

SYSTEM REQUIREMENTS

Trimble eCognition Suite

for Windows operating system

Version 9.4.0
Revision 1.0
November 2018



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Trimble Documentation

eCognition 9.4

System Requirements

Imprint and Version

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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.

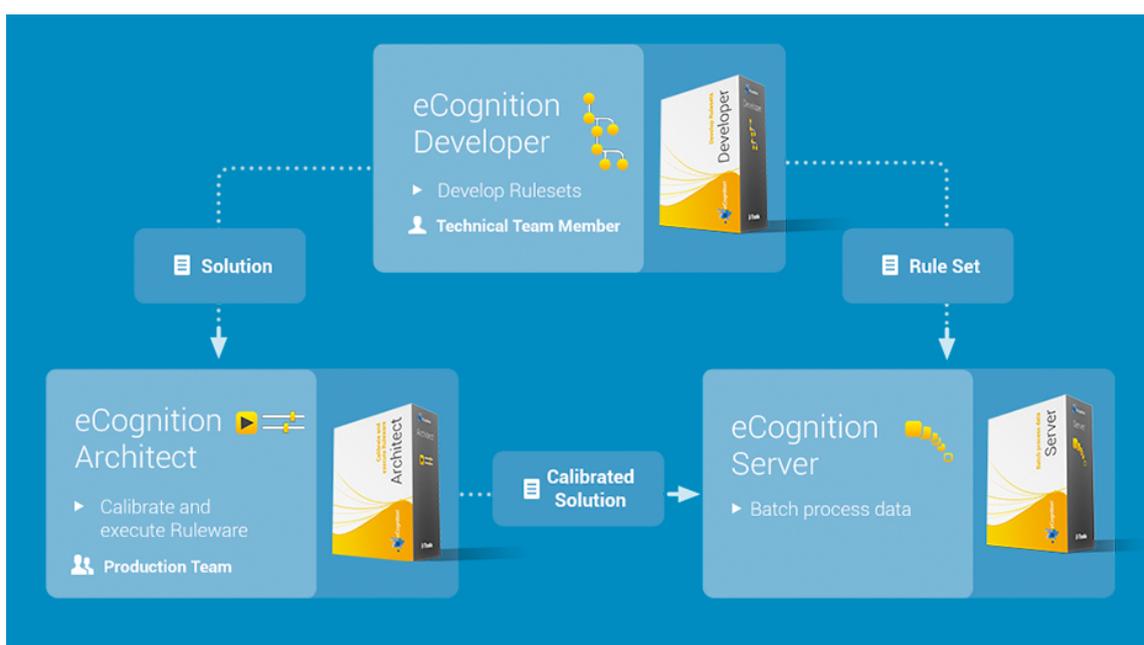


Figure 1.1. Trimble multi-dimensional image analysis software

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 grid 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.

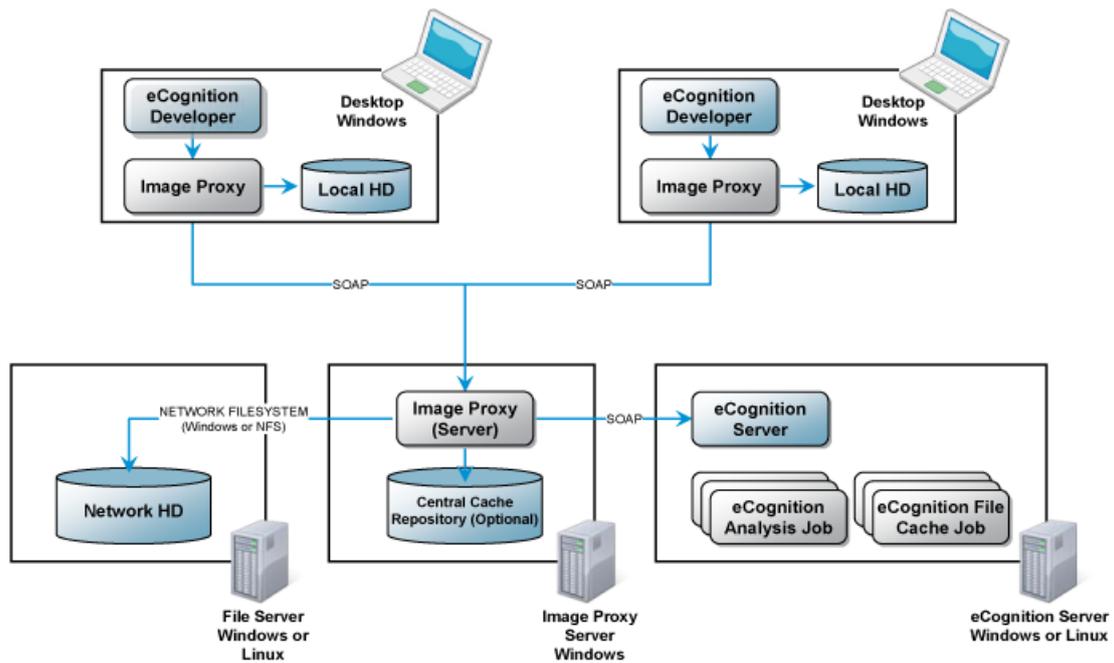


Figure 1.2. Recommended client-server configuration

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 disk 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. The License Server can also be installed on the primary node of the Grid.

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 7 Professional (64 Bit)
- Microsoft Windows 10 (64 bit)

1.5.2 Microsoft Windows Server Operating Systems for eCognition GRID

- Microsoft Windows Server 2008 R2 (64 Bit) Standard Edition
- Microsoft Windows Server 2012 R2 (64 Bit) Standard Edition
- Microsoft Windows Server 2016 (64 Bit) Standard Edition

1.5.3 Linux Server Operating Systems for eCognition GRID

Pre-requisite libraries are required for each specific Linux distribution. These are documented in Detailed System Requirements for Linux Systems, page 11.

- Red Hat Enterprise Linux 6
- Red Hat Enterprise Linux 7
- SUSE Linux Enterprise Server 12
- SUSE Linux Enterprise Server 15
- CentOS 6
- CentOS 7

1.5.4 Graphics Cards for 3D Rendering

Trimble clients allow the display and analysis of a variety 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 can also be found on the websites of the respective graphics card provider. To check the OpenGL version installed on your machine you can also 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 or ATI is highly recommended. Intel Extreme Graphics and integrated graphics may give incorrect results.

1.6 System Requirements

1.6.1 eCognition Developer / Server / Architect / Essentials / Oil Palm Application

CPU Speed

- **Minimum:** Dual core CPU
- **Recommended:** Quad core CPU
- **Optimal:** Hexa core (eCognition Server only)

Memory

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

Hard DISK

- **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)

eCognitions 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.

1.6.2 eCognition Server

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

Each machine hosting components of the eCognition Server is called a node. A eCognition Server setup consists of a primary node and one or more processing nodes. While the primary node controls the operation of the eCognition Server, the processing nodes perform the image analysis tasks.

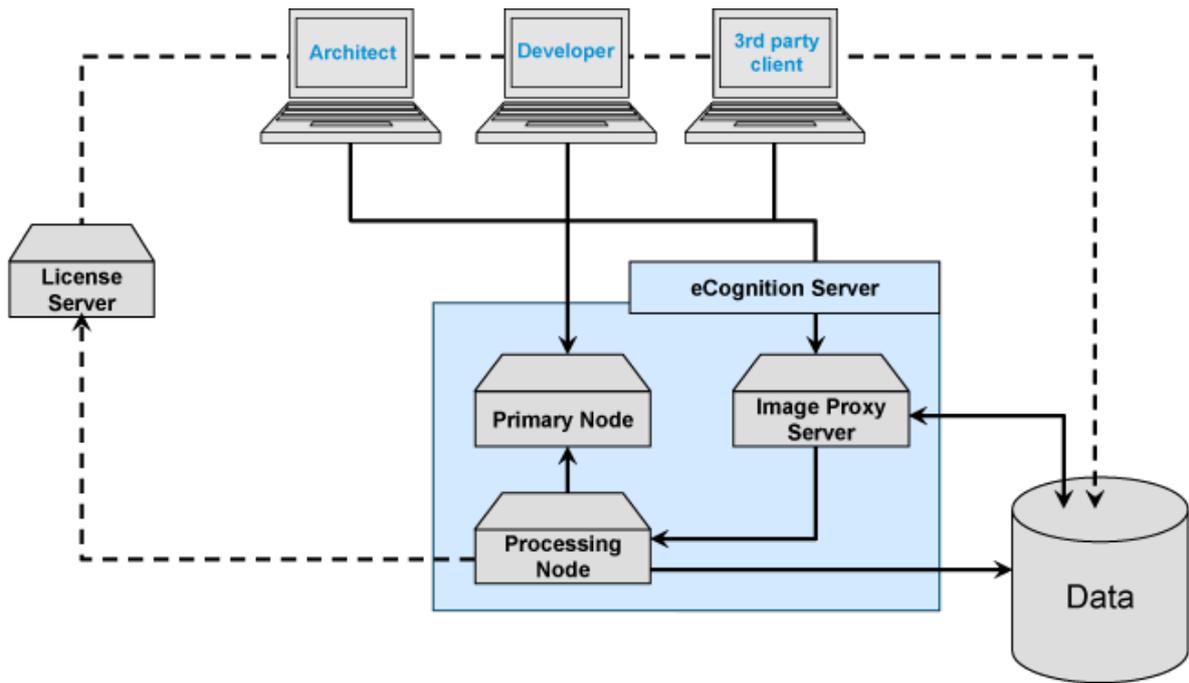


Figure 1.3. Trimble client-server setup

Administration Console

The Administration Console provides system administrators with a web-based interface that simplifies the management of the eCognition Server environment. It is installed as a central part of the eCognition Server and can be accessed by any machine in the network connected to the server and using a standard web browser.

Primary Nodes

The primary node hosts the infrastructure components required to operate the eCognition Server:

- Administration Server: Application server of the Administration Console
- Deployment Server: Manages and distributes image analysis software packages
- Job Scheduler: Manages and distributes active user jobs for processing nodes
- Spooler Service: Retrieves analysis results from processing nodes and stores them in a relational database (part of the Data Management)

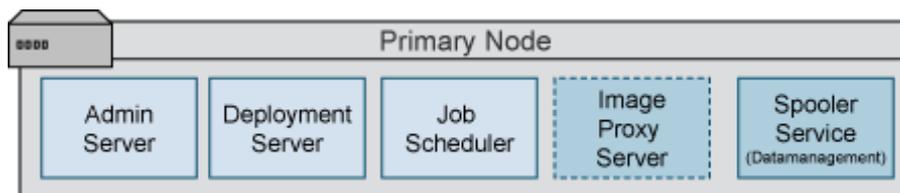


Figure 1.4. Components on the primary node of the eCognition Server

Processing Nodes

The processing nodes host the processing components required to perform the image analysis service:

- The Configuration Service configures the Analysis Engine according to the requirements of the image analysis tasks. Downloads new packages from the deployment server if required.
- The Analysis Engine performs the image analysis tasks.

If you use multi-processor or multi-core machines, you can set up processing nodes with more than one analysis engine. Each analysis engine should then have a dedicated CPU core and one eCognition Server CPU license is needed per analysis engine. It is also possible to install analysis engines on the primary node and use it as a processing node. In this case, the deployment server also acts as the configuration service for this machine.

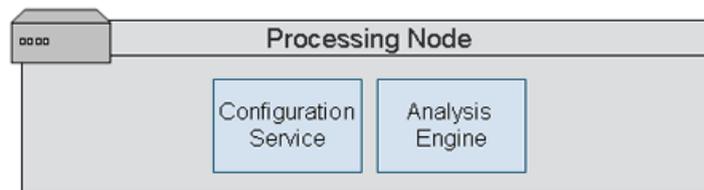


Figure 1.5. Components on a processing node of the eCognition Server

Control Service

The Control Service is a small component that runs on each node of the eCognition Server. It starts and monitors the other Trimble components of the respective node.

Interprocess Communication

The communication protocol for the components of the eCognition Developer 8.9 software suite is SOAP-based. All ports used by the system must be available and properly configured with respect to virus scanners and firewalls:

- Administration Console – 4002
- JobScheduler – 8184
- Configuration Service – 8284
- License Server – COM port 1= 27000 and return COM port 2, allocated at random.

Please see the Installation Guide for additional detailed information on firewall setup.

Image File Access

To process images each eCognition Server node requires access to image data files. This access can be either direct access using network shares or using the Image Proxy Server. It is recommended that the Proxy Server be installed as performance and reliability of image access is improved.

System Requirements for eCognition Server

The following requirements apply to a single analysis engine.

Hardware Requirements

- 1 CPU Core
- 8 GB DDR-RAM
- 1 GB Ethernet network

Operating Systems

- All validated Microsoft Windows operating systems. For Microsoft Windows we recommend using a server operating system, see Microsoft Windows Server Operating Systems for eCognition GRID, page 4.
- All validated Linux operating systems, see Linux Server Operating Systems for eCognition GRID, page 4

System Requirements for the Administration Console

The system requirements for the Administration Console are defined by your preferred web browser. While the console should work with most standard web browsers, it has been validated for the following:

- Microsoft Internet Explorer
- Mozilla Firefox
- Google Chrome

1.6.3 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 disk 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

1.6.4 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 GRID, 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.

3.1 Red Hat Enterprise Linux Server release 6 and 7

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
```

3 Example Linux Packages that Meet Runtime Requirements

```
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
```

Acknowledgments

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[gdal/frmts/gtiff/tif_float.c](#)

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[gdal/frmts/hdf4/hdf-eos/*](#)

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[gdal/frmts/pcraster/libcsf](#)

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This code is derived from the code associated with the book "An Introduction to NURBS" by David F. Rogers. More information on the book and the code is available at:

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[gdal/alg/thinplatespline.cpp](#)

IEEE754 log() code derived from:

@(#)e_log.c 1.3 95/01/18

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gdal/frmts/mrf/* (apply when MRF driver included in build)

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So far as we are aware, there are no patent restrictions on the remaining code. The IJG distribution formerly included code to read and write GIF files.

To avoid entanglement with the Unisys LZW patent, GIF reading support has been removed altogether, and the GIF writer has been simplified to produce "uncompressed GIFs". This technique does not use the LZW algorithm; the resulting GIF files are larger than usual, but are readable by all standard GIF decoders.

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