

Installation Guide

ZEISS ZEN 3.5 (blue edition)



ZEISS ZEN 3.5 (blue edition)

Original Manual

Carl Zeiss Microscopy GmbH
Carl-Zeiss-Promenade 10
07745 Jena
Germany
microscopy@zeiss.com
www.zeiss.com/microscopy



Carl Zeiss Microscopy GmbH
ZEISS Group
Kistlerhofstr. 75
81379 München

Document Name: ZEISS ZEN 3.5 (blue edition) Installation Guide
Revision: 1
Language: en-US
Effective from: 10/2021

© 2021 Without the prior written consent of ZEISS, this document or any part of it must neither be translated nor reproduced or transmitted in any form or by any means - including electronic or mechanic methods, by photocopying, recording or by any information or filing system. The right to make backup-copies for archiving purposes shall remain unaffected thereby. Any violations may be prosecuted as copyright infringements.

The use of general descriptive names, registered names, trademarks, etc. in this document does not imply that such names are exempt from the relevant intellectual property laws and regulations and therefore free for general use. This shall also apply if this is not specifically referred to. Software programs shall entirely remain the property of ZEISS. No program or subsequent upgrade thereof may be disclosed to any third party, copied or reproduced in any other form without the prior written consent of ZEISS, even if these copies or reproductions are destined for internal use at the customer's only, the only exception being one single back-up copy for archiving purposes.

Content

1	System Requirements	4
1.1	ZEISS Microscopy Software.....	4
1.2	LSM 900	4
1.3	LSM 980	5
1.4	LSM 800	5
2	Changes on the operation system	7
3	How to separate operating system and user data	8
3.1	Setting up storage locations	8
3.2	Moving default directories.....	10
4	Configure security software	12
4.1	Before installation	12
4.2	After installation.....	12
4.2.1	Default folders.....	13
4.2.2	Temporary files.....	14
4.2.3	System specific folders.....	14
4.3	Summary.....	14
5	Installing ZEN	16
6	Installing Remote API Client (for SEM systems)	20
7	Installing MATLAB.....	22
8	Sharing a folder for Direct Processing	26
8.1	Looking up the IP address of your computer	30
8.2	Connecting computers via cable	31
9	Compatible cameras	32
10	Troubleshooting	33
10.1	Fixing a failing ZeissPy installation (Ordinal242/MKL-load-failed error)	33
10.1.1	Removing files from the System32 folder.....	33
10.1.2	Setting a new environment variable.....	33
10.2	Fixing runtime or compatibility issues for externally trained neural networks.....	33

1 System Requirements

1.1 ZEISS Microscopy Software

Minimum System Requirements	Recommended system requirements
Intel® CPU with 6 cores, 3.3 GHz (e.g. Intel® Core® i5-10600 CPU)	Intel® Xeon® CPU with 4 cores, 3.8 GHz (e.g. Intel® Xeon® Gold 5222)
16 GB RAM	64 GB RAM
Graphics adapter with support for resolutions of at least 1920 x 1200, 32 Bit true color, DirectX® 12.0 or higher (e.g. integrated Intel® UHD Graphics 630 or dedicated graphic card NVIDIA Quadro P1000 4GB)	Graphics adapter with support for resolutions of 3840 x 2160 Pixel ("4K"), 32 Bit true color, DirectX® 12.0 (or higher), OpenGL® 4.5 (or higher) (e.g. dedicated graphic card NVIDIA Quadro RTX4000 8 GB)
Hard drive 1 x 512 GB SSD NVMe and 1 x 8 TB HDD SATA 6Gb/s	Hard drive 1 x 512 GB SSD NVMe and 2 x 6 TB HDD SATA 6Gb/s (configured as 6 TB RAID 1)
2 x USB 2.0 and 2 x USB 3.0	4 x USB 2.0 and 2 x USB 3.0
Monitor: 24" TFT display, vertical resolution 1200 pixels at least	Monitor: 27" TFT display, vertical resolution 1440 pixels at least
	PCIe interface: 2 available PCI Express x8 Gen2 slots for camera interface cards
Microsoft® Windows® 10 x64 Professional or Enterprise, no special customer adapted versions.	
Windows N editions do not support basic media functionality, so that they cannot be used for the ZEN application.	
The user must be logged on with at least user privileges. For the software installation procedure local administrator rights are required.	
For specific hardware requirements of microscope systems or software modules please refer to the corresponding system or module description.	

1.2 LSM 900

Without Airyscan 2	With Airyscan 2
Intel® Core i5-6500 4-core 3,2 GHz	Intel® Xeon® CPU with 4 cores
Microsoft® Windows® 10	
HP Z240 or newer	HP Z6G4 (highly recommended with Airyscan 2 Multiplex Mode)
32 GB RAM	64 GB RAM
	NVIDIA Quadro P4000 (highly recommended with Airyscan 2 Multiplex Mode)

1.3 LSM 980

Without Airyscan 2 or ELYRA	With Airyscan 2 or ELYRA
Intel® Xeon® CPU with 4 cores	Intel® Xeon® CPU with 8 cores
HP Z840 or Z6G4	
32 GB RAM	64 GB RAM (96GB recommended)
4 or 8TB hard disk space configured as RAID 10	
Microsoft® Windows® 10	
NVIDIA Quadro P400 (only for monitors up to 27")	NVIDIA Quadro P4000 (or M4000 upgrade)
	RAID 10 HDD
	10 Gbit Ethernet Adapter recommended

1.4 LSM 800

Minimum System Requirements	Recommended System Requirements
Intel® Core i5-6500 4-core 3,2 GHz	Intel® Xeon® E5-2643 4-Core 3.0 GHz
Intel® C236 chipset	Intel® C602 chipset
16 GB DDR3-RAM	64 GB DDR3-RAM
Graphics interface PCIe Express x16	
Graphics adapter NVIDIA CUDA capable graphics card supporting resolutions up to 4K, e.g. NVIDIA Quadro K2200 , 32-bit true color, DirectX 11.0 or higher	NVIDIA CUDA capable graphics card supporting resolutions up to 4K, e.g. NVIDIA Quadro M4000, 32-bit true color, DirectX 11.0 or higher
Monitor 27" TFT , vertical resolution 1200 pixels at least	Monitor 30" TFT, vertical resolution 1440 pixels at least
Hard disk 1 x 128 GB SSD and 1 x 4 TB SATA 3.0 Gbit/s4 DVD-ROM DL drive (compatible with dual layer media)	Hard disk 1 x x 256 GB SSD and 4 x 2 TB SATA2 (configured as 4 TB RAID 10 hard drive) DVD-ROM DL drive (compatible with dual layer media)
2x free PCIe x4	2x free PCI Express x8 Gen2
Trigger-Board and Signal Distribution Box	
1 x FireWire IEEE 1394a interface	2 x FireWire IEEE 1394a interface
2 x serial interface (COM1 – COM2)	
4 x USB 2.0, 2 x USB 3.0 interfaces	
Microsoft® Windows® 7 SP1 x64 Professional or Ultimate or Microsoft® Windows® 10 x64 Enterprise (not for Trigger board) No special customer adapted versions	

Minimum System Requirements	Recommended System Requirements
The user must be logged on as a member of the local 'User' group	
For the software installation procedure local administrator rights are required	
The hardware requirements of modules can be higher	

2 Changes on the operation system

NOTICE

Installation of software, hardware drivers, changes to operating system settings or other system interference beyond the actions needed to operate the software are always in the responsibility of the customer, because the potential impact can not be estimated.

The following modifications have, in our experience, no effects on the functionality of the PC system:

- Network integration possible
- Installation of security software / antivirus software (highly recommend if your PC is attached to a network)
- Logon as Domain Users in an Active Directory environment (possibly with local administrator privileges if user needs to install software)
- Installation of standard software (e.g. Microsoft Office)
- Installation of printers
- Windows automatic updates and third-party software updates (Windows Service Packs are to be considered different)
Information about allowed Windows service packs can be found in the corresponding system requirements.

Recommended settings

Windows 10

- When installing updates under settings select '**Current Branch for Business**'.

Effects of following modifications can not be estimated:

- Modifications in the Windows operating system
- Implementation of group policies and scripts
- Installation of third-party software with hardware support.
- Installation of third-party software for generating large data rates (such as backup software) due to possible performance problems of the simultaneous operation of Fast Acquisition Systems
- Storage of data on network drives by redirecting folder structures (e.g. there can occur performance problems in case of Fast Acquisition systems or limitation of the available data storage capacity (disk quota))

Info

If problems occur, the system can be restored to the state of delivery by a ZEISS service technician.

3 How to separate operating system and user data

The following guide shows how to move the standard folders for documents, images and the desktop from drive **C:\ (Operating System)** to drive **D:\ (User Data)**. This prevents images and documents from being stored on the small system drive. The access rights and restrictions are retained. If additional Windows user accounts are created, it is recommended to use this procedure for them as well.

- **Use of drive C:** for operating system, programs, swap file (pagefile.sys, SWAP)
- **Use of drive D:** for user data (images, documents,...)

The description is exemplary for the user '**zeiss**'. The settings are already pre-configured ex works for the Workstation Premium (Order number **410203-9911-000**) and Workstation Compact (**410201-9911-000**)

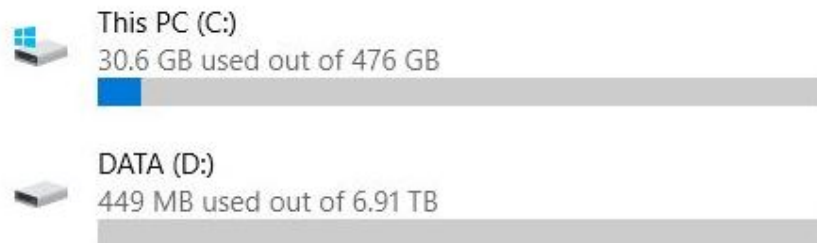
3.1 Setting up storage locations

1. In the Windows **Start** menu go to **Settings > System > Storage > Save locations**.

2. Change the settings for **New documents** and **New photos and videos** to **DATA (D:)** and click **Apply**.

Storage

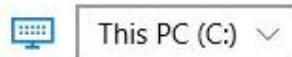
Choose a drive to see what's taking up space.



Save locations

Change where your apps, documents, music, pictures and videos are saved by default.

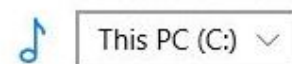
New apps will save to:



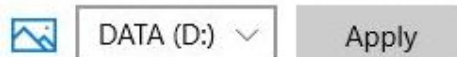
New documents will save to:



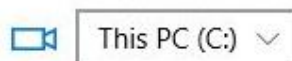
New music will save to:



New photos and videos will save to:

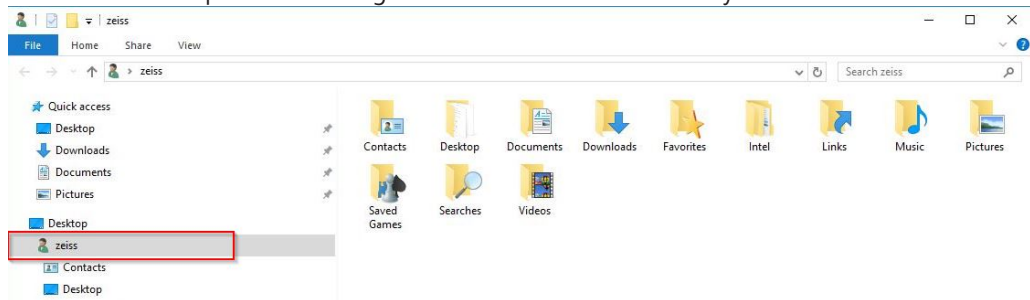


New movies and TV shows will save to:

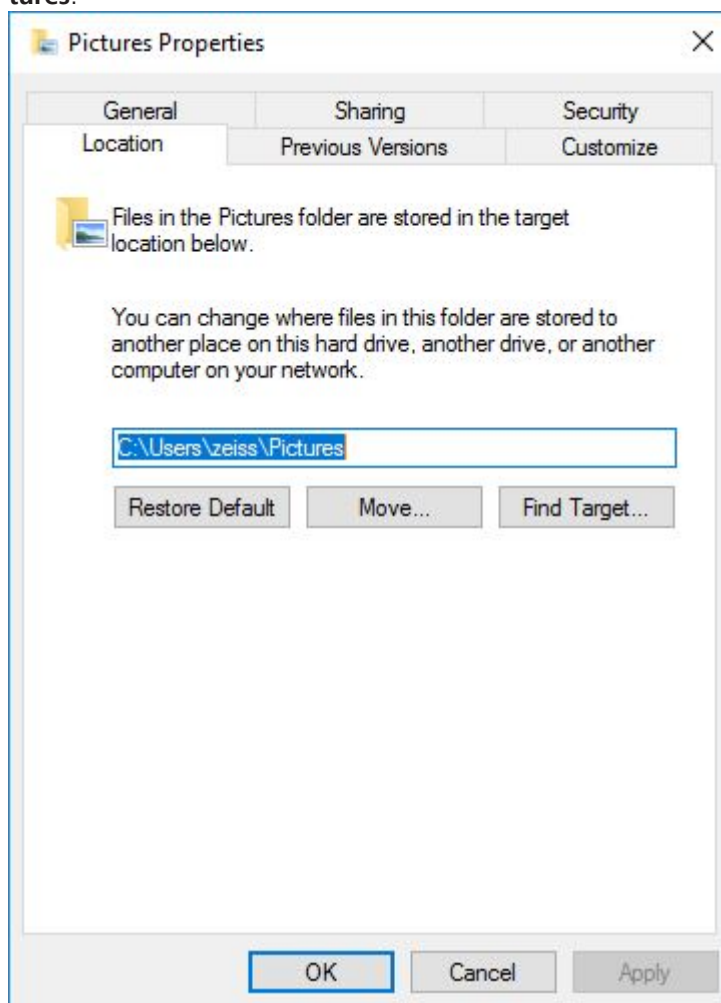


3.2 Moving default directories

1. Start Windows Explorer and navigate to the 'zeiss' user directory.



2. Select **Pictures** and open the **Properties** menu via right mouse click.
3. In the **Location** tab click **Move...** and change the destination location to **D:\zeiss\pictures**.

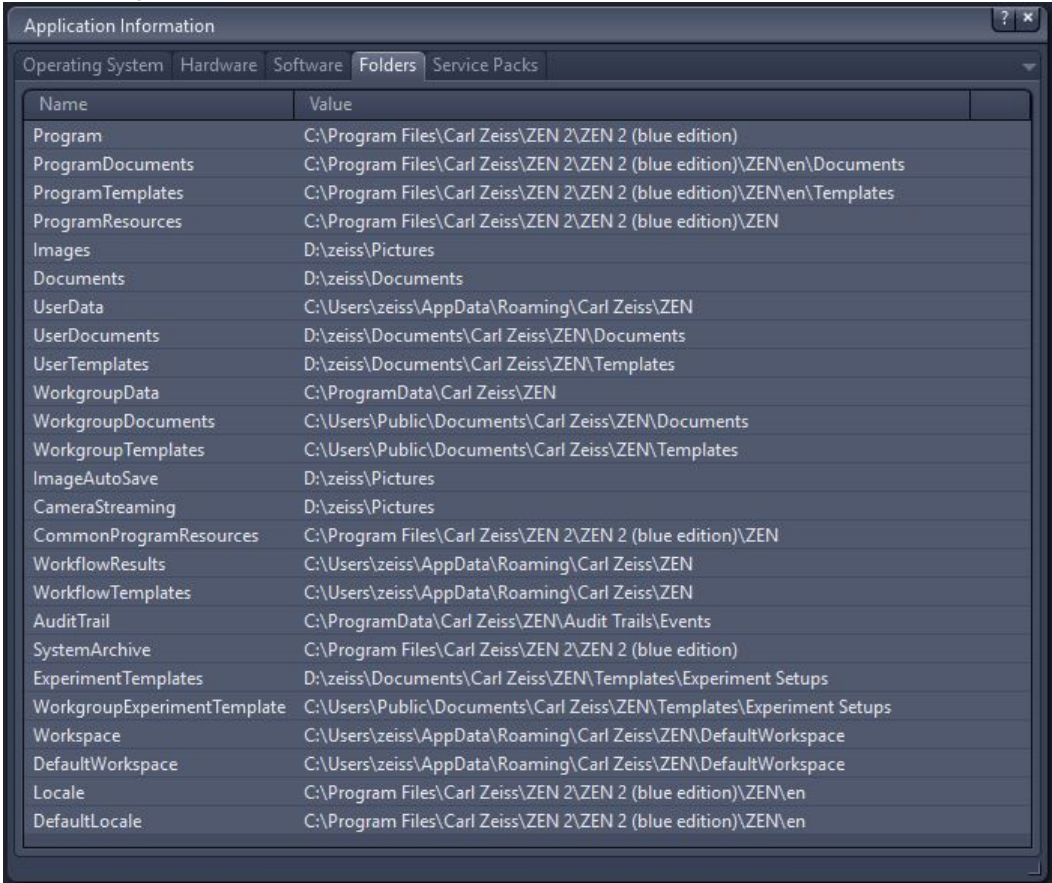


4. Close the dialog with **OK** and answer the occurring message with **Yes** and **Replace file at destination**.
5. Change the path for the **Documents** and **Desktop** folder in the same way.

Note the following:

- The folder **D:\zeiss\Desktop** must be created manually (via **New folder**).
- Changes can be undone by clicking **Restore Default**.

- The resulting directories in the software are:



Name	Value
Program	C:\Program Files\Carl Zeiss\ZEN 2\ZEN 2 (blue edition)
ProgramDocuments	C:\Program Files\Carl Zeiss\ZEN 2\ZEN 2 (blue edition)\ZEN\en\Documents
ProgramTemplates	C:\Program Files\Carl Zeiss\ZEN 2\ZEN 2 (blue edition)\ZEN\en\Templates
ProgramResources	C:\Program Files\Carl Zeiss\ZEN 2\ZEN 2 (blue edition)\ZEN
Images	D:\zeiss\Pictures
Documents	D:\zeiss\Documents
UserData	C:\Users\zeiss\AppData\Roaming\Carl Zeiss\ZEN
UserDocuments	D:\zeiss\Documents\Carl Zeiss\ZEN\Documents
UserTemplates	D:\zeiss\Documents\Carl Zeiss\ZEN\Templates
WorkgroupData	C:\ProgramData\Carl Zeiss\ZEN
WorkgroupDocuments	C:\Users\Public\Documents\Carl Zeiss\ZEN\Documents
WorkgroupTemplates	C:\Users\Public\Documents\Carl Zeiss\ZEN\Templates
ImageAutoSave	D:\zeiss\Pictures
CameraStreaming	D:\zeiss\Pictures
CommonProgramResources	C:\Program Files\Carl Zeiss\ZEN 2\ZEN 2 (blue edition)\ZEN
WorkflowResults	C:\Users\zeiss\AppData\Roaming\Carl Zeiss\ZEN
WorkflowTemplates	C:\Users\zeiss\AppData\Roaming\Carl Zeiss\ZEN
AuditTrail	C:\ProgramData\Carl Zeiss\ZEN\Audit Trails\Events
SystemArchive	C:\Program Files\Carl Zeiss\ZEN 2\ZEN 2 (blue edition)
ExperimentTemplates	D:\zeiss\Documents\Carl Zeiss\ZEN\Templates\Experiment Setups
WorkgroupExperimentTemplate	C:\Users\Public\Documents\Carl Zeiss\ZEN\Templates\Experiment Setups
Workspace	C:\Users\zeiss\AppData\Roaming\Carl Zeiss\ZEN\DefaultWorkspace
DefaultWorkspace	C:\Users\zeiss\AppData\Roaming\Carl Zeiss\ZEN\DefaultWorkspace
Locale	C:\Program Files\Carl Zeiss\ZEN 2\ZEN 2 (blue edition)\ZEN\en
DefaultLocale	C:\Program Files\Carl Zeiss\ZEN 2\ZEN 2 (blue edition)\ZEN\en

4 Configure security software

The following section explains how to configure your security software for installation and optimum operation of the software properly.

Info

The term security software combines all programs which protect your computer from viruses, unwanted interventions, etc.. This includes virus scanners, firewalls and intrusion detection systems. If you do not adapt the security settings there can be problems while installing or running the software. The following topics will show you how to avoid problems with the security software and adapt the settings correctly.

4.1 Before installation

To ensure correct installation, we recommend to perform the following settings:

- **Restore point**
Set a restore point for the possibility to roll back the system in the case problems occur. It also is possible to ask the local ZEISS support team to create an image of the main drive of the PC before the security software is installed and setup by the customers IT department.
- **Lower security rules**
Set the security rules from '**high**' to '**low**'. Refer to the respective operating instructions of your security software on how to set the security rules.
- **Disable security software**
In rare cases, you may need to disable the security software completely. Make sure that you enable the security software after installation. Refer to the respective operating instructions of your security software on whether to enable or disable the security software.

4.2 After installation

To ensure the optimal operation on Windows, we recommend you to perform the following settings after the installation:

- **Exclude ZEN program files from virus scanning**
Exclude the following files from virus scanning. Refer to the respective operating instructions of your security software on how to exclude files from virus scanning.
 - **ZEN.exe / ZENCore.exe**
 - **ZENService.exe**
 - **ZISProtocolServer.exe**
 - **MTBconfig.exe**
 - **Configuration tool.exe**
 - **AimApplication.exe**
 - **CZCanCheck.exe**
 - **CZCansrv.exe**
 - **System_Maintenance_Tool.exe**
- **Exclude ZEN specific file extensions from virus scanning**
Exclude files with the following file extensions from virus scanning. Refer to the respective operating instructions of your security software on how to exclude file extensions from virus scanning.
 - ***.czi**
 - ***.zvi**

- *.zishm
- *.lsm
- *.zmbi
- **Exclude ZEN specific folders from virus scanning**
Under **About ZEN ... > Show ZEN Information > Folders** you can see the program specific folders. Refer to the respective operating instructions of your security software on how to exclude folders from virus scanning.

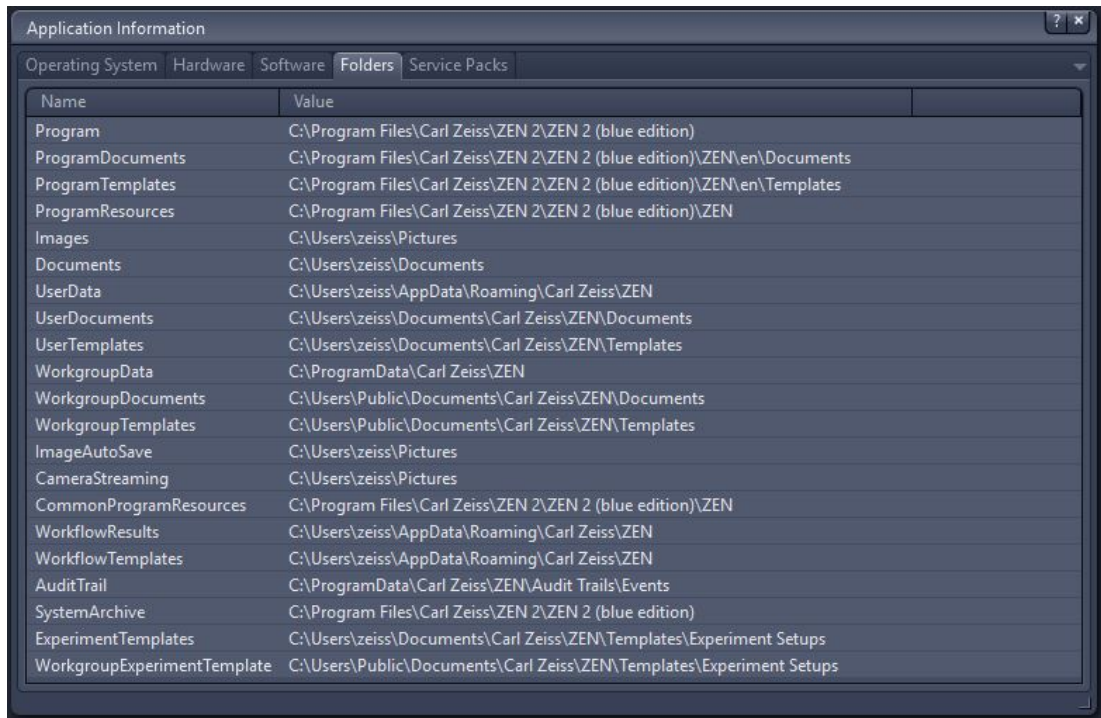


Fig. 1: Program specific folders

4.2.1 Default folders

In the following table you can see the folders to which the captured images will be stored per default.

Operating system	Folder / path
Windows 10:	Pictures and %USERPROFILE%\Pictures and C:\Users\{user name}\Pictures

Change default ZEN image folder

Under **File | Export/Import | Export** or under **File | Save as** change the folder you want to store your images into.

Change default folder for automatic image storage and continuous image acquisition (camera streaming)

Under **Tools | Options | Saving | Auto Save Path** set your desired path/folder.

Change default folder for images on your operating system

- In Windows 10 in the context menu of **Pictures**.

4.2.2 Temporary files

Operating system	Folder / path
Windows 10	%TEMP% or %LOCALAPPDATA%\temp or C:\Users\{user name}\AppData\Local\Temp

Change default folder for temp files

1. Define an appropriate path for the TEMP environment variable (user context).
2. Define the environment variable SWAP indicating a corresponding path.

For Windows 10 this has the following paths or folders that you must exclude from virus scanning:

Operating system	Folder / path
Windows 10 (en)	C:\Users\{user name}\Pictures
Windows 10 (en)	C:\Users\{user name}\AppData\Local\Temp
Windows 10 (en)	%TEMP%
Windows 10 (en)	%SWAP%

4.2.3 System specific folders

If you are using a ZEISS PC system, the location of your images is predefined. The table below show the system specific folders for the following ZEISS Microscopy High-End and Mid-Range work stations:

- Microscopy Workstation High-End GPGPU - 410203-9910-000
- Microscopy Workstation HighEnd - 410203-9909-000
- Microscopy High-End Workstation - 410203-9908-000
- Microscopy Workstation Mid-Range - 410202-9902-000
- Microscopy Mid-Range Workstation - 410202-9901-000
- Microscopy Workstation Compact - 410201-99010-000
- User PC Compact Smartpoo - 410211-9002-000

Operating system	Folder / Path
Windows 10	D:\Users\{user name}\Pictures Default: %SystemDrive%\Users Modified: D:\Users

4.3 Summary

To ensure correct operation of the software it is necessary to ensure that the security software on your computer is not blocking the program. For full functionality you should have made the following settings:

- You have disabled the security software during installation or reduced the security settings.

- You have excluded the entire application, the defined paths or relevant files from virus scanning.

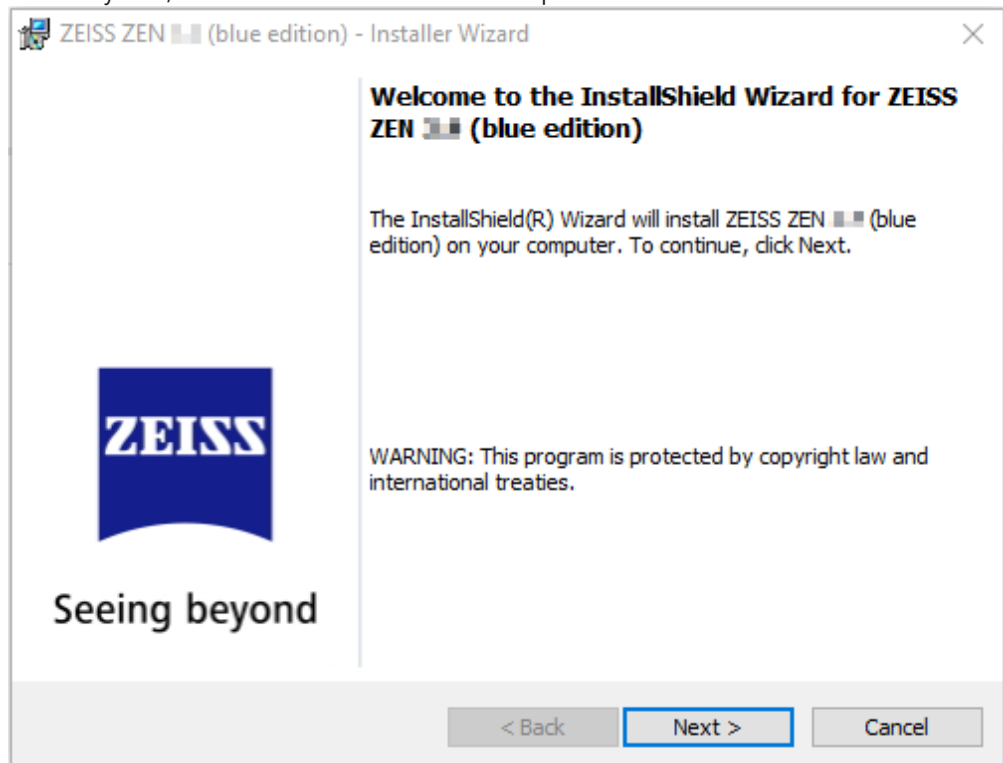
5 Installing ZEN

NOTICE

- ▶ Do not install an older ZEN version over a newer ZEN version.
- ▶ If ZEN is already installed on your PC, during installation the current version will be uninstalled first.
- ▶ If the system requests a restart at the **beginning** of the installation (depends on your PC configuration) you need to agree. Otherwise the installation will not continue.
- ▶ The system requests a restart at the **end** of the installation. This restart is required for the successful camera driver installation.
- ▶ In case of installing ZEN on a SEM system, make sure that SmartSEM is not running when installing ZEN.

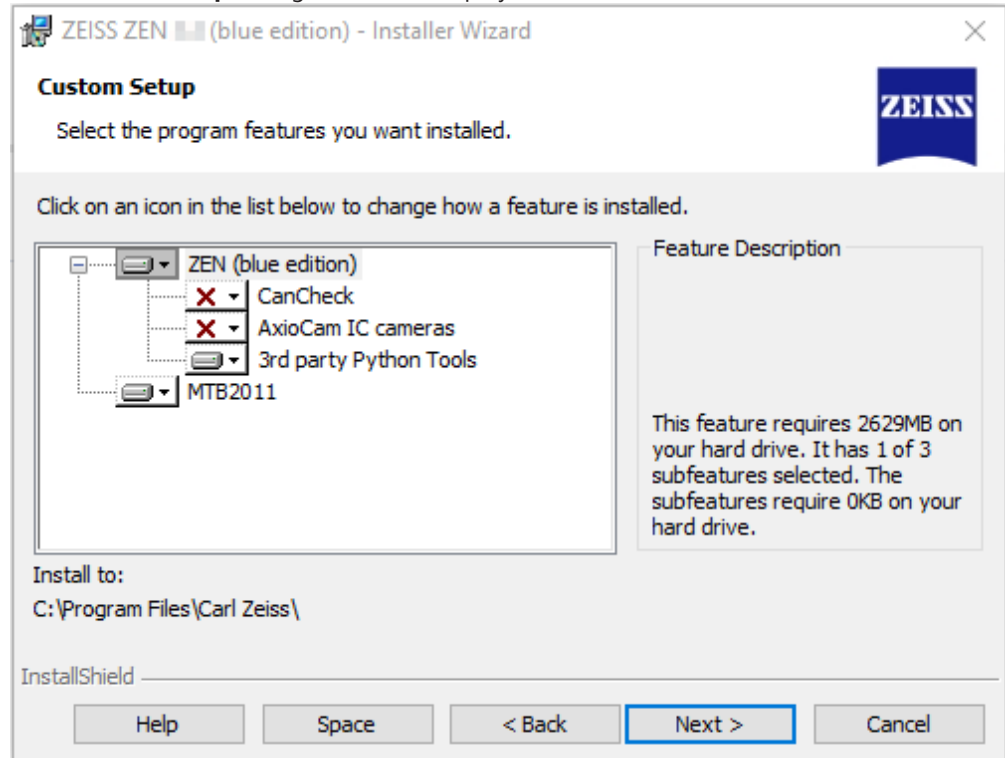
- Prerequisite**
- ✓ You have read the chapter **Configure security software** attentively.
 - ✓ You have opened the **ZEISS Microscopy Installer** with admin rights.
 - ✓ Your system is connected to the Internet.
 - ✓ You have selected (default setting) the online installation, see **ZEISS Microscopy Installer** manual.
1. Open the **Install** tab.
 2. On the left, activate **ZEN (blue edition)** with the respective version number.
 - ➔ The available components and tools for installation are displayed on the right side.
 3. On the right side, activate all components you want to install.
 4. Activate **I agree to the Terms and Conditions of the selected software**.
 5. Click **Install**.
 - ➔ The language selection dialog is displayed.
 6. Select the installation language from the dropdown list and click **OK**.
 - ➔ Depending on your system configurations, additional pre-installation steps can be necessary before you can continue installing the software. If the message dialog appears which tells you to install missing requirements, we recommend to install all the listed requirements and reboot your computer, when asked.

- After the installation of all required system components and after the download of all necessary files, the ZEN **InstallShield Wizard** opens.



7. Click **Next** to start with the installation.
 - The **License Agreement** dialog is displayed.
8. Select **I accept the terms in the license agreement** and click **Next**.
 - The **Destination Folder** dialog is displayed. Here you can select an alternative installation folder. We recommend to leave the default folder settings untouched.
9. Click **Next** to install the software to the default folder or click **Change** to select a different folder.

→ The **Custom Setup** dialog window is displayed.



10. You can leave the default settings and click **Next**. If you do not want to install a certain feature, simply deactivate it in the dropdown menu.

NOTICE! If you install ZEN on a SEM system, deactivate the feature MTB 2011.

→ The **Local ZEISS Apeer Prerequisite** dialog is displayed.

11. Read the information and decide if you want to use the local Apeer functionality and download the necessary Docker tool.

12. Click **Next**.

→ The **Ready to Install the Program** dialog is displayed.

13. Click **Install**.

→ The installation dialog is displayed. The software will be installed now.

→ During installation several messages can appear. Also the **3rd party Python Tools** will be installed, which needs some extra time.

If the **3rd party Python Tools** are not installed, the machine learning based Intellesis modules will not work. This also includes the use of their functionality in other parts of the software, like the neural networks in certain BioApps.

14. Click **I accept the agreement** and click **Next**.

15. Read the **Information** message attentively before you continue with the installation and click **Next**.

→ The **Destination Location** dialog is displayed.

16. We recommend to leave the default folder settings untouched and click **Next**.

→ The **Select Components** dialog is displayed.

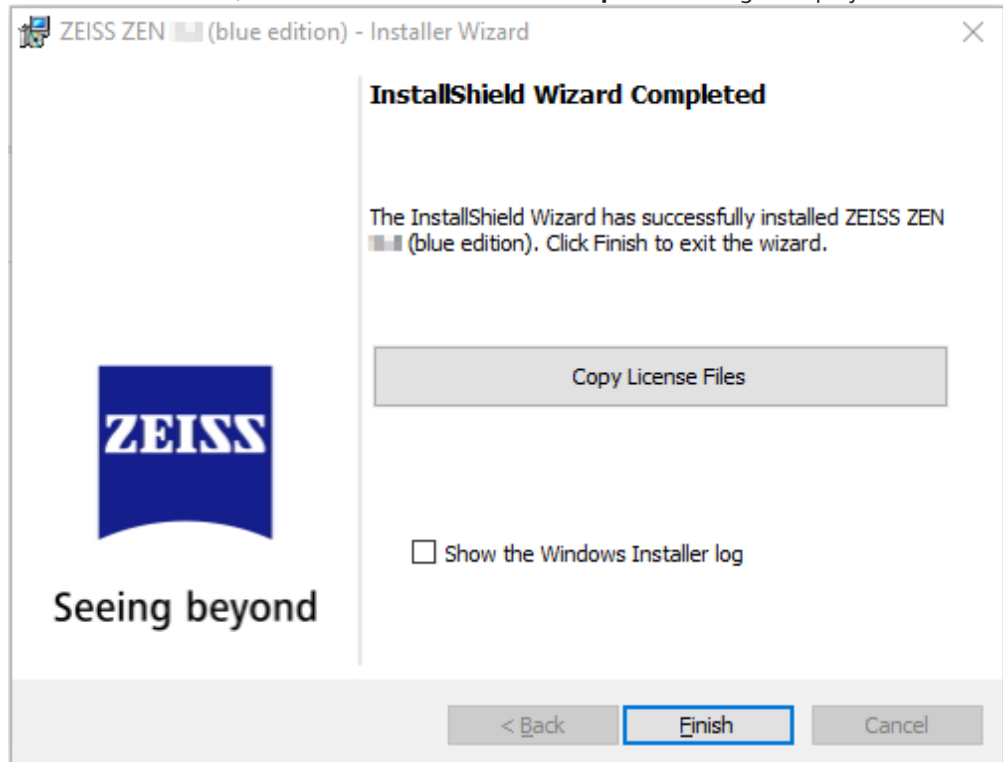
17. Select **GPU-disabled**, if you do not have a GPU or your GPU does not fulfill all minimum requirements (see next step).

18. Select **GPU-enabled**, if your system fulfills the following requirements:

→ **NVIDIA GPU** with **CUDA Compute Capability 3.0** or higher. You can find a list of supported cards under <https://developer.nvidia.com/cuda-gpus>.

→ Make sure that the latest drivers are installed. You can download them under <https://www.nvidia.de/Download/index.aspx>.

- Alternatively, the install medium is additionally shipped with a set of ISV-certified NVIDIA drivers located under **Other\HP Drivers**.
19. Click **Install** to continue with the 3rd party software installation.
 - After the installation the dialog for completing the ZEISS Python setup wizard is displayed.
 20. Click **Finish**.
 - The installation of the ZEN software continues.
 - After the installation, the **InstallShield Wizard Completed** dialog is displayed.



21. Click **Copy License Files** to copy the license files automatically from the supplied USB stick to your computer.
22. Exit the **Copy License File** dialog first and then click **Finish**.
23. Connect the included dongle to a free USB port.
24. Close the **ZEISS Microscopy Installer** and restart your PC to complete the installation.

After the restart of your computer the installation was successful. Start the software by clicking on the ZEN blue icon on your desktop.

If you install ZEN on a computer for a SEM system, continue with the next chapter.

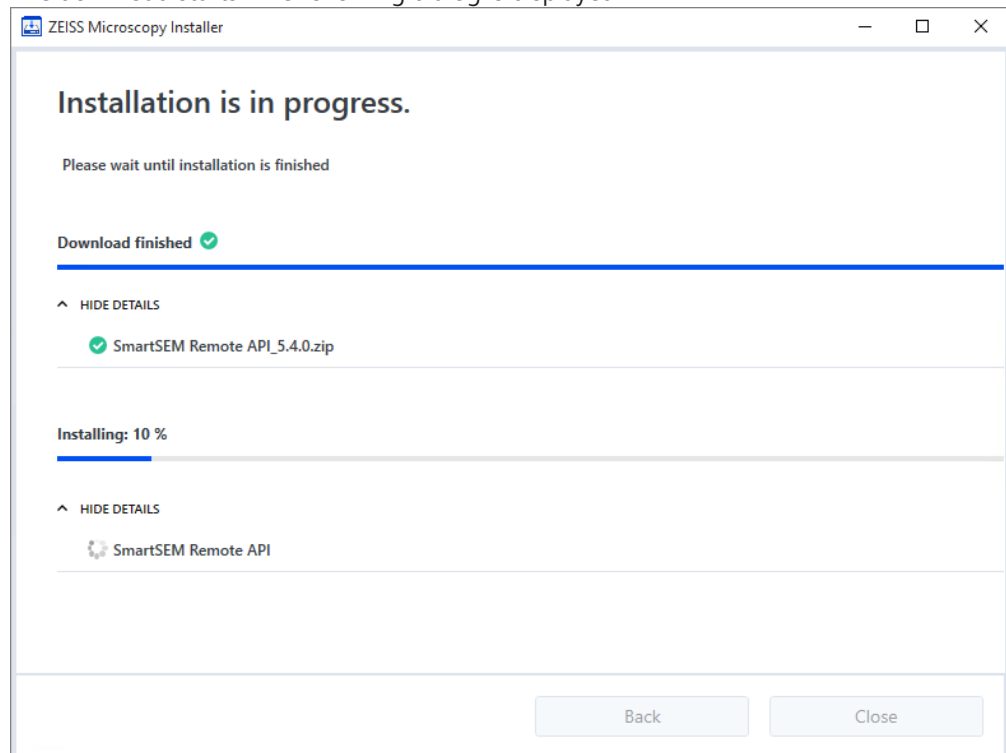
6 Installing Remote API Client (for SEM systems)

To enable communication between SmartSEM and ZEN, the **RRemote Client** has to be installed on the **SEM** system as well. After the ZEN software is installed, install the **RRemote Client**.

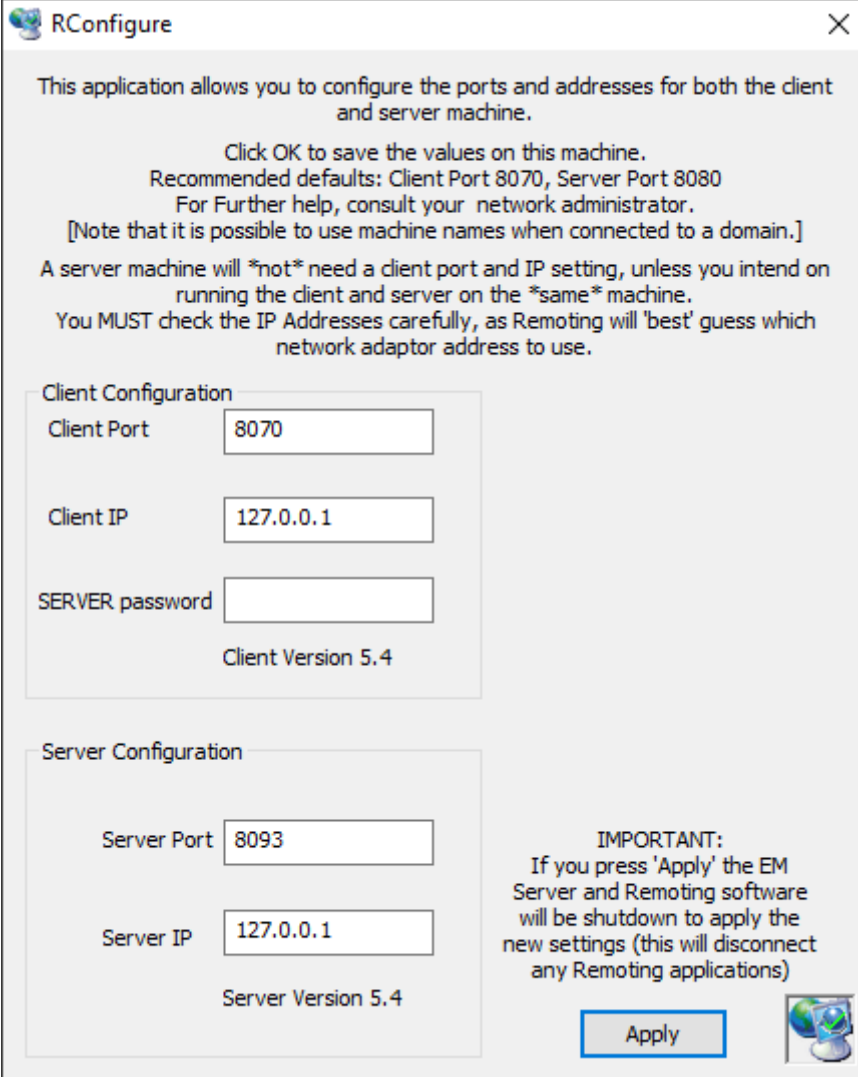
- Prerequisite**
- ✓ You have read the chapter *Configure security software* [▶ 12] attentively.
 - ✓ You have opened the **ZEISS Microscopy Installer** with admin rights.
 - ✓ Your system is connected to the Internet.
 - ✓ You have selected (default setting) the online installation, see **ZEISS Microscopy Installer** manual.
 - ✓ You have closed **SmartSEM** and **EM Server**.

1. Open the **Install** tab.
2. Activate ZEN (blue edition) > **Tools and accessories** > **SmartSEM Remote API**.
3. Activate **I agree to the Terms and Conditions of the selected software**.
4. Click **Install**.

→ The download starts. The following dialog is displayed:



- After the download, the installation starts. Several installation dialogs are displayed, but no action is required. Wait until the different windows have disappeared. After the installation procedure you can check the configuration with the tool **RConfigure** (open from Windows Start menu).



The screenshot shows the RConfigure dialog box with the following content:

RConfigure [Close]

This application allows you to configure the ports and addresses for both the client and server machine.

Click OK to save the values on this machine.
Recommended defaults: Client Port 8070, Server Port 8080
For Further help, consult your network administrator.
[Note that it is possible to use machine names when connected to a domain.]
A server machine will *not* need a client port and IP setting, unless you intend on running the client and server on the *same* machine.
You MUST check the IP Addresses carefully, as Remoting will 'best' guess which network adaptor address to use.

Client Configuration

Client Port:

Client IP:

SERVER password:

Client Version 5.4


Server Configuration

Server Port:

Server IP:

Server Version 5.4

IMPORTANT:
If you press 'Apply' the EM Server and Remoting software will be shutdown to apply the new settings (this will disconnect any Remoting applications)

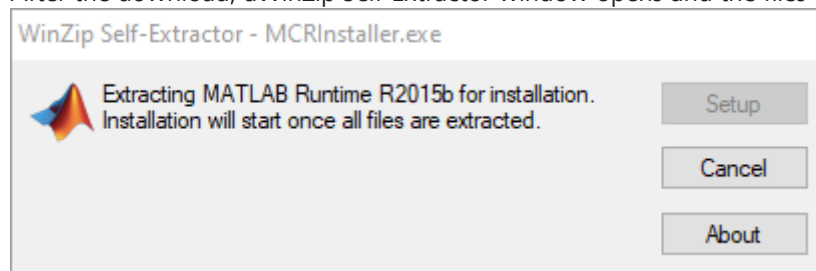


You have successfully installed the Remote Client on your SEM system. You can test the program with the Desktop-App **SmartSEM API Test**.

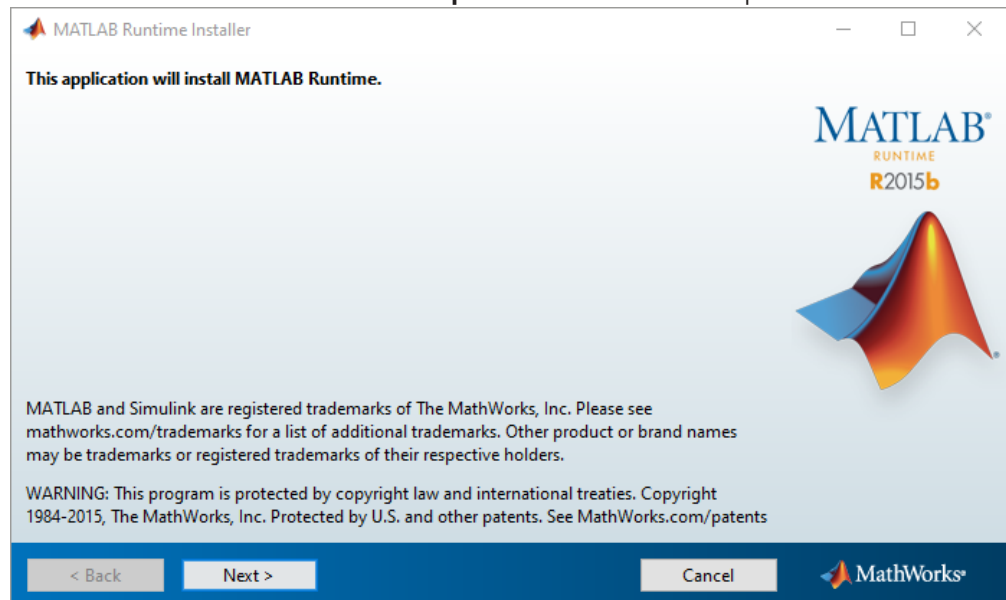
7 Installing MATLAB

If you have bought the **CAT Module** (Correlative Array Tomography) the installation of **MATLAB Runtime** is mandatory on both computers (SEM and LM system). Proceed as follows:

- Prerequisite**
- ✓ You have read the chapter **Configure Security Software** attentively.
 - ✓ You have opened the **ZEISS Microscopy Installer** with admin rights.
 - ✓ Your system is connected to the Internet.
 - ✓ You have selected (default setting) the online installation, see **ZEISS Microscopy Installer** manual.
1. Open the **Install** tab.
 2. On the left, activate **ZEN (blue edition)** with the respective version number.
 - The available components and tools for installation are displayed on the right side.
 3. On the right side under **Third Party Tools**, activate **MATLAB Runtime**.
 4. Activate **I agree to the Terms and Conditions of the selected software**.
 5. Click **Install**.
 - The download of the necessary files starts.
 - After the download, a WinZip Self-Extractor window opens and the files are extracted

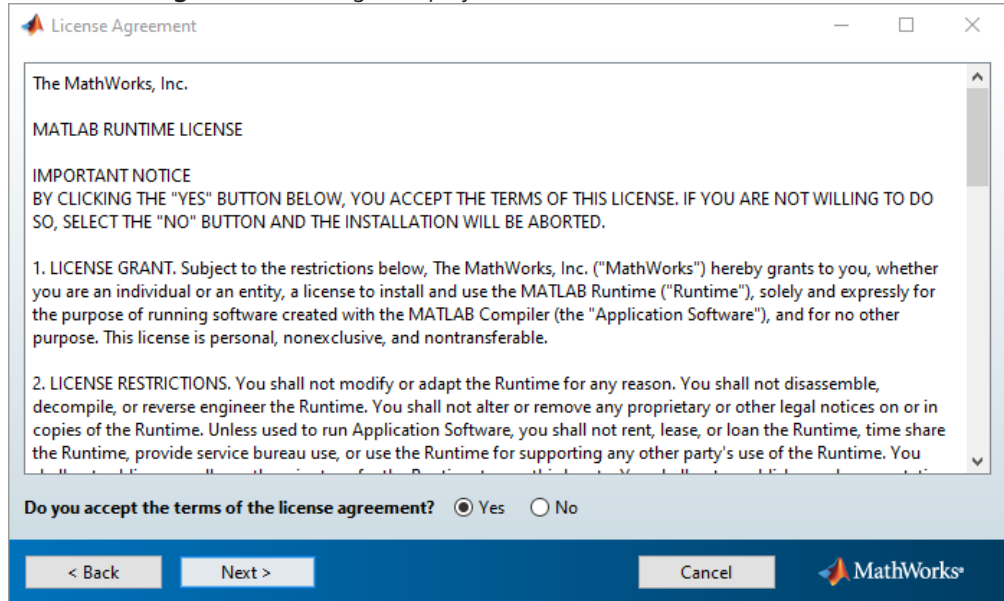


- After the extraction the **MATLAB Compiler Runtime Installer** opens.



6. Click **Next**.

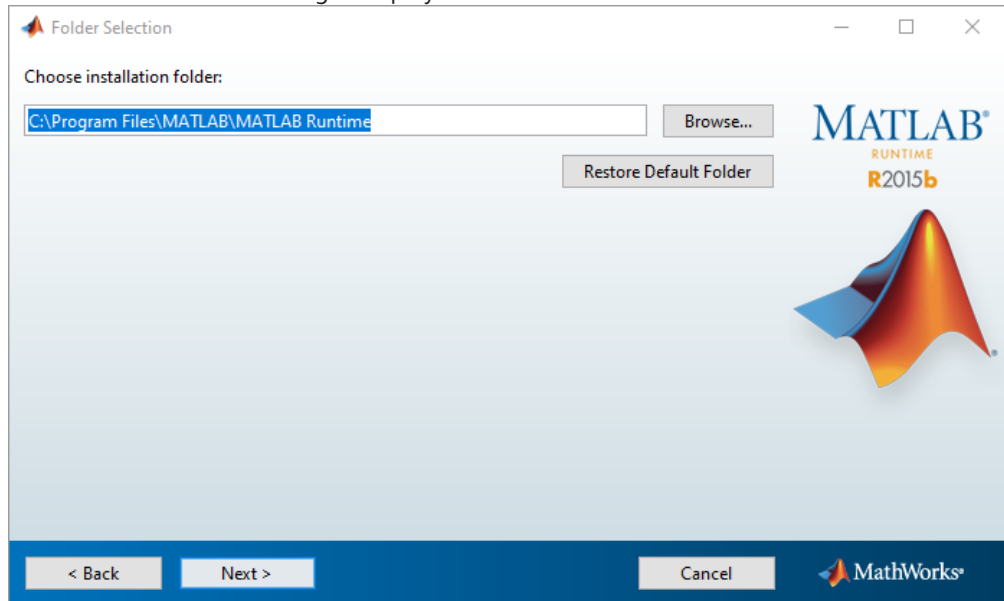
→ The **License Agreement** dialog is displayed.



7. Accept the License Agreement by activating **Yes**.

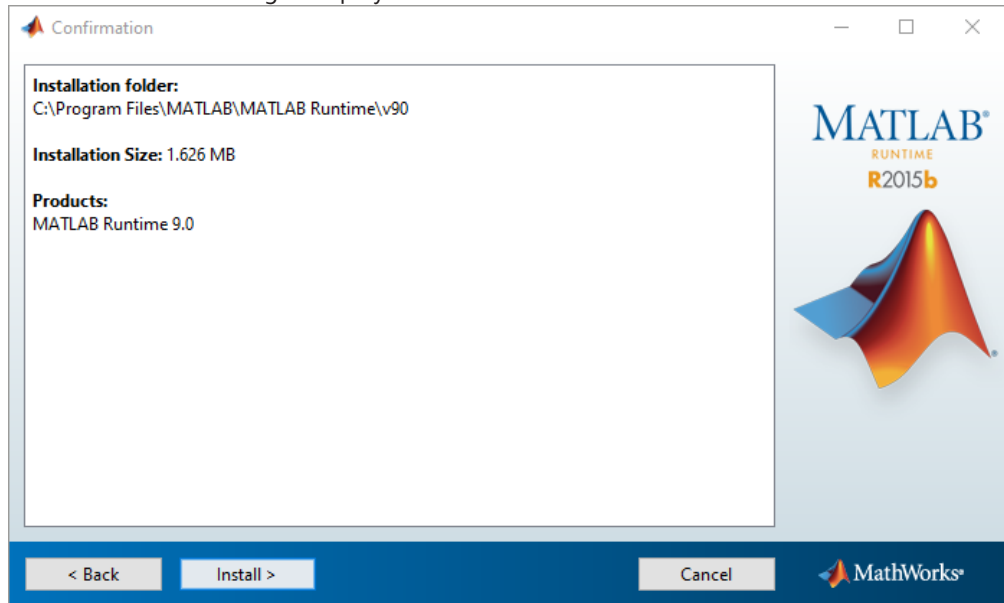
8. Click **Next**.

→ The **Folder Selection** dialog is displayed.



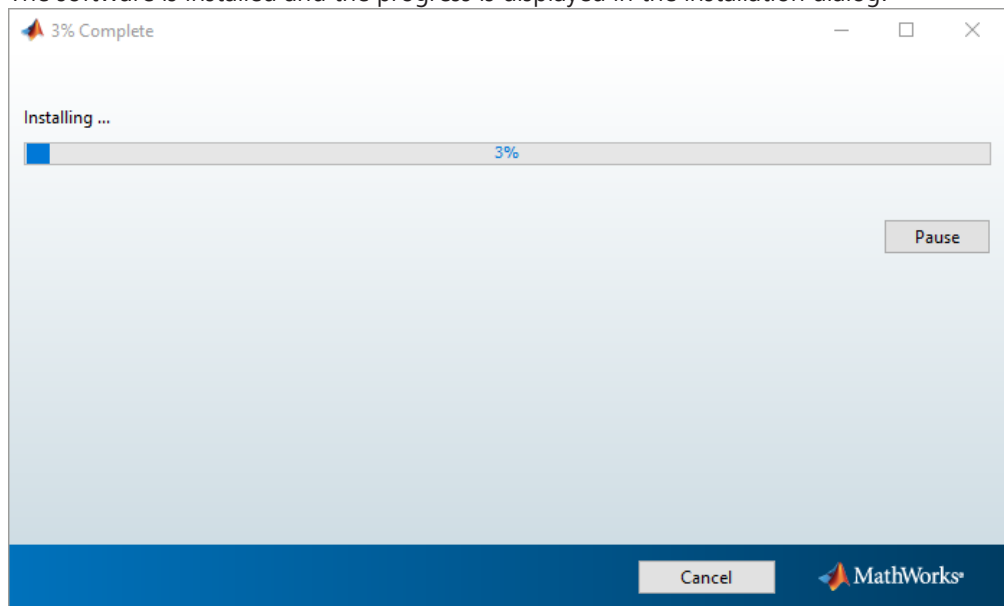
9. Click **Next** to install to default folder.

→ The Confirmation dialog is displayed.

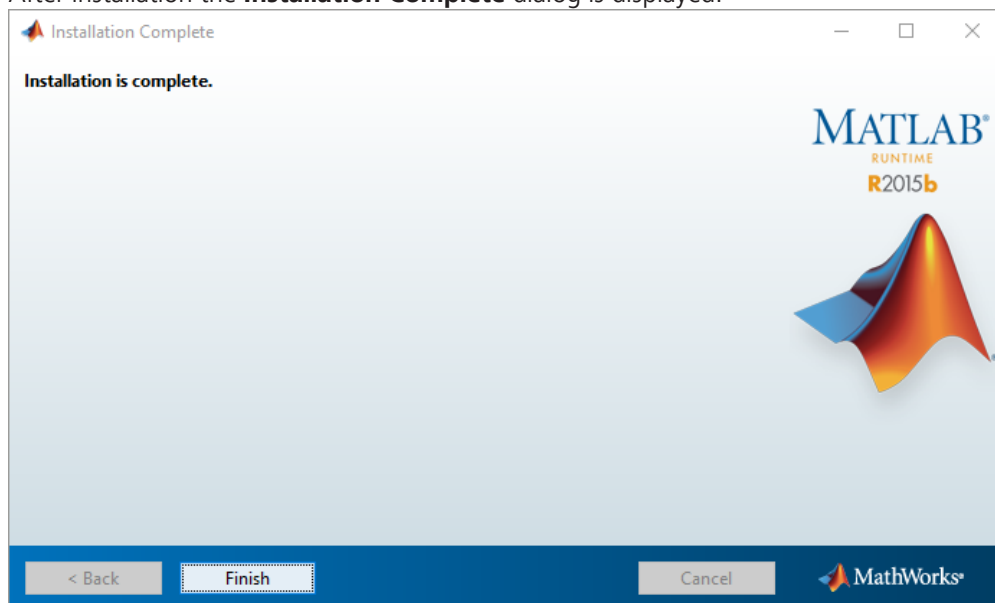


10. Click **Install**.

→ The software is installed and the progress is displayed in the installation dialog.



→ After installation the **Installation Complete** dialog is displayed.



11. Click **Finish**.

You have successfully installed the **MATLAB Runtime** that is necessary for the working with the CAT module.

8 Sharing a folder for Direct Processing

This step by step guide gives instructions on how to create a shared folder for the Direct Processing module in ZEN (blue edition).

You need an imaging system with its workstation (called **acquisition computer**) and for processing you need a high-end workstation (called **processing computer**) with a P6000 card (M/P4000 or M6000 works too) running the newest NVIDIA driver. Both computers need the software version ZEN (blue edition) 3.0 or higher.

Computer connection

The processing computer must be connected to the acquisition computer via ethernet connection. It works best to have both workstations equipped with a 10 GB ethernet card. A 1GB Ethernet is fine as well, just make sure to not create very large images and deactivate **Follow acquisition** in ZEN when acquiring larger images. For details on how to connect your computer in a network, ask your local IT department. For some basic information, see also *Connecting computers via cable* [▶ 31].

IP Addresses

This is not strictly necessary, but knowing the IP Addresses is the safest way to troubleshoot networking issues, so we recommend to check this in any case. It is easiest to network the computers if both have the same login credentials, e.g. Username = ZEISS, password = zeiss. The computers can only network with each other if a password is set for both logins. For a description of how to look up the IP address of your PC, see *Looking up the IP address of your computer* [▶ 30].

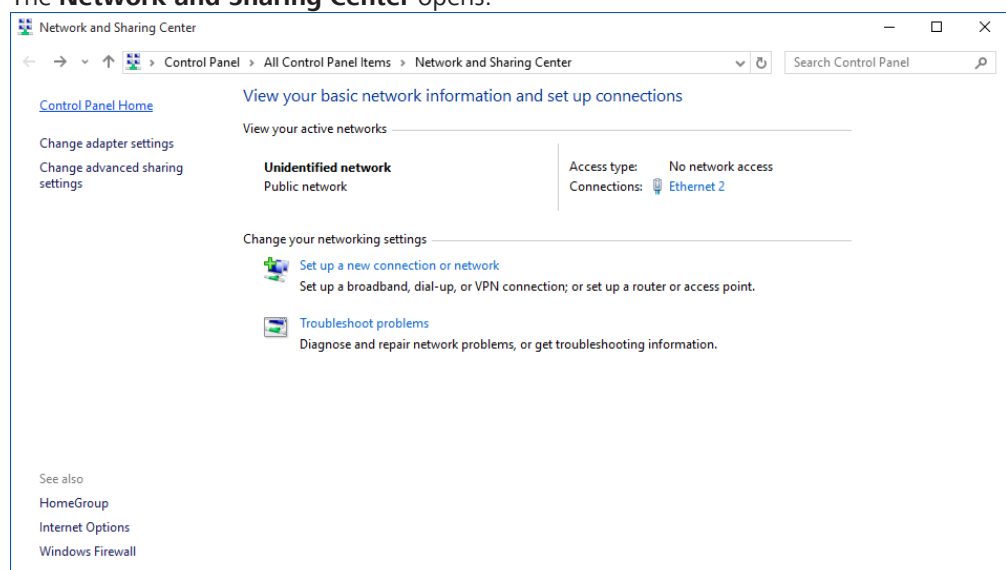
Also note down the computer names. You can find those when you right click the **This PC** in the explorer and select **Properties**

Creating a shared folder on the processing computer

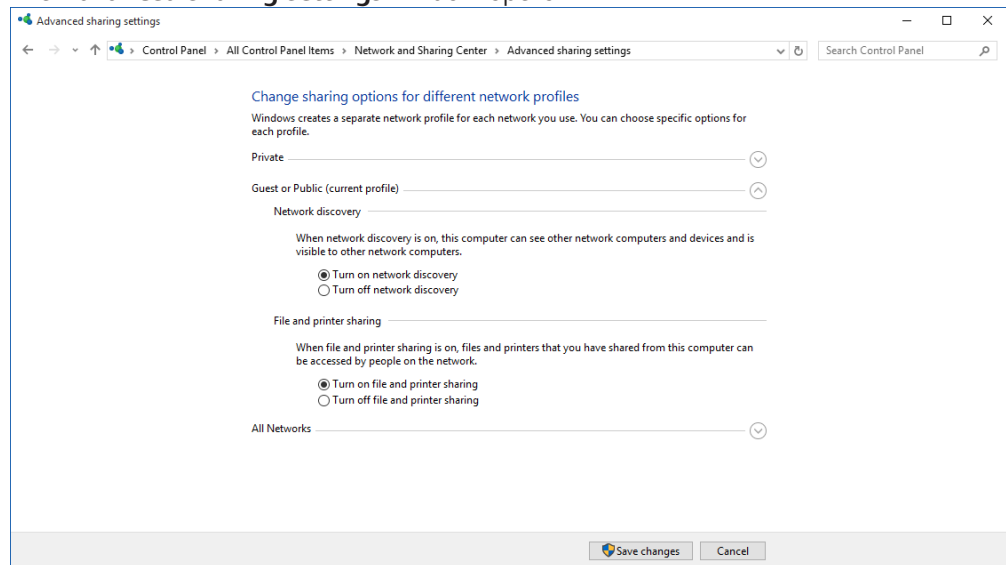
You have to make your processing PC discoverable in your network and create a shared folder.

Prerequisite ✓ You are on the processing computer.

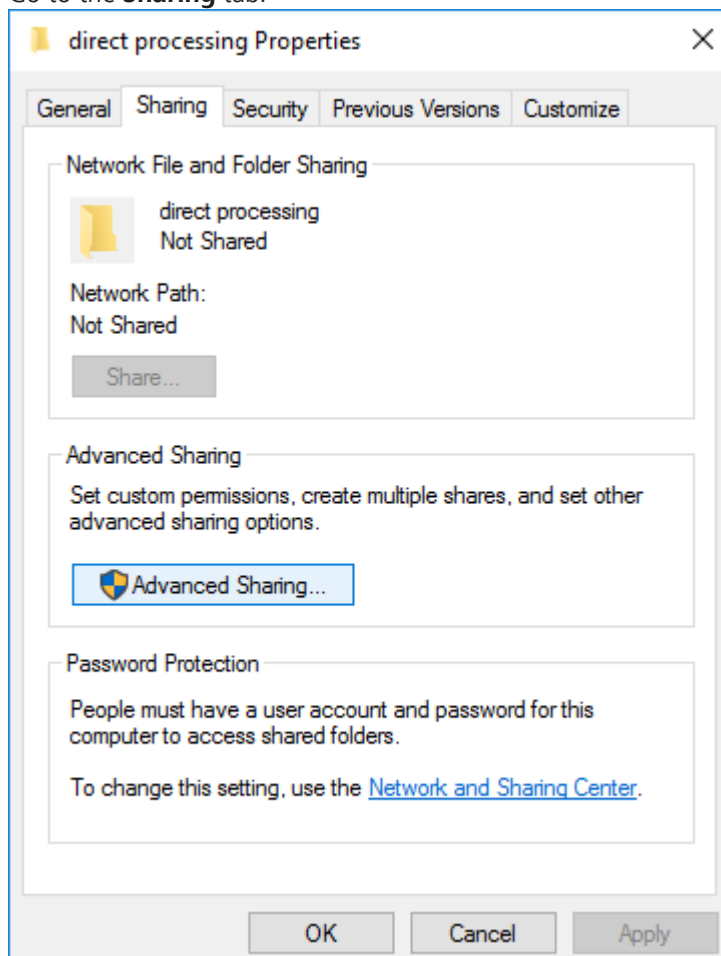
1. Click on Windows start menu > **Settings > Network & Internet > Status > Network and Sharing Center**.
→ The **Network and Sharing Center** opens.



2. Click **Change advanced sharing settings**.
→ The **Advanced sharing settings** window opens.

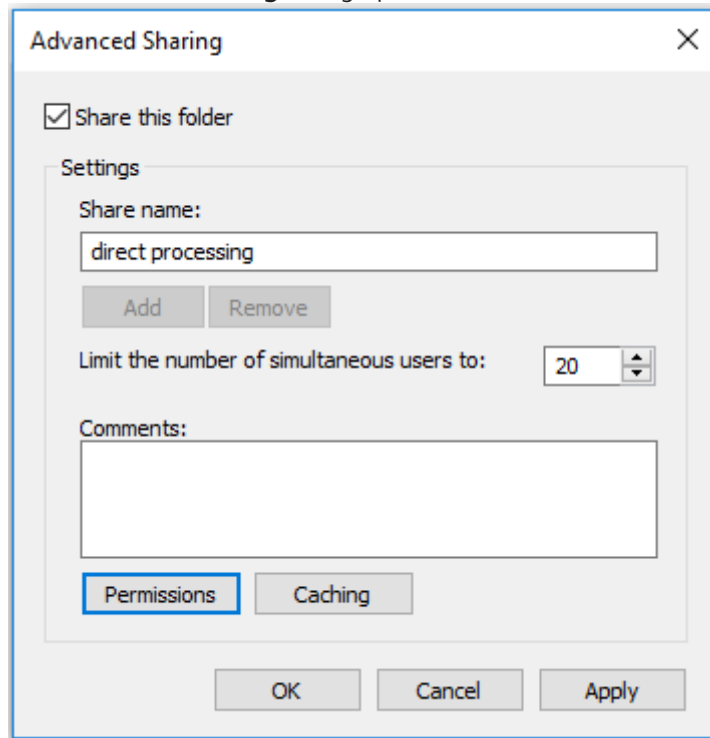


3. Turn on network discovery for your network.
4. Click **Save changes**.
5. Open the **Windows Explorer** and create a folder where both data and communication between both ZENs should happen, e.g. "D:\direct processing".
6. Right click on the folder and select **Properties**.
7. Go to the **Sharing** tab.

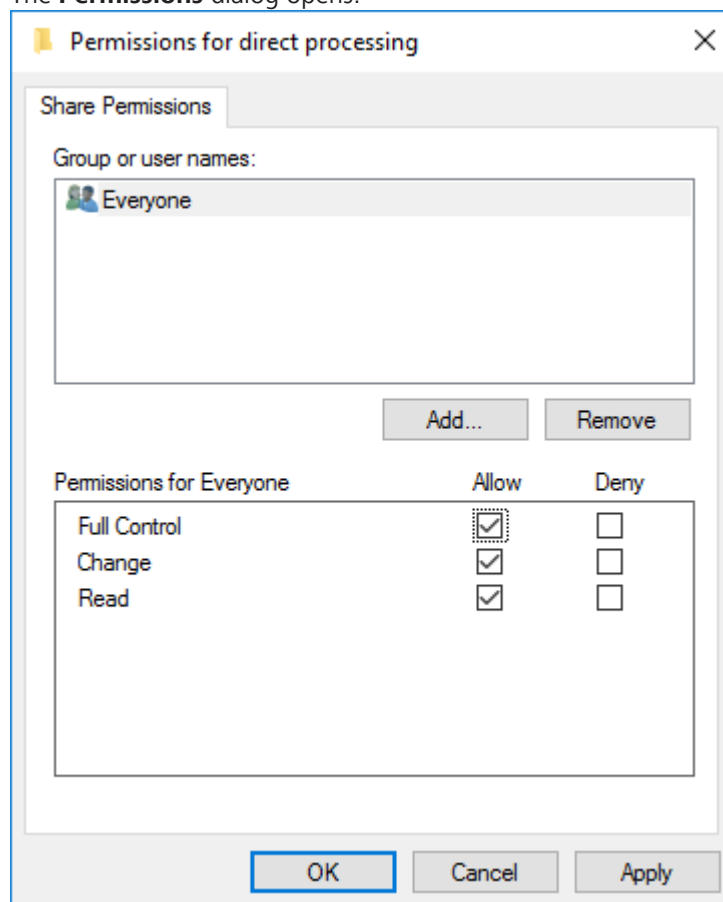


8. Click **Advanced Sharing**.

→ The **Advanced Sharing** dialog opens.

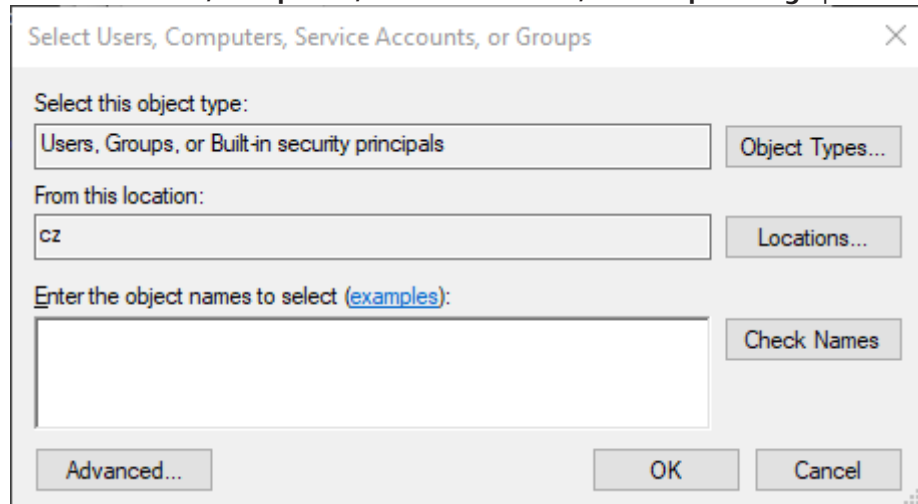


9. Activate **Share this folder**.
10. Click **Permissions**.
11. The **Permissions** dialog opens.



12. To give access to specific groups or people, click **Add**.

→ The **Select Users, Computers, Service Accounts, or Groups dialog** opens.



13. If you want to change which accounts you can add, click **Object Types** to open a dialog to select different types.
14. If you want to change the (network) location, click **Locations** to open a dialog to select the location.
15. In the text field, enter the user or group name you want to give access to and click **Check Names**.
 - If the name exists, it is verified. In case there is no (exact) match, or in case there are multiple matches, a dialog opens where you can refine your search or select the right user/group.
16. Click **OK**.
 - The **Select Users, Computers, Service Accounts, or Groups dialog** closes and the user/group is added to the list on the **Permissions** dialog.
17. Select the user(s)/group(s) and activate the checkboxes for the permissions you want to give them to this folder.
18. Click **OK** to confirm all changes in all dialogs.

You have created a shared folder on the processing computer. You can now setup the access to the folder on the acquisition computer.

Accessing the shared folder from the acquisition computer

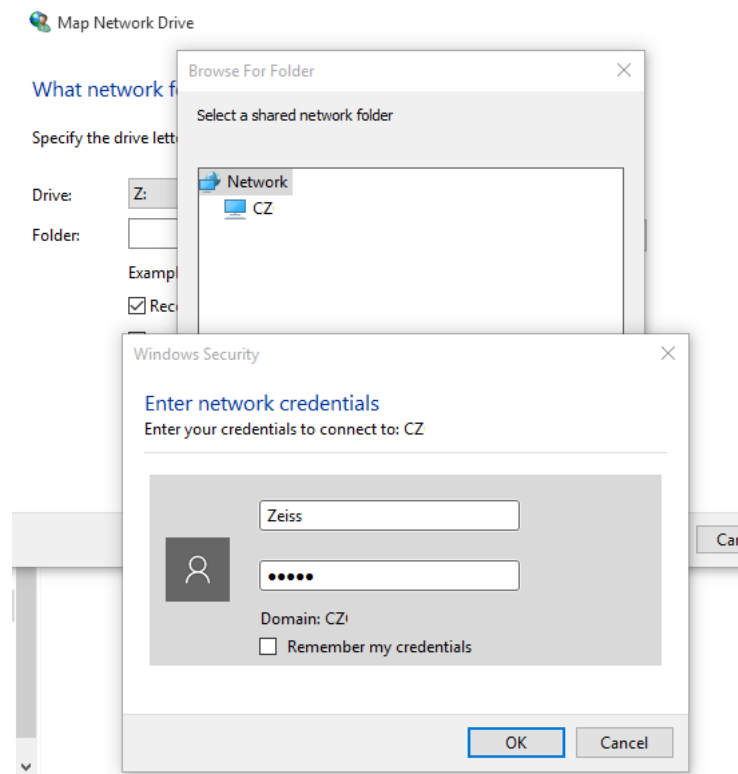
On the acquisition computer, you need to map the folder from the processing computer to a drive letter.

Note: You could also do this by directly accessing the folder via the IP address, however, it is better to use the Windows mapping function as this enables some caching mechanisms which make the connection more reliable.

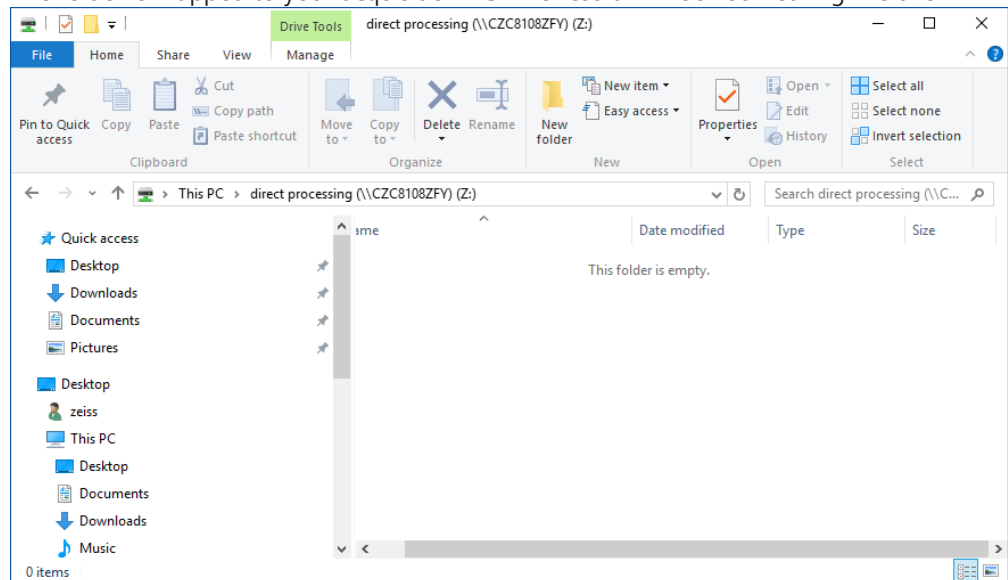
Prerequisite ✓ You are on the acquisition computer.

1. In **Windows Explorer**, open the **Network** location.
2. Select the processing computer. Here you might need the computer name you noted down before.
3. Select the shared folder of the processing computer.
4. On the top of the Windows explorer, click **Easy access** and select **Map as drive** from the dropdown menu.
 - The **Map Network Drive** dialog opens.
5. Select the respective **Drive** for the **Folder**.
 - A log in screen opens.

6. Enter the credentials of the processing computer.



7. Click **OK**.
 8. Click **Finish**.
- The folder is mapped to your acquisition PC. The result will look something like this:



You are now ready to setup the connection of the two computers in ZEN. Please refer to the respective chapter in the software manual or the online help, which is accessible by pressing the *F1* button.

8.1 Looking up the IP address of your computer

1. In the Windows search, enter **cmd**.
2. Select **Command Prompt**.

- The **Command Prompt** window opens.
- 3. Type in **ipconfig/all** and press *Enter*.

You can now see information for the network configuration of your computer. There you can look up the IP address of your computer. You have to make sure to select the correct Ethernet port, as ZEISS workstations usually have at least two. If only one is connected, this is the one which shows an IP address.

8.2 Connecting computers via cable

We recommend connecting the PCs in a network by using i.e. a router. In case a router cannot be used and two PCs are connected via a cable, consider the following remarks:

1. Establish a network by cable.
 - By default, a network/connection is established.
2. As a test, check the IPs of the computers and ping each other.
3. In case this fails, check the ethernet adapter and enable DHCP. Also check firewall notifications/settings.
 - Ports used by ZEN are open by default, but could be blocked by various reasons (IT, Windows, firewall).
4. If a port is blocked. try to set another port in the ZEN options for Direct Processing (see also the help for ZEN).
5. You can also test more than one ethernet adapter by pinging the PCs.

9 Compatible cameras

The table below reveals, which cameras are compatible to the ZEN (blue edition) software.

Compatible ZEISS Axiocams

Camera	Connection
Axiocam 105 color	USB 3.0
Axiocam 202 mono	USB 3.0
Axiocam 208 color	USB 3.0
Axiocam 305 color / mono	USB 3.0
Axiocam 503 color / mono	USB 3.0
Axiocam 506 color / mono	USB 3.0
Axiocam 512 color / mono	USB 3.0
Axiocam 702 mono	USB 3.0
Axiocam 705 color / mono	USB 3.0
Axiocam 712 color / mono	USB 3.0
AxioCam MRc/MRm Rev. 3	FireWire A
AxioCam MRc5	FireWire A
AxioCam HRc/HRm Rev. 3	FireWire A
AxioCam ICc1	FireWire B
AxioCam ICc5	FireWire B
Axiocam ERC5s Rev. 2	USB 2.0

Other, compatible cameras

Camera	Notice
PrimoStar HD	USB only, not via network connection
Primovert HDcam	USB only, not via network connection
Andor: iXon3 888 Ultra/Live USB 3.0, iXon3 897 Ultra/Live USB 3.0	
Hamamatsu: Orca Flash 4.0 V3 CL/USB3.0, Orca Flash LT USB3.0, Orca Fusion, Orca Fusion BT, Image EM X2 512, Image EM X2-1K	
Roper Photometrics: Evolve 512, Evolve 512 Delta, Prime 95 B, 95B 22mm, Prime BSI, Prime BSI Express	
PCO: edge 5.5 CL, edge 4.2 CHLS USB3.0, edge 4.2 bi, edge 4.2 CL, edge 4.2 LT	

10 Troubleshooting

This chapter contains information on how to tackle common problems while installing ZEN (blue edition).

10.1 Fixing a failing ZeissPy installation (Ordinal242/MKL-load-failed error)

In case your ZeissPy installation is failing due to an Ordinal242/MKL-load-failed error, the reason might be that you have some 3rd-Party application installed which modified the System32 folder. During the installation, a warning message will be displayed and inform you about DLLs that are in the System32 folder. For a potential solution, take the following steps:

1. *Remove files from the System32 folder* [▶ 33].
2. *Set a new environment variable* [▶ 33]

10.1.1 Removing files from the System32 folder

1. Open the Windows **File Explorer**.
2. Go to **C:\Windows\System32**.
3. Search for any MKL- or libiomp related files and rename them by adding a **.bak** to the file-name.
4. Observe if any other software application breaks.
5. If an application fails, try to move the DLL files alongside the .exe of the breaking software to another folder. If it works again, you can keep things in the moved state.
6. Check whether the error is gone and ZeissPy can be installed.

If this does not solve the problem, you can also try *Setting a new environment variable* [▶ 33].

10.1.2 Setting a new environment variable

1. In the Windows search, enter **Environment Variable**.
2. Click the search entry **Edit the system environment variables**.
→ The **System Properties** dialog opens.
3. On the **Advanced** tab, click **Environment Variables**.
→ The **Environment Variables** dialog opens.
4. Click **New**.
5. In the **New User Variable** dialog, set the **Variable name** to **CONDA_DLL_SEARCH_MODIFICATION_ENABLE** and for **Variable value** enter **1**.
6. Click **Ok** to close the **New User Variable** dialog.
7. Click **Ok** to close the **Environment Variables** dialog.
8. Click **Ok** to close the **System Properties** dialog.
9. Check whether the error is gone and ZeissPy can be installed.

10.2 Fixing runtime or compatibility issues for externally trained neural networks

In case you run into import or runtime issues in the context of externally trained neural networks, go to <https://pypi.org/project/czmodel/> for information on model and compatibility requirements.

Carl Zeiss Microscopy GmbH
Carl-Zeiss-Promenade 10
07745 Jena
Germany

phone: +49 3641 64 3161
fax: +49 3641 64 3439
info.microscopy@zeiss.com
www.zeiss.com/microscopy