

# CA on CD Family Hardware Requirements

The CA on CD family consists of two types of products.

**CA on CD** is an annual subscription product issued monthly. Each monthly update contains a cumulative database that replaces all of the previous issues for the current subscription year. The number of discs in a monthly issue increases from a single disc in the January issue to ten or more discs by the final issue of an annual subscription. The number of discs needed for CA on CD varies with the number of documents covered in CA during the year, which in turn depends on the number of chemical research articles published worldwide.

**Collective Indexes on CD** is available from the 10<sup>th</sup> Collective Period to the current period and are available in two versions -- Indexes Only or Indexes with Abstracts. These are closed databases and are not updated. These are massive databases and have substantial hardware requirements. Each Collective Index covers a five year period.

The same software is used for both types of product. For both products all of the database files must be copied from the CD-ROM discs to hard drive(s).

Table 1. Database Hardware Requirements

CAS CD-ROM Title	Title Characteristics			Database on Hard Drive			User Doc Hard Drive Space <sup>1</sup>
	Time Period	Abstracts	No. of discs	Support Space	# CD Drives	Database Space	
CA on CD 1996 <sup>2</sup>	1996	Yes	4	4 MB	1	2.2 GB	35 MB
CA on CD 1997 <sup>2</sup>	1997	Yes	4	4 MB	1	2.2 GB	35 MB
CA on CD 1998 <sup>2</sup>	1998	Yes	4	4 MB	1	2.2 GB	35 MB
CA on CD 1999 <sup>2</sup>	1999	Yes	5	5 MB	1	3 GB	35 MB
CA on CD 2000 <sup>2</sup>	2000	Yes	5	6 MB	1	3.2 GB	35 MB
CA on CD 2001 <sup>2</sup>	2001	Yes	6	7 MB	1	3.5 GB	35 MB
CA on CD 2002 <sup>2</sup>	2002	Yes	8	9 MB	1	4.4 GB	38 MB
CA on CD 2003 <sup>2</sup>	2003	Yes	8	10 MB	1	4.6 GB	38 MB
CA on CD 2004 <sup>2</sup>	2004	Yes	10	13 MB	1	5.8 GB	38 MB
CA on CD 2005 <sup>2</sup>	2005	Yes	10	12 MB	1	5.7 GB	38 MB
CA on CD 2006 <sup>3</sup>	2006	Yes	9	10 MB	1	5.0 GB	38 MB
CA on CD 2007 <sup>4</sup>	2007	Yes	10	14 MB	1	6.2 GB	38 MB
10CI on CD with Abstracts <sup>2</sup>	1977-81	Yes	7	8 MB	1	4.1 GB	35 MB
10CI on CD [Indexes Only] <sup>2</sup>	1977-81	No	6	7 MB	1	3.3 GB	35 MB
11CI on CD with Abstracts <sup>2</sup>	1982-86	Yes	9	9 MB	1	4.8 GB	35 MB
11CI on CD [Indexes Only] <sup>2</sup>	1982-86	No	7	8 MB	1	3.8 GB	35 MB
12CI on CD with Abstracts <sup>2</sup>	1987-91	Yes	10	11 MB	1	5.9 GB	35 MB
12CI on CD [Indexes Only] <sup>2</sup>	1987-91	No	8	10 MB	1	4.9 GB	35 MB
13CI on CD with Abstracts <sup>2</sup>	1992-96	Yes	13	14 MB	1	7.5 GB	35 MB
13CI on CD [Indexes Only] <sup>2</sup>	1992-96	No	11	12 MB	1	6.2 GB	35 MB
14CI on CD with Abstracts <sup>2</sup>	1997-01	Yes	19	21 MB	1	11.4 GB	35 MB
14CI on CD [Indexes Only] <sup>2</sup>	1997-01	No	16	20 MB	1	9.5 GB	35 MB
15CI on CD with Abstracts <sup>5</sup>	2002-06	Yes	34	53 MB	1	21.8 GB	38 MB
15CI on CD [Indexes Only] <sup>6</sup>	2002-06	No	29	46 MB	1	18.6 GB	38 MB

<sup>1</sup> CA on CD 1997 to present share user documentation. The Indexes Only and with Abstracts versions of each of the CI on CD products share their user documentation. These values are per platform as the documentation files are installed in the platform-specific software directory.

<sup>2</sup> Back issues are no longer available for purchase.

<sup>3</sup> Estimate assuming eight full discs and one partial disc.

<sup>4</sup> Estimate assuming nine full discs and one partial disc.

<sup>5</sup> Estimate assuming 33 full discs and one partial disc.

<sup>6</sup> Estimate assuming 28 full discs and one partial disc.

## Supported Platforms

The CA/CI on CD application software runs on the following systems either as stand-alone single user systems or as network workstations.

- ◆ Windows –
  - ◆ Windows 2000 and XP. There is NO support for non-80386 versions of Windows NT such as DEC Alpha<sup>®</sup>, or IBM PowerPC<sup>®</sup> systems.

Supported network only workstations:

- ◆ Macintosh<sup>®</sup> –
  - ◆ Macintosh systems running OS X<sup>7</sup>.

The security mechanism supports the following machines as network license servers:

- ◆ For Windows –
  - ◆ Windows 2000 Server and Server 2003. There is NO support for non-80386 versions of Windows such as DEC Alpha, or IBM PowerPC<sup>®</sup> systems,
- ◆ For OS X Macintosh –
  - ◆ Windows PC with USB port. (May also be used to support Windows workstations.)

Supported file servers:

- ◆ For Windows<sup>8</sup> –
  - ◆ Windows 2000 Server and Server 2003. There is NO support for non-80386 versions of Windows NT such as DEC Alpha, or IBM PowerPC systems,
- ◆ Macintosh –
  - ◆ Windows 2000 Server and Server 2003 with Macintosh support installed,
  - ◆ Macintosh systems running System OS X.

## General Considerations

There are many factors that can influence performance of the CA on CD product. These include the usual PC or Macintosh performance considerations: such as processor type and speed, system bus speed and type, available memory, and other hardware characteristics, operating system choice, other software installed, and resources utilized by other applications running at the same time. For network installations these considerations apply to both the servers and the user workstations. In addition, network installation's performance will have some dependency on the choice of network operating system, the speed of the network hardware, and the volume of network traffic.

This document only addresses a small number of parameters which are specific to CD-ROMs or which comprise required resources (memory and storage space). Generally the best performance is obtained using high-performance components. Please bear in mind that acceptable performance is subjective and will likely be different for different users.

### Hard Drives versus CD-ROM drives

CD-ROM drives are slow when compared to other storage devices. Copying the database to a hard drive during the installation will give substantially better performance than searching the data on the CD-ROM discs. Due to performance issues we recommend copying to your hard drive. For use with Macintosh OS X workstations all database and supporting files MUST be copied to a SINGLE Folder on a hard drive.

Each CD-ROM disc contains a single database file, possibly as large as 680MB, which must be copied to a single hard

<sup>7</sup> Macintosh System 8.6 through 9.x support was dropped in the 3<sup>rd</sup> quarter of 2006.

<sup>8</sup> WARNING: Workstation versions of Windows operating systems limit the number of users that may log onto the system. This may limit the number of users that can access CA or CI on CD to less than the HASP License Manager will allow. We recommend using only Server versions of Windows as the File Server or Software Server if these functions are separated.





Table 3. Multiple User Windows File Server Hardware Requirements

	File Server	License Server <sup>10</sup>	User Workstation
System Software	Windows 2000 Server, Server 2003, or NetWare	Windows 2000 Server, Server 2003	Windows 2000, XP
Memory (RAM)	Unspecified	Unspecified	256 MB
Clients Supported	Windows	Windows	
Disk Storage			
Software	93 MB	10 MB	< 1 MB
User Doc Software <sup>11</sup>	17 MB		60 MB
User Documentation	See Table 1		
Data base	See Table 1		
Security System		USB port	
Network Protocol	Supports file sharing with User Workstations	TCP/IP	TCP/IP

**License Server:** The Windows License Server machine and process must be up and running for Windows Workstations to access the CA on CD or CI on CD databases. The License Server process does not require dedicated hardware. The License Server and the File Server are normally the same machine. Alternatively, any Windows machine that uses the TCP/IP network communication protocol<sup>12</sup> may function as the License Server. The License Server must have the appropriate<sup>13</sup> port to attach the License Key.

**User Workstations:** Windows 2000, XP with 256 MB of RAM and 1 MB of available local hard drive space. Network interface and software supporting file sharing with the File Server. The User Workstations and the License Server communicate via network specific protocols. Each of the license server programs supports different network protocols:

- A **Windows 2000<sup>®</sup>, 2000 Server, XP or Server 2003 License Server** requires that TCP/IP be installed on every User Workstation and that a network path is available between each User Workstation and the License Server machine.

## Required Hardware Examples

**Example 1:** Assume that CA on CD 2007 is to be installed on a server to support Windows users. What is required? The license server and file server could be the same machine, but the requirements are given here separately.

### File Server

- ◆ Windows 2000 Server, Server 2003, or NetWare Server (check with Novell <http://support.novell.com/lifecycle/> for current versions),
- ◆ Memory as required to support the operating system and installed devices
- ◆ Network interface
- ◆ With the database files copied to the hard drive:
  - ◆ A single CD-ROM drive<sup>14</sup>
  - ◆ 6.2 GB of hard drive space. An additional 55 MB (17 + 38) is required if the user documentation is installed. We recommend that the database files for each issue be copied to its own directory.

<sup>10</sup> When using a Firewall on the License Manager remember to allow communications via UDP using port 475 for the HASP key. If not the License Manager will not function properly and you will get errors that the 'HASP is not Found'.

<sup>11</sup> Installed only if the User Documentation is installed.

<sup>12</sup> 3Com<sup>®</sup>, Banyan Vines<sup>®</sup>, D-Lin<sup>®</sup>k, DEC Pathworks<sup>®</sup>, Novell NetWare (check with Novell <http://support.novell.com/lifecycle/> for current versions), Windows NT network, LANtastic<sup>®</sup>, LanManager<sup>®</sup>, OS/2<sup>®</sup> Lan Server, or any other network that uses TCP/IP.

<sup>13</sup> The HASP HL key requires a USB 1.1 or 2.0 primary port, use of a hub is not allowed.

<sup>14</sup> Could also be located on the license server or on a Windows workstation. This drive is used during installation only.

## License Server

- ◆ Windows 2000, XP, Server 2003
- ◆ Memory as required to support the operating system and installed devices
- ◆ 10 MB of disc space for the License Manager software
- ◆ Network Interface
- ◆ TCP/IP network protocol with User Workstation machines
- ◆ A USB port for attaching the HASP HL security key

## User Workstations

- ◆ 256 MB of RAM
- ◆ Network Interface
- ◆ File Sharing access to server files
- ◆ TCP/IP network protocol with License Server machine
- ◆ 1 MB of local disk storage, an additional 60 MB is required if user documentation is installed
- ◆ Windows 2000 or XP.

**Example 2:** Assume that CA on CD 2006, CA on CD 2007, and 15CI with Abstracts are installed on a server for access by networked Windows PCs. What is required? The License Server and File Server could be the same machine, but the requirements are given here separately.

## File Server

- ◆ Windows 2000 Server, Server 2003 or NetWare Server (check with Novell <http://support.novell.com/lifecycle/> for current versions)
- ◆ Memory as required to support the operating system and installed devices
- ◆ Network interface
- ◆ With the database files copied to the hard drive:
  - ◆ A single CD-ROM drive
  - ◆ 33 GB of hard drive space (5.0 + 6.2 + 21.8). An additional 93 MB is required if the user documentation is installed (17 + 38 + 38). Use of one directory for each of the three issues is recommended. If the installation is split the use of two 22 GB drives or partitions will work.

## License Server

- ◆ Windows 2000 Server, Server 2003
- ◆ Memory as required to support the operating system and installed devices
- ◆ 10 MB of disc space for the License Manager software
- ◆ Network Interface
- ◆ TCP/IP network protocol with User Workstation machines
- ◆ A USB port for attaching the HASP HL security key

## User Workstations

- ◆ 256 MB of RAM
- ◆ Network Interface
- ◆ File Sharing access to server files
- ◆ TCP/IP network protocol with License Server machine
- ◆ 1 MB of local disk storage, an additional 60 MB is required if user documentation is installed
- ◆ Windows 2000, XP

## Multiple User Macintosh Networked Installation

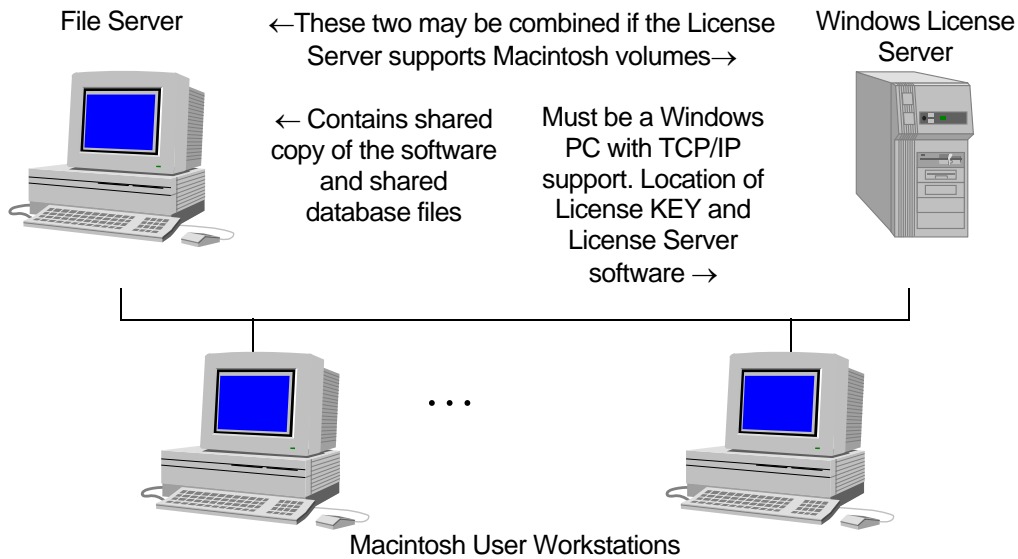


Table 4. Multiple User Macintosh Hardware Requirements

	<b>File Server</b>	<b>License Server</b>	<b>User Workstation</b>
Hardware	Macintosh (Windows PC)	Windows PC	Macintosh
System Software/Other Software	Macintosh OS X (Windows with Macintosh support)	Windows 2000 Server or Server 2003	OS X
Clients Supported	Macintosh	Macintosh OS X and Windows	Macintosh
Security System	NA	USB	NA
Network Protocols	TPC/IP	TCP/IP	TCP/IP
Memory	Unspecified	Unspecified	256 MB
Hard Drive Space Required			
Software	8 MB	10 MB	< 1 MB
User Doc Software <sup>15</sup>	17 MB		30 MB
User Documentation	See Table 1		
Data base	See Table 1		

**File Server:** Macintosh or Windows 2000 Server or Server 2003 (with Macintosh support installed) file server with one CD-ROM drive plus hard drive space.

- With the database copied to hard drive the disk storage required on the file server is the sum of the Hard Drive Space entries from Table 1 for the installed databases + 8 MB. Additional hard drive space is required on the server for the optional user documentation if it is installed. A single CD-ROM drive is required during the installation process.

The User Workstations communicate with the File Server via FILE SHARING. An interface to the network is required to communicate with the License Server process and to mount the File Server volumes.

The file sharing mechanism built into the Macintosh OS, so called "personal file sharing", is limited to sharing ten volumes. Note that the volume where the software is installed on the server must be shared leaving a maximum of nine product volumes that can be shared. This limit will be exceeded if: (1) more than one CA on CD database is installed on a single server, and (2) the CA on CD databases are accessed directly from the CD-ROM discs. TCP/IP software added to the server increase both the number of volumes that can be shared and the performance of Macintosh file sharing. As a practical matter, performance is not likely to be acceptable with so many volumes shared using personal file sharing.

**License Server:** The Windows License Server machine and process must be up and running for Macintosh Workstations to access the CA on CD databases. The license server process does not require dedicated hardware. The License Server and File Server is normally the same machine. Alternatively, the License Server software and key may be installed on any networked Windows Server with Macintosh file support. The License Server must have the appropriate port to attach the License Key. The User Workstations communicate with the License Server via TCP/IP. If there are routers in the network between the User Workstations and the License Server, those network routers must be set to allow TCP/IP communications to pass through.

**User Workstations:** Macintosh with 256 MB of RAM, less than 1 MB of local hard drive space, and Ethernet connection to the file server (and License Server if it is a separate machine). The supported Macintosh OS versions are: Power PC with OS X. The User Workstations communicate with the File Server via FILE SHARING. The User Workstation communicates with the Windows License Server via TCP/IP to process messages. If there are routers in the network between the User Workstations and the Windows License Server, those network routers must be set to allow TCP/IP to pass through.

## Required Hardware Examples

**Example 1:** Assume that CA on CD 2007 is to be installed on a server to support Macintosh users. What is required? The license server and file server could be the same machine, but the requirements are given here separately.

### File Server

- ◆ Windows 2000 Server or Server 2003 with Macintosh support, or Macintosh
- ◆ Memory as required to support the operating system and installed devices
- ◆ Network interface
- ◆ With the database files copied to the hard drive:
  - ◆ A single CD-ROM drive
  - ◆ 6.2 GB of hard drive space. An additional 55 MB is required if the user documentation is installed (17 + 38). It is required that the database files for each issue be copied to a single directory for that issue.

### License Server

- ◆ Windows License Server
- ◆ Network Interface
- ◆ TCP/IP networking

### User Workstations

- ◆ 256 MB of RAM
- ◆ Macintosh OS 10.x
- ◆ TCP/IP Network Interface
- ◆ 1 MB of local disk storage

**Example 2:** Assume that CA on CD 2006, CA on CD 2007, and 15CI with Abstracts are installed on a server for access by networked Windows PCs. What is required? The Windows License Server and File Server could be the same machine, but the requirements are given here separately.

### File Server

- ◆ Windows 2000 Server or Server 2003 with Macintosh support, or NetWare Server (check with Novell <http://support.novell.com/lifecycle/> for current versions)
- ◆ Memory as required to support the operating system and installed devices
- ◆ Network interface
- ◆ With the database files copied to the hard drive:
  - ◆ A single CD-ROM drive
  - ◆ 33 GB of hard drive space (5.0 + 6.2 + 21.8). An additional 93 MB is required if the user documentation is

---

<sup>15</sup> Installed only if the User Documentation is installed.

installed (17 + 38 + 38).

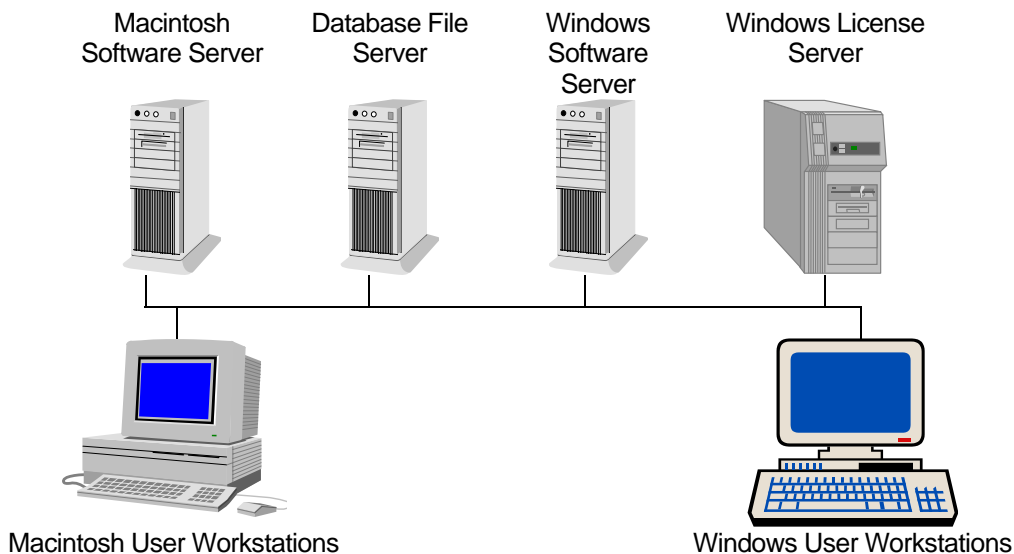
### License Server

- ◆ Windows License Server
- ◆ Network Interface
- ◆ TCP/IP networking

### User Workstations

- ◆ 256 MB of RAM
- ◆ Windows 2000 or XP
- ◆ TCP/IP Network Interface
- ◆ 1 MB of local disk storage

## Multiple User Mixed Windows/Macintosh Networked Installation



### File Servers

**Database File Server:** This server contains the shared copy of the database files used by all Windows and Macintosh users. This server can be (1) a Windows 2000 Server or Server 2003 (with Macintosh support installed) or (2) a Macintosh file server<sup>16</sup> with either multiple CD-ROM drives OR one CD-ROM drive plus hard drive space.

- With the database copied to hard drive the disk storage required on the file server is the sum of the Hard Drive Space entries from Table 1 for the installed databases. A single CD-ROM drive is required during the installation process.

Only a single copy of the large database files is necessary to support both Windows and Macintosh installations. The User Workstations communicate with the File Server via FILE SHARING. TCP/IP networking protocol is required.

**Windows Software Server:** This server contains a single copy of the Windows software and its support files. This copy is shared by all Windows users. This server is typically (1) a Windows 2000 Server or Server 2003, or (2) a Macintosh file server<sup>17</sup> or (3) a NetWare Server (check with Novell <http://support.novell.com/lifecycle/> for current versions) server. Disk storage required on the Windows Software Server is the sum of the Software storage from Table 3 plus Hard Drive Space from Table 1 for the installed databases. Additional hard drive space is required on the

<sup>16</sup> See the "personal file sharing" limitation on the number of volumes that can be shared by a Macintosh in the Multiple User Macintosh Installation section. TCP/IP software must be installed on all User Workstations if the Database files reside on a Macintosh server machine.

<sup>17</sup> TCP/IP software must be installed on all User Workstations if the Windows Software resides on a Macintosh server machine.

Windows Software Server for the optional user documentation and for 17 MB of installation software for the user documentation if user doc is installed. The User Workstations communicate with the Windows Software Server via FILE SHARING. In most installations the Windows Software Server and the File Server are the same machine.

**Macintosh Software Server:** This server contains a single copy of the Macintosh software and its support files. This copy is shared by all Macintosh users. This server is typically (1) a Windows 2000 Server or Server 2003 with Macintosh support installed, or (2) a Macintosh file server or (3) a NetWare Server (check with Novell <http://support.novell.com/lifecycle/> for current versions) server with Macintosh support installed. Disk storage required on the Macintosh Software Server is the sum of the Software storage from Table 3 plus Hard Drive Space from Table 1 for the installed databases. Additional hard drive space is required on the Macintosh Software Server for the optional user documentation and for 17 MB of installation software for the user documentation if user doc is installed. The User Workstations communicate with the Macintosh Software Server via FILE SHARING. In most installations the Macintosh Software Server and the File Server is the same machine.

### License Server

**Windows License Server:** Must be a Windows 2000 Server/Server 2003. This server is the location of the Windows HASP License key and the Windows License Server program and serves as the HASP License Server for both Windows and Macintosh users. See Multiple User Windows License Server requirements.

### Combining Servers

Many of the server roles are typically combined. For instance, Windows Server 2003 can fill four of the server roles: Database File Server, Macintosh Software Server, Windows Software Server, and Windows License Server.

### User Workstations

**Windows User Workstations:** See Table 3 - Multiple User Windows User Workstation requirements. Use of a Macintosh as a file server for Windows machines requires TCP/IP software to be installed on all Windows workstation machines.

**Macintosh User Workstations:** See Table 4 - Multiple User Macintosh User Workstation requirements. Use of a Windows NT server to support Macintosh requires Macintosh support to be installed on the server.

## Required Hardware Examples

**Example 1:** Assume that CA on CD 2007 is to be installed on a server to support Windows and Macintosh OS X users. What is required? The license server and file server could be the same machine, but the requirements are given here separately.

### File Server

- ◆ Windows 2000 Server or Server 2003 with Macintosh support, or Macintosh with TCP/IP software
- ◆ Memory as required to support the operating system and installed devices
- ◆ Network interface
- ◆ With the database files copied to the hard drive:
  - ◆ A single CD-ROM drive
  - ◆ 6.2 GB of hard drive space in a single directory or folder

### Windows Software Server

- ◆ Windows 2000 Server or Server 2003 with Macintosh support, or NetWare Server (check with Novell <http://support.novell.com/lifecycle/> for current versions), or Macintosh with TCP/IP software
- ◆ Memory as required to support the operating system and installed devices
- ◆ Network interface
- ◆ 93 MB of local disk space if user documentation is NOT installed; 55 MB (17 + 38) of local disk space if user documentation IS installed

### Macintosh Software Server

- ◆ Windows 2000 Server or Server 2003 with Macintosh support, or Macintosh with TCP/IP software
- ◆ Memory as required to support the operating system and installed devices
- ◆ Network interface
- ◆ 8 MB of local disk space if user documentation is NOT installed; 55 MB (17 + 38) of local disk space if user documentation IS installed

### Windows License Server

- ◆ Windows 2000 Server or Server 2003
- ◆ Memory as required to support the operating system and installed devices
- ◆ Network Interface
- ◆ TCP/IP network protocol with User Workstation machines
- ◆ 10 MB of local disk space for HASP License Manager software
- ◆ A USB port for attaching the HL security key

### Macintosh User Workstations

- ◆ 256 MB of RAM
- ◆ Macintosh OS 10.2 or higher
- ◆ Network Interface
- ◆ 1 MB of local disk storage; 31 MB (1 + 30) if user documentation IS installed

### Windows User Workstations

- ◆ 256 MB of RAM
- ◆ Network Interface
- ◆ File Sharing access to server files
- ◆ TCP/IP network protocol with License Server machine
- ◆ 1 MB of local disk storage; 61 MB (1 + 60) if user documentation IS installed
- ◆ Windows 2000 or XP.

**Example 2:** Assume that CA on CD 2006, CA on CD 2007, and 15CI with Abstracts are installed on a server for access by networked Windows and Macintosh machines. What is required? Some of the server roles could be combined, but the requirements are given here separately.

### File Server

- ◆ Windows 2000 Server or Server 2003 with Macintosh support, or Macintosh with TCP/IP software
- ◆ Memory as required to support the operating system and installed devices
- ◆ Network interface
- ◆ With the database files copied to the hard drive:
  - ◆ A single CD-ROM drive
  - ◆ 33 GB of hard drive space (5.0 + 6.2 + 21.8). Use of one directory for each of the three issues is recommended. If the installation is split the use of two 22 GB drives or partitions will work.

### Macintosh Software Server

- ◆ Windows 2000 Server or Server 2003 with Macintosh support, or Macintosh with TCP/IP software
- ◆ Memory as required to support the operating system and installed devices
- ◆ Network interface
- ◆ 8 MB of local disk space if user documentation is NOT installed; 93 MB (17 + 38 + 38) of local disk space if user documentation IS installed

## Windows Software Server

- ◆ Windows 2000 Server or Server 2003, or NetWare Server (check with Novell <http://support.novell.com/lifecycle/> for current versions)
- ◆ Memory as required to support the operating system and installed devices
- ◆ Network interface
- ◆ 93 MB of local disk space if user documentation is NOT installed; 93 MB of local (17 + 38 + 38) disk space if user documentation IS installed

## Windows License Server

- ◆ Windows 2000 Server or Server 2003
- ◆ Memory as required to support the operating system and installed devices
- ◆ Network Interface
- ◆ TCP/IP network protocol with User Workstation machines
- ◆ 10 MB of local disk space for HASP License Manager software
- ◆ A USB port for attaching the HASP HL security key

## Macintosh User Workstations

- ◆ 256 MB of RAM
- ◆ Macintosh OS X
- ◆ Network Interface
- ◆ 1 MB of local disk storage; 31 MB (1 + 30) if user documentation IS installed

## Windows User Workstations

- ◆ 256 MB of RAM
- ◆ Network Interface
- ◆ File Sharing access to server files
- ◆ TCP/IP network protocol with License Server machine
- ◆ 1 MB of local disk storage; 61 MB (1 + 60) if user documentation IS installed
- ◆ Windows 2000 or XP