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Contents: This white paper contains general notes and tips and tricks for installing, configuring and setting up a NeuroCheck NCCG Gigabit Ethernet camera including components.

Note: This document is not part of the official product documentation of the NeuroCheck software.

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1. Introduction

The Gigabit Ethernet cameras of the NCCG series can be comfortably integrated into NeuroCheck just like other types of cameras. Due to the technical complexity, situations may arise requiring careful matching of components and detailed configuration to guarantee smooth operation.



You should study the help file for the camera driver (NcDc.NeuroCheck.BO.chm) in any case; this document provides you with additional valuable tips and tricks for smooth system installation.

Unless otherwise indicated, all notes refer to the different NeuroCheck software versions in the same way.

2. Models

This checklist applies to all NeuroCheck Gigabit Ethernet cameras. We are talking about NCCG cameras here. The following model series are currently supported:

- NCCG
- NCCG.I
- NCG (discontinued)
- NCHG (discontinued)
- NCLG (discontinued)
- NCLT

3. Selection of hardware components

- Use NeuroCheck digital cameras as listed above.
- Use computer with much memory (at least 4 GB RAM for 32-bit operating system, 8 GB RAM for 64-bit operating system), more is better.
- Do not use Cat 5 cables but at least Cat 6.
- GigE adapter: Please ask NeuroCheck GmbH or your local supplier for the compliance list of the manufacturer. Best use Intel server adapter for PCI express.
- NCCG cameras can only be operated using GigE adapters. NCCG cameras cannot communicate with 100 Mbit/s network adapters.

4. Checklist configuration

4.1. Network adapter

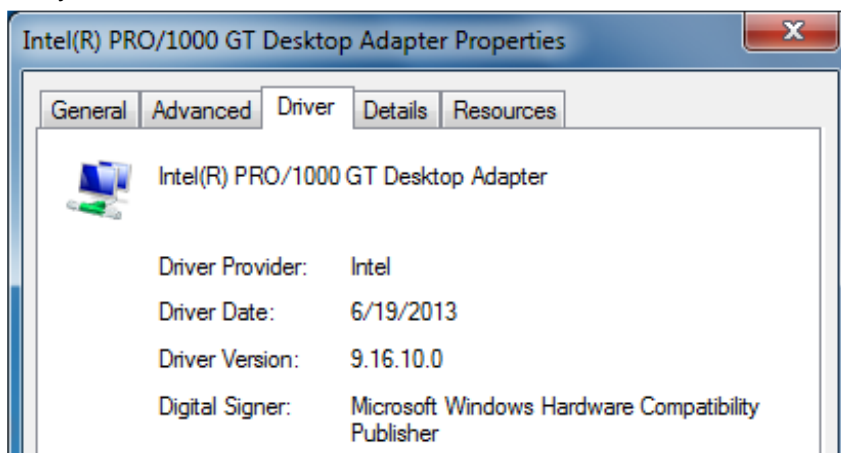
These settings are made in the Properties of the network adapter.

Attention: The settings may be overwritten when updating Windows.

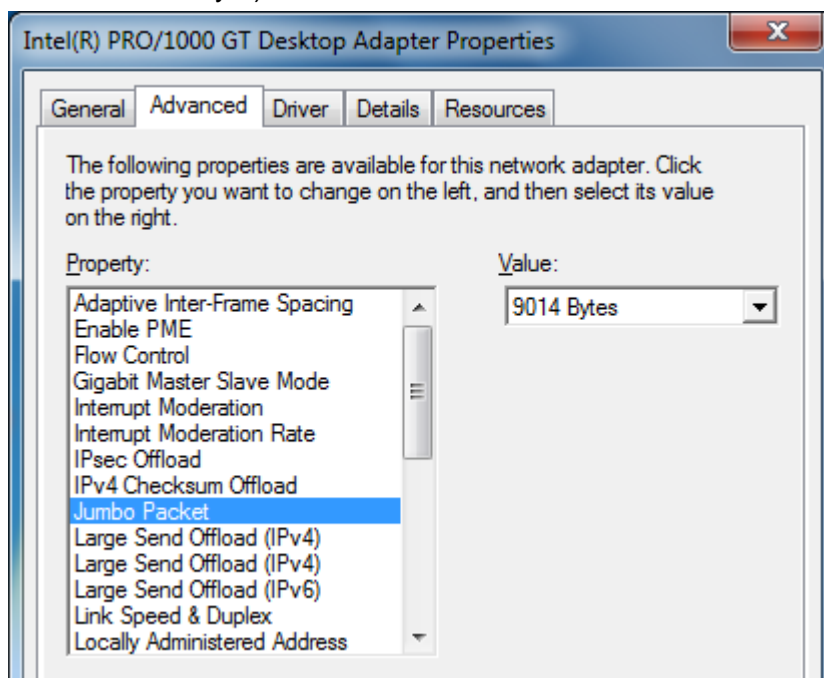
Windows 7: Control Panel | Network and Internet | Network and Sharing Center
Follow link to Adapter Settings (left hand side).

Windows 10: Settings | Network and Internet | Change adapter options.

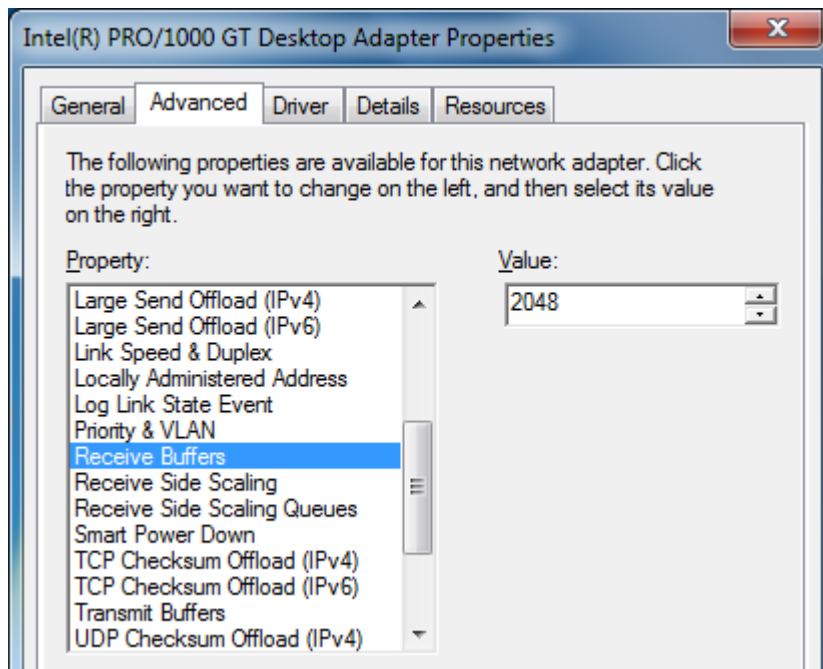
- Install vendor driver if available. Microsoft Windows automatically installs its own driver but generally, the vendor's driver is better.



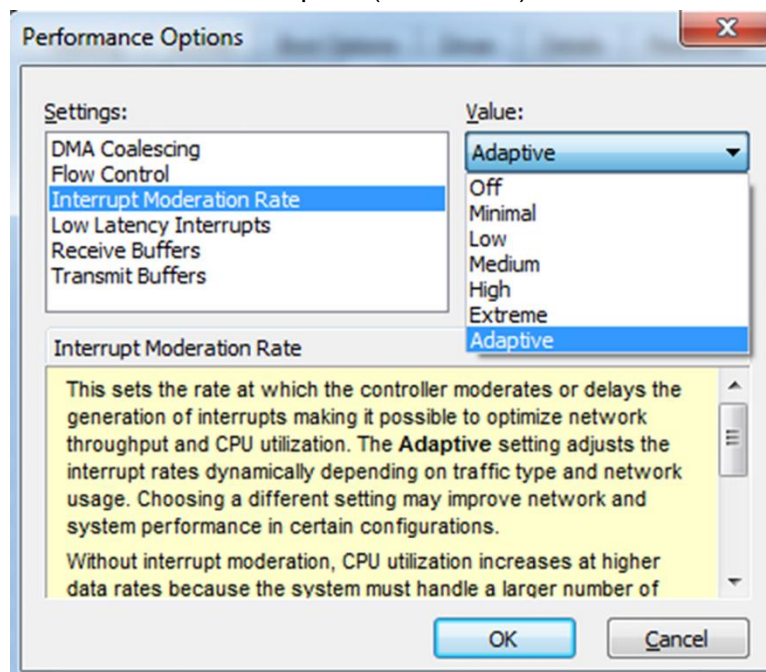
- Enable Jumbo Packets and set to maximum size supported by the network adapter and connected switch (if present).
(Intel PRO/1000: 9014 Byte).



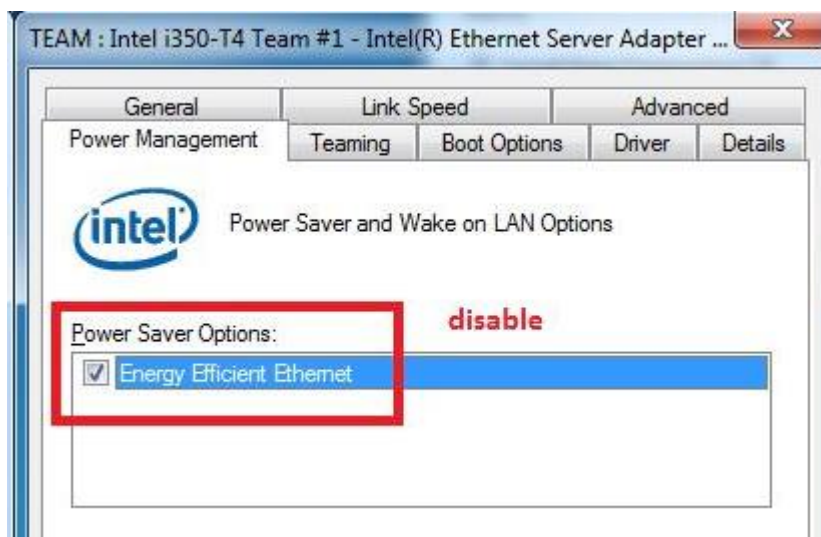
- Set value of Receive Buffers / Receive Descriptors to maximum.
For Intel cards the settings are in the Properties dialog for the adapter under Advanced | Receive Buffers (Maximum Intel PRO/1000: 2048 or 4096). Sometimes you will find this setting in a sub entry Performance options (or something like that).



- Set Interrupt Moderation Rate to Adaptive (if available).



- Energieeffizientes Ethernet deaktivieren



- Each adapter should have its own subnet. Dual port cards have two adapters, therefore, they should work in two subnets.
 - Example:** 4 cameras with 2 adapters and a switch each; cameras 1 & 2 with adapter 1, cameras 3 & 4 with adapter 2.
 - Wrong configuration:
 1. Adapter: 192.168.1.101, 255.255.255.0
 2. Adapter: 192.168.1.102, 255.255.255.0
 1. Camera: 192.168.1.1, 255.255.255.0
 2. Camera: 192.168.1.2, 255.255.255.0
 3. Camera: 192.168.1.3, 255.255.255.0
 4. Camera: 192.168.1.4, 255.255.255.0
 - Better configuration:
 1. Adapter: 192.168.1.100, 255.255.255.0
 2. Adapter: 192.168.2.100, 255.255.255.0
 1. Camera: 192.168.1.1, 255.255.255.0
 2. Camera: 192.168.1.2, 255.255.255.0
 3. Camera: 192.168.2.1, 255.255.255.0
 4. Camera: 192.168.2.2, 255.255.255.0
- Disable firewall for the network adapter.

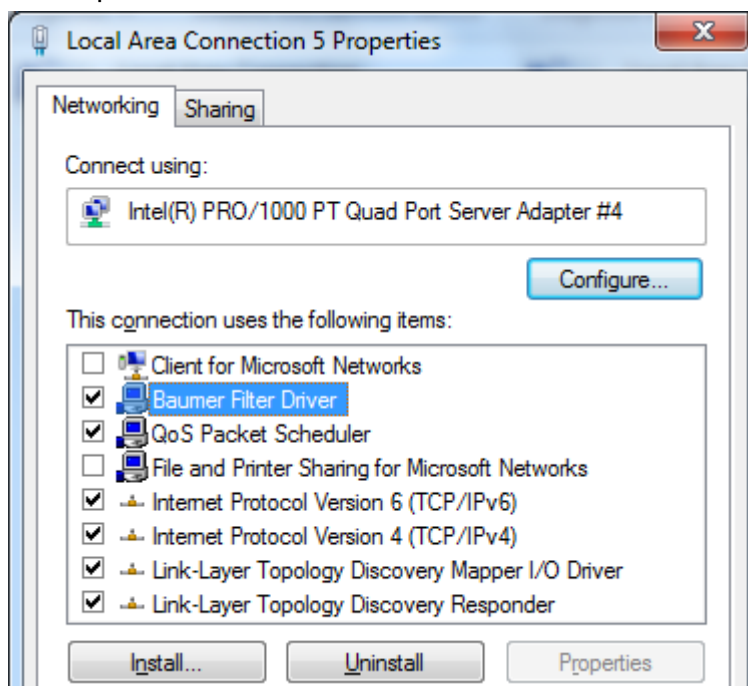
4.2. Filter driver

Installation and update using DriverManager.exe. Check in the network adapter Properties (see above).

- Install filter driver for **every** network adapter connected to NCCG cameras.

Update filter driver:

- Uninstall old driver
- Restart computer
- Install new driver
- Restart computer



- The Baumer filter driver and Basler streaming driver are not compatible. After installing the Basler driver, the Basler driver must be disabled in the network adapter properties, and the Baumer filter driver must be enabled.

4.3. Switch

Set using the HTML interface of the switch.

- Make sure that Jumbo Packets are enabled.

4.4. Cameras

- The IP address of each camera must be in the same subnet as the network adapter to which it is connected.

4.5. NeuroCheck camera driver

Make settings using the camera's Properties or Info dialog in NeuroCheck device manager.

- Set Packet Size to the same value as Jumbo Packet size in the network adapter. If you are using a switch and the maximum Packet Size supported by the switch is smaller than the Jumbo Packet Size set in the network adapter, set the Packet Size to the maximum size supported by the switch.
- Setting the Packet Gap is only necessary for systems where several cameras transfer data simultaneously (!) via a switch to a network adapter, i.e. only when using parallel image capturing and a switch. Otherwise use the default.
- In case of trouble, enable logging. NCCG camera Additional Information gives manufacturer information and camera statistics. Manufacturer information is logged during Open of the camera (start of NeuroCheck, integration of camera into NeuroCheck, closing NeuroCheck device manager (NeuroCheck 5.1)) and gives information about the FirmWare status. Camera statistics are logged for each image capture (not parallel) and give information concerning image data transfer.
- Upon request of NeuroCheck technical support, tracing of the manufacturer drivers can be enabled:
 - NeuroCheck 5.1: NcGeBoGe.dll: NCGEBOGE.INI, new entry: Trace=1.
The output file bgapi_tracefile.log will be written into the NeuroCheck program directory; please enable write permission.
 - NeuroCheck 6.0: NcDc.Baumer.(UI).NET.dll: NC60CFG.DRV.cfgx,
Node: NcDc.Baumer.NET, Sub node: trace, Value: 1.
The output file BGAPI_TraceOutput.log will be written into the NeuroCheck program directory; please enable write permission.
 - NeuroCheck 6.1: NcDc.NeuroCheck.BO.(UI).dll: NC61CFG.DRV.cfgx,
Node: NcDc. NeuroCheck.BO.dll, Sub node: trace, Value: 1,
The output file NcDc.NeuroCheck.BO_TraceOutput.log will be written into the NeuroCheck project folder subfolder SystemOutput.
 - NeuroCheck 6.2: NcDc.NeuroCheck.BO.(UI).dll: NC62CFG.DRV.cfgx,
Node: NcDc. NeuroCheck.BO.dll, Sub node: trace, Value: 1,
The output file NcDc.NeuroCheck.BO_TraceOutput.log will be written into the NeuroCheck project folder subfolder SystemOutput.