

Bentley®



CUBE
CONNECT Edition

CUBE BASE

Reference Guide (v6.5.0)

Minimum system requirements

System requirements of CUBE, outlined in this section, include:

- **Recommended workstation configuration**
- **Recommended server configuration**
- **Supported operating systems**
- **Antivirus software**
- **ArcGIS**
- **CUBE Cluster**
- **Additional server considerations**

Recommended workstation configuration

| Hardware | Requirements |
|-------------------|---|
| CPU Speed | Minimum: 1.5 GHz single core Recommended: 2.0 GHz dual-core or better With Cluster: 2.0 GHz quad-core or better |
| Processor | Minimum: Intel Pentium 4, AMD Athlon Recommended: Intel Core i5, i7, Xeon or better; AMD Phenom II, Athlon II, FX-Series, A-Series APU or better |
| Memory/RAM | 1 GB minimum; 4 GB or higher recommended With Cluster: 2 GB per core recommended |
| Hard Disk | Minimum: ATAPI IDE; 5,400 rpm Recommended: SATA 3 Gb/s or 6 Gb/s; SAS; 7,200 RPM or better; SSD |
| Hard Disk Space | 10 GB for the application and supporting applications and data (like GIS) 100+ GB for output files |
| Screen Resolution | Minimum: 1024 x 768 at Normal size (96dpi); 16-bit color depth Recommended: 1440 x 900 or higher at Normal size (96dpi); 32-bit color depth |

| Hardware | Requirements |
|------------------------|--|
| Video/Graphics Adapter | <p>Minimum: 24-bit capable graphics adapter; 64 MB video memory</p> <p>Recommended: 32-bit capable graphics adapter; 512 MB or more video memory</p> <p>OpenGL version 2.0 runtime and Shader Model 3.0 or higher is recommended</p> <p>ATI or NVidia GPU is recommended for any 3D GIS work or CUBE Dynasim microsimulation</p> |
| Networking Hardware | 100BT or 1000BT TCP-IP compatible Ethernet or Wireless adapter |
| Peripherals | <p>DVD-ROM drive</p> <p>(1) available USB port, parallel port, ExpressCard slot, or PCMCIA slot for hardware dongle</p> |
| Operating System | Recommended: Windows 10 |

Recommended server configuration

| Hardware | Requirements |
|-------------------|--|
| CPU Speed | 2.0 GHz quad-core or higher; multiple CPUs are ideal |
| Processor | Recommended: Intel Xeon E3, E5, E7; AMD Opteron 42xx, 43xx, 62xx, 63xx, 83xx |
| Memory/RAM | <p>4 GB minimum; 16 GB or higher recommended</p> <p>With Cluster: 2 GB per core recommended</p> |
| Hard Disk | Recommended: SATA 3 Gb/s or 6 Gb/s; SAS; 7,200 RPM or better; SSD |
| Hard Disk Space | <p>10 GB for the application and supporting applications and data (like GIS)</p> <p>100+ GB for output files</p> |
| Screen Resolution | Minimum: 1024 x 768 at Normal size (96dpi); 16-bit color depth |

| Hardware | Requirements |
|------------------------|---|
| Video/Graphics Adapter | Minimum: 16-bit capable graphics adapter; 64 MB video memory Recommended: 24 or 32-bit capable graphics adapter; 256 MB or more video memory OpenGL version 2.0 runtime and Shader Model 3.0 or higher is recommended |
| Networking Hardware | 100BT or 1000BT TCP-IP compatible Ethernet adapter (1) network adapter is required, (2+) are recommended for resilience |
| Peripherals | DVD-ROM drive (1) available USB port or parallel port for hardware dongle |
| Operating System | Recommended: Windows Server 2016 R2 or Windows Server 2019 |
| Other Notes | Support for either a RAID or SAN is recommended |

See also: [Additional server considerations](#).

Supported operating systems

CUBE is designed to be run on the Microsoft Windows operating system. It is recommended that Windows be kept up to date with the latest service packs and updates. The following operating systems are supported:

- **Workstation**
 - Windows 8.1
 - Windows 10
- **Server**
 - Windows Server 2016
 - Windows Server 2019

Antivirus software

Citilabs recommends keeping your computer's Antivirus software up to date, and with the latest virus definitions. On rare occasions, CUBE.exe or Voyager executables may need to be added to the virus checker's "trusted zone" or equivalent. (For example, this was necessary with Kaspersky 2009, but not the 2010 version).

Please contact Citilabs support (accessible on the [Help menu](#)) if you have questions about antivirus software.

ArcGIS

To access geodatabase data and display the data in the GIS window, CUBE requires ArcGIS engine or desktop. If ArcGIS is not already present on the machine, the CUBE installer can install versions 10.8 of ArcGIS Engine. For more information, see ["Installation" on page 40](#).

Supported versions of ArcGIS include (engine or desktop) starting from 9.3 up to and including 10.8.

Citilabs recommends installing the latest service pack for your ArcGIS version.

NOTE: If you choose not to install these versions of ArcGIS, such as if you are using an earlier version installed on your machine, then CUBE cannot access and display geodatabase data. Geodatabase and GIS window features will not be available.

CUBE Cluster

CUBE Cluster enables the CUBE Software Suite to take advantage of multiple CPU cores and distribute model runs over several computers. If your license includes CUBE Cluster, it is recommended that you use a processor with as many cores or threads as possible to reduce model runtime.

Additional server considerations

Virtual environments

VMware vSphere and Microsoft Hyper-V are in wide use among CUBE users. Citilabs cannot assist with the setup of the virtual environment and hypervisor, but can support the Citilabs software installed on the virtual machine.

Hyper-threading

CUBE is capable of taking advantage of Hyper-Threading technology found on many Intel processors. However, when comparing two processors from the same family, assuming the processors are otherwise identical, an 8-core processor without Hyper-Threading will outperform a 4-core processor with Hyper-Threading, even though both processors are making 8 threads available to the operating system. When comparing processors from different families, it is best practice to consider the benchmarks of each processor, which can be found online or through manufacturer documentation.

Disk configuration

Since environment needs and configurations can vary widely, Citilabs cannot make any specific recommendations as to which RAID card, SAN, disks, etc. to use. However, we can recommend that a setup where the load is distributed across multiple disks is ideal. The speed at which CUBE runs is greatly dependent on the performance of the disks and CPU. A faster disk configuration will often result in better model runtimes and performance.

Terminal services

Running CUBE in multi-user Terminal Services and Citrix environments is supported; however, running CUBE as a Terminal Services RemoteApp is untested and unsupported.

