

How to check the connection to a KNXnet/IP router or interface

Our KNX interface uses KNXnet/IP tunneling to communicate to the KNX network. Therefore, any standard conform KNXnet/IP router or interface can be used.

! KNXnet/IP routers and interfaces **must not** be monitored by the NETx Server! During the monitoring process, our server opens a KNX management connection (for more details see [this article](#)). Some KNXnet/IP routers and interfaces will reboot and close all tunneling connections after closing a KNX management connection. Therefore, unwanted disconnects of the KNXnet/IP connection will occur.

Please use the GATEWAY item to monitor the state of a KNXnet/IP router or interface instead.

Within the Item Tree of the server, the *GAETEWAY* item indicates the connection state to a KNXnet/IP router or interface. If it is true, the connection is working – if it is false there is a communication problem. The following figure shows an example where the connection to a KNXnet/IP router is successfully established.

Item	Description	Value
NETx		
XIO		
KNX		
ETS		
BROADCAST		
192.168.1.36		
GATEWAY		True
Status	KNX Gateway status number	0
Devices		
05 - Demo Case Small		

In addition, the *Status* item provides an error code if the connection is not working:

Status code	Description
1000	Network problem. The server is not able to establish an IP connection to router or interface. Please check your firewall, network and all network switches and routers.
33	The KNXnet/IP router or interface cannot find an active data connection with the specified ID. This may indicate that the KNXnet/IP router or interface made a restart and lost the connection IDs. Possible reason for a restart may be too much traffic at the KNX bus, a hardware failure or problems with the power supply.
34	The requested connection type is not supported by the KNXnet/IP router or interface.
35	One or more requested connection options are not supported by the KNXnet/IP router or interface.
36	No KNXnet/IP tunneling connection is available. A KNXnet/IP router or interface only supports a limited amount of simultaneous connections. Old devices only one – newer devices (like our NETx KNX IP Router and Interface) up to 5. Please check whether other client (e.g. ETS) is also connected to the router or interface.
37	No free KNX individual address available for the tunneling connection. Please check your ETS project whether all available tunneling connections are assigned to a KNX individual address. For older KNXnet/IP routers or interfaces, additional addresses may be activated by pressing the programming button for at least 5 seconds. Please check the datasheet of your device.
38	The KNXnet/IP router or interface detects an error concerning the data connection with the specified ID.
39	The KNX connection to the router or interface is not working. Please check the twisted pair side of your router or interface.

If the status is 1000, there is a network problem. To further analyze the problem, check your firewall, network and all network switches and routers. KNXnet /IP tunneling uses UDP/IP for communication, the default UDP port is 3671. Please ensure that a UDP communication with port 3671 is possible between the server and the KNXnet/IP router or interface.

For analyzing the network, please **do not use** the "ping" command. ping uses the ICMP protocol. This means that even a ping is successful it does not indicate that a UDP/IP connection is possible. Even more each standard network device will reply to ping requests – even if it is not a KNXnet/IP router or interface.

For a meaningful analyzes you can use the following tools:

- Wireshark: Wireshark is a very sophisticated, free network monitoring tool. Using Wireshark, you can sniff all incoming and outgoing network packets. Since 2016, Wireshark also includes a KNXnet/IP decoder.
- nxaKNXnetIPTestTool.exe: this is a small console application which is included within the setup of the server. It can be used to test KNXnet/IP tunneling connections.

The nxaKNXnetIPTestTool.exe Tool is located within the following directory: <installation directory>\Tools\KNXnetIP

Usage: KNXnetIP <Dst IP Address> [Src IP Address]

To use the tool, open a Windows "cmd" shell and change to the directory mentioned above. Then invoke the command with the IP address of the KNXnet /IP router or interface as parameter that you would like to test. The second parameter is the local IP address which is optional.

To check the router if the IP address 192.168.1.36, the following command has to be entered:



```
C:\Windows\System32\cmd.exe - nxaKNXnetIPTestTool.exe 192.168.1.36

C:\Program Files (x86)\NETxAutomation\NETx.BMS.Server.2.0\Tools\KNXnetIP>nxaKNXnetIPTestTool.exe 192.168.1.36
Send CONNECT Request to 192.168.1.36
6 10 2 5 0 1a 8 1 0 0 0 0 e 57 8 1 0 0 0 0 e 57 4 4 2 0
Send successful
Connect Response received
6 10 2 6 0 14 5 0 8 1 0 0 0 0 0 4 4 50 65
Connect successful. Got channel ID: 5
Send DISCONNECT Request to 192.168.1.36
6 10 2 9 0 10 5 0 8 1 0 0 0 0 e 57
Send successful
Disconnect Response received
6 10 2 a 0 8 5 0
Press enter to exit ...
```

Within the output of the command, the raw KNXnet/IP packets are shown. In addition, it is shown whether the connection was successful – if not the error code is shown too.

Article applies to the following products:

- NETx BMS Platform
- NETx Multi Protocol Server
- NETx BMS Server 2.0

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