921		Y	Y	N	Y	Y

3: Supported handsets

Model	Image	SIP	SCCP	Console		End Point
				SIP	SCCP	
6941		Y	Y	Y	Y	Y
6945		Y	Y	N	Y	Y
6961		Y	Y	Y	Y	Y
7821		Y	N	Y	Y	Y
7841		Y	N	Y	Y	Y
7861		Y	N	Y	Y	Y
7902		N	Y	N	N	N
7905		Y	Y	Y	Y	Y

3: Supported handsets

Model	Image	SIP	SCCP	Console		End Point
				SIP	SCCP	
7906		Y	Y	Y	Y	Y
7910		N	Y	N	Y	Y
7911		Y	Y	Y	Y	Y
7912		Y	Y	N	Y	Y
7915		Y	Y	Y	Y	Y
7916		Y	Y	Y	Y	Y
7920		N	Y	N	N	N
7921		N	Y	N	N	Y
7925		N	Y	N	N	Y

3: Supported handsets

Model	Image	SIP	SCCP	Console		End Point
				SIP	SCCP	
7925G		N	Y	N	N	Y
7925G-EX		N	Y	N	N	Y
7926		N	Y	N	N	Y
7931		Y (3)	Y	Y (3)	Y (3)	Y
7935		N	Y	N	N	Y
7936		N	Y	N	N	Y
7937		N	Y	N	Y	Y
7937G		N	Y	N	N	Y
7940		Y	Y	N	Y	Y (2)
7941		Y	Y	Y	Y	Y

3: Supported handsets

Model	Image	SIP	SCCP	Console		End Point
				SIP	SCCP	
7941G-GE		Y	Y	Y	Y	Y
7942		Y	Y	Y	Y	Y
7942-G		Y	Y	Y	Y	Y
7945		Y	Y	Y	Y	Y
7945G		Y	Y	Y	Y	Y
7960		Y	Y	N	Y	Y (2)
7961		Y	Y	Y	Y	Y
7961G-GE		Y	Y	Y	Y	Y
7962		Y	Y	Y	Y	Y
7965		Y	Y	Y	Y	Y

3: Supported handsets

Model	Image	SIP	SCCP	Console		End Point
				SIP	SCCP	
7965G		Y	Y	Y	Y	Y
7970		Y	Y	Y	Y	Y
7971		Y	Y	Y	Y	Y
7975		Y	Y	Y	Y	Y
7985		N	Y	N	Y	Y
8811		Y	N	Y	N	Y
8851		Y	N	Y	N	Y
8841		Y	N	Y	N	Y
8861		Y	N	Y	N	Y

3: Supported handsets

Model	Image	SIP	SCCP	Console		End Point
				SIP	SCCP	
8941		Y	N	Y	N	Y
8945		Y	N	Y	N	Y
8961		Y	N	Y (3)	N	Y
9951		Y	N	Y (3)	N	Y
9971		Y	N	Y (3)	N	Y
Cius		Y	N	N	N	Y
Cisco CSF	N/A	N	N	Y	N	N
DX650		Y	N	Y	Y	Y
DX70		Y	N	Y	Y	Y

3: Supported handsets

Model	Image	SIP	SCCP	Console		End Point
				SIP	SCCP	
DX80		Y	N	Y	Y	Y
IP Communicator		Y	Y	Y	Y	Y
Jabber Client		Y	N	Y	N	Y
SPA 8800	N/A	N	N	N	N	N
VG 224	N/A	N	N	N	N	N

Notes on numbered items:

(1)	No BLF, but can receive transfer.
(2)	Supported for SCCP only.
(3)	Support with disable rollover.

4: Performance and utilization

This chapter contains the following information:

- [General bandwidth recommendations](#)
- [Network latency limitations](#)
- [Attendant Console](#)
- [Server](#)
- [Voice Connect](#)
- [Supervisor](#)
- [Wallboard](#)

General bandwidth recommendations

Location-based Call Admission Control may be implemented to control the bandwidth usage across the WAN. A maximum amount of bandwidth may be configured for calls to and from each remote location. When an Arc controlled CTI Route Point or CTI Port is created, the location should be set to **None**. However, this effectively ensures that no bandwidth limits will apply to that device.

Locations may be implemented which will account for bandwidth according to Region settings, to define the codec used between two endpoints.

Call type	Bandwidth
Calls routed across a LAN typically use the G711 codec	64 Kbps
Calls routed across the WAN may use the G729 codec	8 Kbps

If different compression types are to be used to reduce the amount of bandwidth needed across the WAN, then a transcoder will be needed. In addition, further bandwidth is used by IP communications between the Arc Server and the Console Attendant as described in the following sections.

Network latency limitations

Arc Pro can operate over WAN (Wide Area Networks), however there are requirements as to the maximum latency that the system can operate under before the user experience begins to deteriorate. Between the Arc Pro Server and the Cisco Unified Call Manager, where the TAPI communication takes place, the maximum latency permitted is defined by Cisco. This value can be found in *Cisco's TAPI documentation*.

Between the Arc Pro Server and any Arc Pro Clients, the maximum latency permitted is 150ms round trip time.

In cases where the SQL Server that Arc Pro is using is not located on the Arc Pro Server, the maximum latency permitted is 150ms round trip time. This applies to the Arc Pro Server and any clients connections to the SQL Server.

Attendant Console

The following log-in tests used a directory of 250 contacts. The console by default pulls back a maximum of a 1000 contacts with any one SQL search therefore the recorded values represent the maximum log-in bandwidth required regardless of directory size.

Activity as measured from the Client	Download Bandwidth (KB)	Upload Bandwidth (KB)
Client login (Operator – direct access mode) With 1000 Contacts	1,092 843.70 +193%	12.7 11.65 +85%
Client login (Operator – direct access mode) With 100 Contacts	333.28	11.65
Client login (Operator – memory mode) With 1000 Contacts	2,134 N/A N/A	8.4 N/A N/A

Directory and Busy Lamp

Every search made of the Contact Directory will return a number of matches within the SQL database. The bandwidth requirements will depend on the number of contacts being returned and the amount of data within each contact.

Activity as measured from the Client	Download Bandwidth (KB)	Upload Bandwidth (KB)
20 contact SQL search using attendant console	8.7 19.51 +13.10%	4.5 8.81 +22.53%
20 contact SQL search using attendant console with Scalable Busy Lamp Enabled (New subscriptions)	33.2 17.88 +69.90%	8.3 9.98 -20.96%
20 contact SQL search using attendant console with Scalable Busy Lamp Enabled (Cached subscriptions)	13.42 +42.61%	7.21 +28.98%

Presence integration

Activity as measured from the Client	Download Bandwidth (KB)	Upload Bandwidth (KB)
CUPS searching 'get' for typical directory view of 20 contacts (New subscriptions)	8.9 70.74	4.5 32.96
CUPS searching 'get' for typical directory view of 20 contacts (Cached subscriptions)	18.57 93.97	7.18 54.89
OCS presence 'get' for typical directory view of 20 contacts with a short note (New subscriptions)	24.58 22.77	8.42 8.07
OCS presence 'get' for typical directory view of 20 contacts with a short note (Cached subscriptions)	27.83 24.81	8.04 12.47
Calendar (using Outlook interface) 'get' for typical directory view of 20 contacts	NA (Data obtained from outlook session)	NA (Data obtained from outlook session)

Server

Database Synchronization with CUCM (Arc 5.1.1 onwards)

The other major requirement for Arc attendant console outside of the call handling requirements is the initial synchronizing of the Contacts DB. This is undertaken via an LDAP synch with CUCM. Again the amount of bandwidth required depends on the amount of contacts and the amount of data within each contact.

Activity as measured from the Arc Pro Server	Download Bandwidth (KB)	Upload Bandwidth (KB)
Initial synchronization of the Arc Pro directory contacts database using LDAP synchronization with a CUCM source of 50 basic contacts (3x fields).	376.4 1,043.05 +302.75%	461 185.08 -52.02%
Initial synchronization of the Arc Pro directory contacts database using LDAP synchronization with an AD source of 50 basic contacts (8x fields).	103.2 109.50 -71.77%	135 118.23 -80.09%
Initial synchronization of the Arc Pro directory contacts database using LDAP synchronization with an AD source of 20,000 basic contacts (8x fields).	33,596 31,570 -4.65%	49,918 104,950 -5.61%

4: Performance and utilization

Activity as measured from the Arc Pro Server	Download Bandwidth (KB)	Upload Bandwidth (KB)
Initial Full Sync based on the following: <ul style="list-style-type: none"> • 50 Agents (Each agent has 1 skill assigned) • 50 Operators (Each operator has 1 queue assigned) • 10 Supervisors • 1 Wallboard user • 1 Community • 2 Permission Groups • 25 Agent Skills • 25 Agent Queues • 10 Console Queues Directory containing 1000 contacts	7,144 356.44 -86.77%	3,494 108.38 +13.77%
Typical bandwidth per individual change in this example adding a new console queue.	214 193 -10%	9.5 7.4 -22%

LDAP or Equivalent Integration

Activity as measured from the Arc Pro Server	Download Bandwidth (KB)	Upload Bandwidth (KB)
Initial connection	20 22.43 +91.05%	10 7.86 +38.42%
Maintaining (contact update in AD source in this example a phone number edit)	4.3 4.10 +27.32%	7.4 2.53 -57.55%

Voice Connect

Activity as measured from the Arc Pro Voice Server	Download Bandwidth (KB)	Upload Bandwidth (KB)
Service start-up with all waves locally cached	13 0.86 -93.47%	3.6 0.05 -98.70%
Server start-up with all waves locally cached	2,916 41.60 -98.47%	39 0.09 -99.77%

4: Performance and utilization

Streaming of WAV files per queue/call, based on our standard messages:

Voice Connect activity (playing of prompts)	Download Bandwidth (KB)	Upload Bandwidth (KB)
Default voice messages (all of the canned voice messages produce very much the same bandwidth results, the recorded result is for "Your call will be answered shortly, thank you for holding")	25 N/A N/A	38 N/A N/A

Supervisor

Activity as measured from the Client	Download Bandwidth (KB)	Upload Bandwidth (KB)
Client login	340.7 345.04 -11.57%	6.6 4.39 -57.66%
System Monitor, per client, per broadcast	35 35.05 0%	0 0 0%
Reporting	Typically <100 per report dependent to the type of the report and the amount of data it contains	Typically <5
Online updates, per change	<1	Typically <5

Wallboard

Activity as measured from the Client	Download Bandwidth (KB)	Upload Bandwidth (KB)
Client login	301.7 232.66 +1.51%	0.33 0.39 0%
Updates -per broadcast per Wallboard	35 35.05 0%	0 0 0%