

System Requirements

Trimble eCognition Suite

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Trimble Documentation

eCognition 10.5

System Requirements

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Overview System Requirements

eCognition is a comprehensive image analysis platform for multi-dimensional image analysis. It contains all the client and server software needed to extract intelligence from any digital image in a fully-automated or semi-automated way.

The client software is role-based and supports the needs and skills of different users in an organization. The server software, known as the eCognition Server, is a processing environment that allows the batch processing of jobs and is hugely scalable, capable of handling tens, hundreds or many thousands of images in a single job.

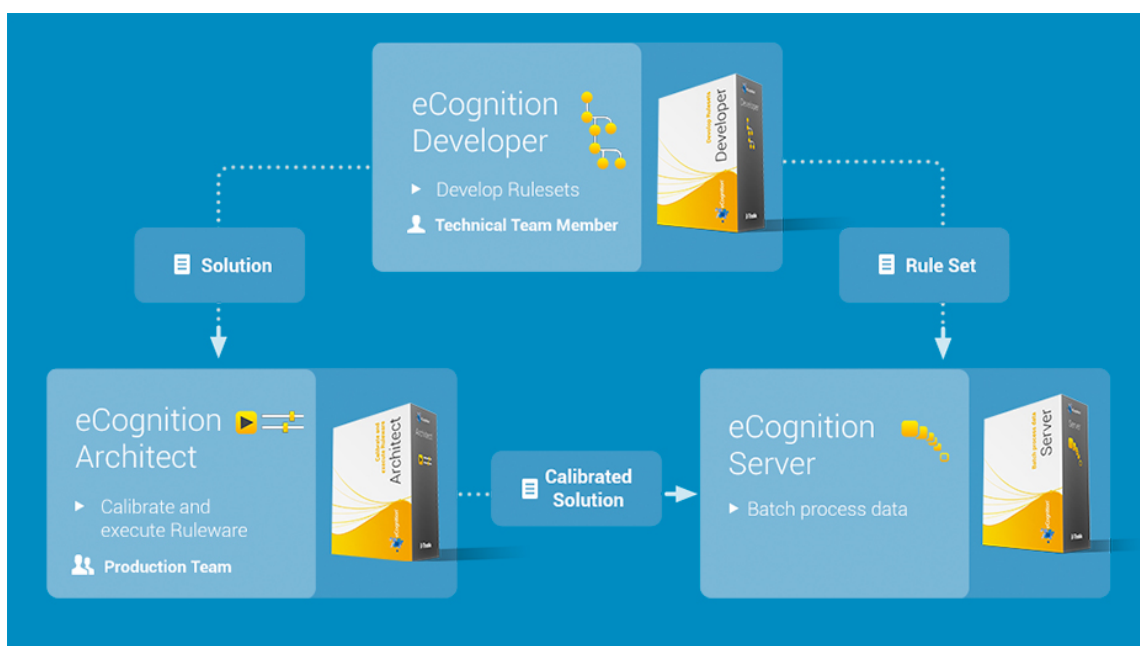


Figure 1.1. Trimble multi-dimensional image analysis software

1.1 Client Software

1.1.1 eCognition Developer

eCognition Developer is a powerful and completely integrated environment designed for image analysis specialists to develop, test and package new image analysis applications. eCognition Developer can be used as a standalone tool or in combination with the eCognition Server.

eCognition Developer incorporates the latest generation of Trimble Cognition Network Technology[®], enabling the creation of new solutions for multidimensional image analysis applications. It incorporates a new programming paradigm, high-performance analysis for complex multidimensional data and sophisticated viewing, visualization and registration capabilities.

1.1.2 eCognition Architect

eCognition Architect is an intuitive end-user tool used to configure and execute image analysis applications. It provides support for fully automated or semi-automated workflows and guides users through the application they are running. eCognition Architect incorporates all the required tools for users to import, view and visualize multidimensional images and results.

1.2 Server Software

1.2.1 eCognition Server

The eCognition Server provides a processing environment for the batch execution of image analysis using a high-performance computing environment. All supported connectors and drivers are described in a separate document called "Supported Connectors and Drivers".

1.2.2 Image Proxy Server

The Image Proxy Server (IPS) is a software component running on Microsoft Windows that provides high-performance image access and caching. A local IPS is installed automatically with each Trimble client.

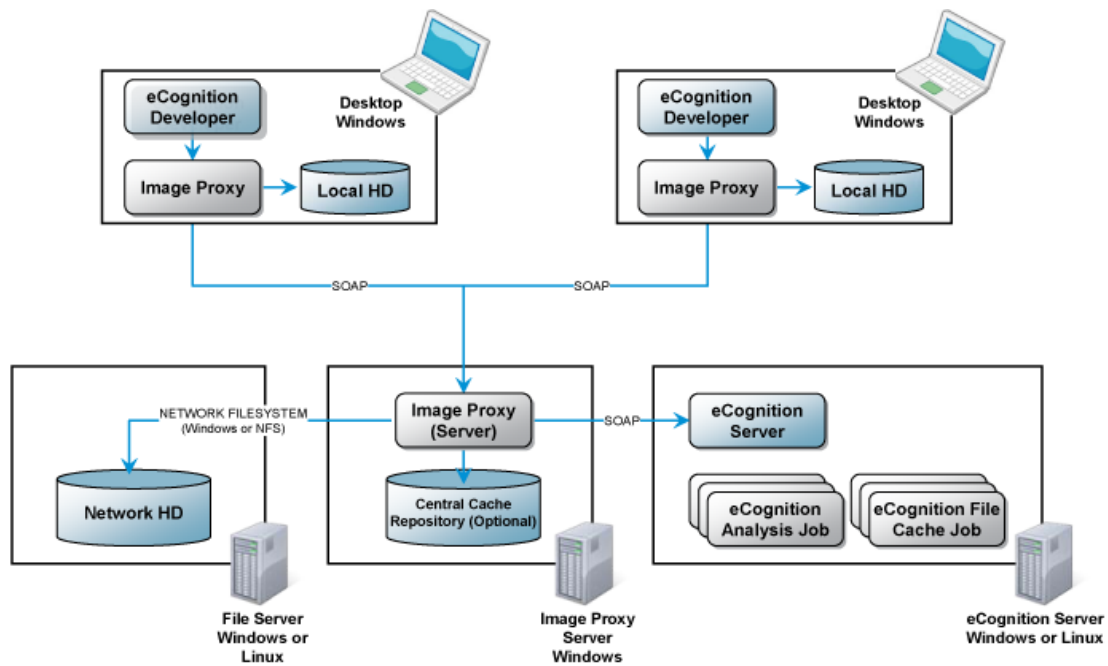


Figure 1.2. Recommended client-server configuration

The key functionality provided by the IPS includes:

- Delivering Windows-only file formats to eCognition Linux Servers (requires one Windows server)
- Creating and delivering zoom pyramids for large images
- Creating and delivering thumbnail caches for workspaces
- Creating and delivering an image statistics cache
- Creating and delivering cached zoom pyramids for thematic layers
- Creating and delivering cached raster representations of vector files

Data Storage and Cache Management

The Image Proxy Server creates and manages cache data, which can be stored in a sub folder with the original data or in a centralized repository connected to the Image Proxy Server (local storage or NAS). This cache can be sized appropriately for your environment. It uses a combination of maximum size, FIFO and minimum and maximum retention times. This caching can also be turned off by updating the default configuration.

1.3 License Server

Trimble software is soft license-protected using FlexNet Licensing Technology from Flexera Software. The License Server is used to provide the available licenses to the software and can be used locally on a single machine or in a network environment.

You must install the License Server before installing other Trimble software. It can be run on any machine within the network that is constantly available.

1.4 Hardware Platforms

All Trimble products require an Intel x86_64 hardware platform (64 bit).

1.5 Operating Systems

Trimble software has been validated for the following operating systems:

1.5.1 Microsoft Windows Client Operating Systems for eCognition Developer & Architect

- Microsoft Windows 10 (64 bit)
- Microsoft Windows 11 (64 bit)

1.5.2 Microsoft Windows Server Operating Systems for eCognition Developer and Architect

- Microsoft Windows Server 2019 (64 Bit) Standard Edition
- Microsoft Windows Server 2022 (64 Bit) Standard Edition

1.5.3 Linux Server Operating Systems for eCognition

Pre-requisite libraries are required for each specific Linux distribution. These are documented in Detailed System Requirements for Linux Systems, page 8.

- Red Hat Enterprise Linux 8
- SUSE Linux Enterprise Server 15
- CentOS 8

1.6 Requirements for Graphics Cards / GPU

1.6.1 Graphics Cards / GPU for 3D Rendering

Trimble clients allow the display and analysis of a variety of data types. Some features need an OpenGL capable graphics card:

- To properly display 3D analysis results, an OpenGL capable graphics card is required
- To render *.las files (point clouds) in the 3D viewer you also need to install an up-to-date OpenGL compatible graphics card driver

To update your graphics card driver to the current version select for example the Device Manager in the Windows Control Panel. In the section 'Display adapters', select your graphics card and navigate to the tab Driver where you can select 'update driver'. Technical details and update executables are also available on the websites of the respective graphics card provider. To check the OpenGL version installed on your machine you can install an OpenGL viewer for example http://download.cnet.com/OpenGL-Extensions-Viewer/3000-18487_4-34442.html or http://www.ozone3d.net/gpu_caps_viewer/

A dedicated OpenGL capable desktop graphics card from NVIDIA is highly recommended.

1.6.2 Graphics Cards / GPU for Deep learning

The use of eCognition's Deep learning processing requires a DirectX 12 capable GPU. Note that TensorFlow support for CUDA is no longer available in eCognition Version 10.5. Therefore, TensorFlow models only run using CPU. Models converted to ONNX format run both on CPU and on GPU and are therefore recommended (with the only requirement of DirectX 12 on Windows see <https://onnxruntime.ai>).

Note - Since eCognition Version 10.5 models created using eCognition's 'create convolutional neural network' algorithm no longer run on GPU.

1.6.3 Multiple Graphics Cards

eCognition is only able to use a single GPU per instance. Multiple GPUs are only recommended if you run multiple eCognition instances in parallel.

1.7 System Requirements

1.7.1 eCognition Developer / Server / Architect

Memory

- **Minimum:** 4 GB DDR-RAM
- **Recommended:** 16 GB DDR-RAM
- **Optimal:** 32 GB or more

Storage Space

- **Minimum:** 50 GB S-ATA Drive
- **Recommended:** 200 GB SSD-Drive
- **Optimal:** 512GB SSD or more

Display

- **Minimum:** Full HD Display (1920x1080)
- **Recommended:** 4 K Display (3840x2160)

eCognition's user interface (desktop client) is optimized for certain screen resolutions and text sizes (Windows operating systems):

- resolution 1920x1080 and text size 100%
- resolution 3840x2160 and text sizes 150%, 200% and 250%

For other resolutions / text sizes, window sizes / toolbar layout may need to be adjusted and saved in eCognition > *View* > *Save Current View*.

Operating Systems

All validated Microsoft Windows client operating systems can be used, see Microsoft Windows Client Operating Systems for eCognition Developer & Architect , page 4.

1.7.2 eCognition Server

eCognition Server is a scalable computing infrastructure that may be installed on one or more machines in your network.

1.7.3 Image Proxy Server

The Image Proxy Server (IPS) software provides high-performance image access and image caching services. IPS software is installed by default with each client and is also installed as a

server to support image access from processing nodes and centralized cache services to clients..

Server Deployment

The Image Proxy Server is responsible for both serving image data but also creating necessary cache data to provide high-performance access.

Cache Processing

The IPS can use the facilities of the existing eCognition Server processing nodes to offload the cache creation processing, which reduces the processing load on the image server . On Linux, this offloading of processing to the eCognition Server is dependent on having all the image drivers you wish to use available natively on Linux. Please see the Supported Connectors and Drivers documentation for details of which drivers are available for which operating system.

Storage Architecture

The choice of storage architecture for image cache data also affects the amount of storage space required for the Image Proxy Server. The default option is to use decentralized storage.

- Decentralized – cache data is stored along side the original image data
- Centralized – cache data is stored in a centralized location

1.7.4 License Server

The License Server software provides software licenses to all Trimble products. It can be installed on any machine that is reliably available within the network domain that is used to operate the Trimble software.

Hardware Requirements

- Dual core CPU
- 4 GB DDR-RAM

Operating Systems

- All validated Microsoft Windows operating systems (see Microsoft Windows Client Operating Systems for eCognition Developer & Architect , page 4)
- All validated Linux operating systems (see Linux Server Operating Systems for eCognition, page 4)

Detailed System Requirements for Linux Systems

2.1 Kernel Version

eCognition Server supports the Intel Platform Kernel.

2.2 Perl

For Perl installation, the following requirements should be met:

- Perl should be installed in the `/usr/bin/perl` directory.
- The Perl XML simple module should be installed.

2.3 Glibc and zlib for 32 bit runtime

For running the delivered ruby interpreter used for eCognition AdminConsole *glibc.i686* and *zlib.i686* should be installed.

2.4 LSB support (License Server Installation)

For a License Server Installation the FlexNet executables assume support of LSB (Linux Standard Base) libraries. In tests only RHEL 6 and 7 didn't provide that support without installation of the appropriate packages (see package description below).

Example Linux Packages that Meet Runtime Requirements

The following packages can be utilized to configure the required runtime dependencies for the supported Linux operating systems.

See also: [Linux Server Operating Systems](#)

3.1 Red Hat Enterprise Linux Server

Installation e.g. via `yum install <packagename>` . RedHat 6.x requires installation of ruby-libs.i686.

- perl-XML-Parser
- glibc.i686
- zlib.i686
- libungif

Packages for a License Server installation for LSB support:

- redhat-lsb.i686
- redhat-lsb.x86_64

3.2 SUSE Linux Enterprise Server 15 GA

For SUSE Linux Enterprise Server 15 GA, eCognition requires following legacy packages to be pre-installed:

- for head node: freetype, libpng, insserv, glibc-32bit, zlib-32bit, libgcc_s1-32bit *
- for worker node: freetype, libpng, insserv and key exchange algorithm for SSH protocol **

*To install extra packages using zypper, execute following commands:

```
zypper addrepo https://download.opensuse.org/repositories/M17N/SLE_15/M17N.repo
```

```
zypper refresh
```

```
zypper install freetype
```

```
zypper install libpng  
zypper install glibc-32bit  
zypper install zlib-32bit  
zypper install libgcc_s1-32bit  
zypper install insserv
```

**To add legacy key exchange algorithm for SSH, edit /etc/ssh/sshd_config (or ~/.ssh/config), insert these lines of code:

```
#Legacy changes  
KexAlgorithms +diffie-hellman-group1-sha1  
Ciphers +aes128-cbc
```