ibaPDA-SNMP-Server+

SNMP-Server for Measurement Data

Manual

Issue 1.2

Measurement Systems for Industry and Energy

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The current version is available for download on our web site www.iba-ag.com.

Version	Date	Revision	Author	Version SW
1.2	08-2025	Min. Update time; new authentication and encryption algorythms; table objects	RM	8.11.0

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Contents

1 About this manual

This documentation describes the functionality and use of the SNMP-server in *ibaPDA* .

1.1 Target group and previous knowledge

This documentation is aimed at qualified professionals who are familiar with handling electrical and electronic modules as well as communication and measurement technology. A person is regarded as professional if he/she is capable of assessing safety and recognizing possible consequences and risks on the basis of his/her specialist training, knowledge and experience and knowledge of the standard regulations.

In particular, this documentation is intended for personnel involved in the engineering, testing, commissioning or maintenance of PLCs and communication systems. For the handling of *SNMP-Server* in*ibaPDA*the following basic knowledge is required and/or useful:

- Windows operating system
- Basic knowledge of *ibaPDA*
- Experience of configuring an SNMP server

1.2 Notations

In this manual, the following notations are used:

Action	Notation
Menu command	Menu *Logic diagram*
Calling the menu command	*Step 1 – Step 2 – Step 3 – Step x* Example: Select the menu *Logic diagram – Add – New function block*.
Keys	<Key name> Example: <Alt>; <F1>
Press the keys simultaneously	<Key name> + <Key name> Example: <Alt> + <Ctrl>
Buttons	<Key name> Example: <OK>; <Cancel>
Filenames, paths	`Filename`, `Path` Example: `Test.docx`

1.3 Used symbols

If safety instructions or other notes are used in this manual, they mean:

Danger!

The non-observance of this safety information may result in an imminent risk of death or severe injury:

- Observe the specified measures.

Warning!

The non-observance of this safety information may result in a potential risk of death or severe injury!

- Observe the specified measures.

Caution!

The non-observance of this safety information may result in a potential risk of injury or material damage!

- Observe the specified measures

Note

A note specifies special requirements or actions to be observed.

Tip

Tip or example as a helpful note or insider tip to make the work a little bit easier.

Other documentation

Reference to additional documentation or further reading.

2 System requirements

The following system requirements are needed for using SNMP Server:

- *ibaPDA* V8.11.0 or higher
- Lizenz *ibaPDA-SNMP-Server+* when user-defined signals should be available as SNMP-objects.
- Network connection to one or more SNMP clients

Note

iba AG recommends running the SNMP communications for data acquisition on a separate network to avoid interference to the SNMP-telgrams caused by the Ethernet data traffic between *ibaPDA* and other network nodes (file servers, data file requirements, etc.).

Further requirements for the respective computer hardware and the supported operating systems can be found in *ibaPDA* documentation.

License information

Order No.	Product designation	Description
30.670050	ibaPDA-SNMP-server+	Extension license for *ibaPDA*-System for enhanced SNMP Server functions

3 SNMP Server

SNMP (simple network management protocol) was designed to be able to monitor and control network elements (e.g., routers, switches, printers, computers, etc.) from a central station. By using the SNMP server, the *ibaPDA* system can be monitored by a network-monitoring tool, e. g., Paessler PRTG or Nagios.

The SNMP versions, V1, V2c and V3, are supported. By default, the SNMP server provides a set of diagnostic signals that give feedback about the state of the system and the various data records.

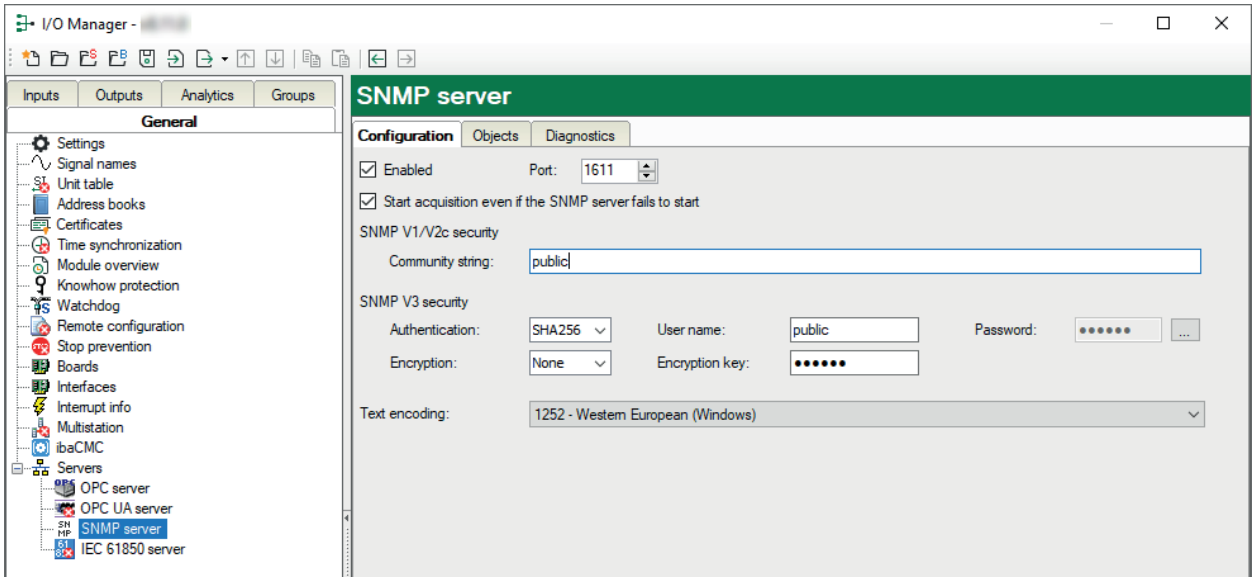
The basic function for status monitoring of iba software products can be used without additional license. In *ibaPDA*, you can also make any signal recorded via *ibaPDA* available as an object in the SNMP server with the additional license (*ibaPDA-SNMP-Server +*, order no. 30.670050).

Note

The shortest update time for the signals is 50 ms due to technical reasons.

3.1 Configuration tab

In the *Configuration* tab you enable the SNMP server and make the basic settings, such as for data security.



Enabled
Here you can activate and deactivate the SNMP server.

Port
The port via which the SNMP server should communicate.

The default value is 1611.

Community string
In the protocol variants V1 and V2c, only a community string can be submitted for authentication. This serves as a password for the data transfer between the SNMP server and SNMP client. The default value for the community string is "public".

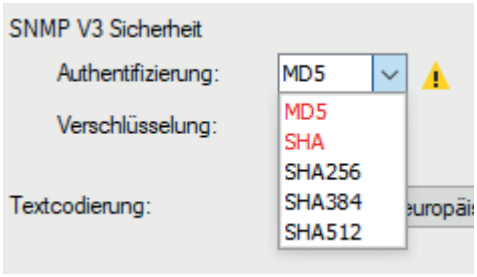
Allowed characters are a-z, A-Z, 0-9 and special characters.

Authentication, user name, password
In protocol version V3, the security standards are more stringent and there are multiple methods available for authentication and encryption. For authentication, the following standards are supported:

- SHA256 (secure hash algorithm, SHA2 class, hash function, 256-bit)
- SHA384 (secure hash algorithm, SHA2 class, hash function, 384-bit)
- SHA512 (secure hash algorithm, SHA2 class, hash function, 512-bit)

In addition to selecting the authentication algorithm, you must also enter a user name and password.

Older standards like MD5 or SHA are not supported anymore. If these standards are still set in older configurations, a warning symbol appears nearby and those standards are highlighted in red in the drop-down list.



Encryption, key
In terms of encryption, you will have the following options:

- No encryption
- AES128 (Advanced Encryption Standard, 128-bit)
- AES192 (Advanced Encryption Standard, 192-bit)
- AES256 (Advanced Encryption Standard, 256-bit)

Older standards like DES are not supported anymore. If these standards are still set in older configurations, a warning symbol appears nearby and those standards are highlighted in red in the drop-down list.

Note

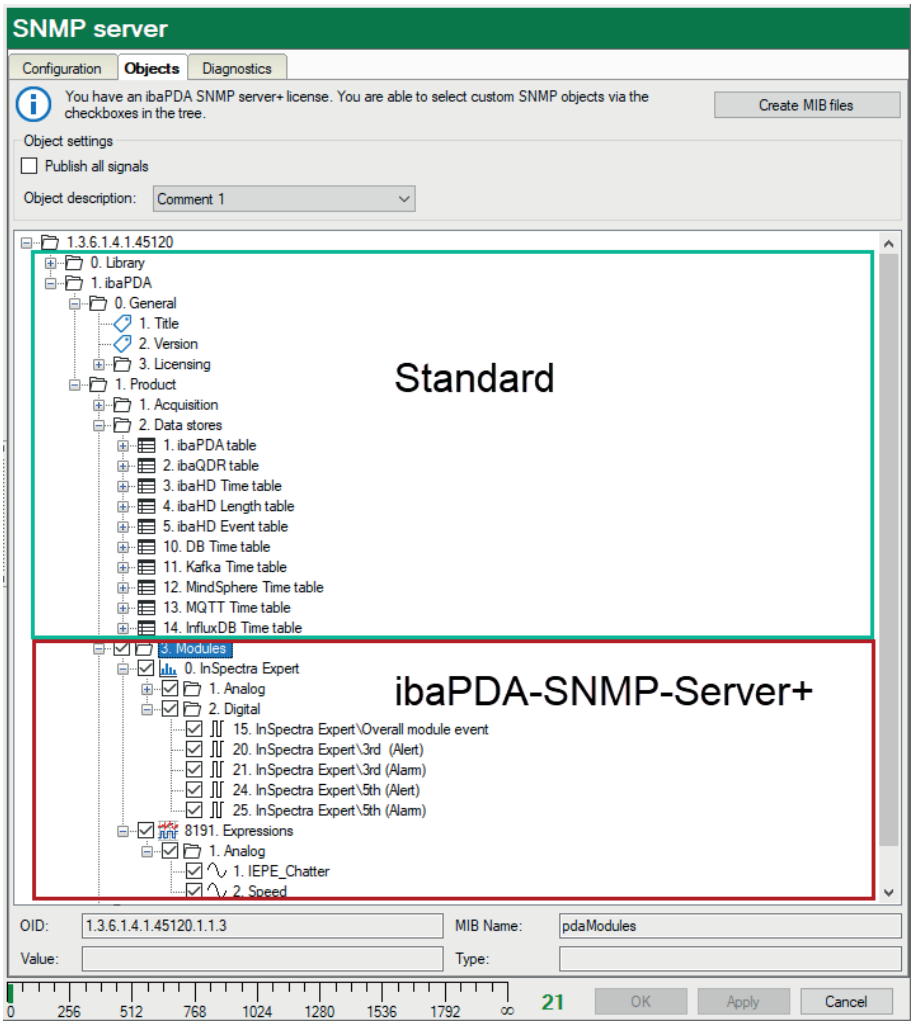
It is best to clarify the settings to be made here with your network administrator. Make sure that the set port is not already being used by any other SNMP servers running on the computer.

The <...> button is used to change the password.

Text encoding
For the correct transmission of ASCII data (text channels), set the appropriate text encoding for the region or language here.

3.2 Objects tab

In this tab, you specify the information and data made available on the SNMP server. The tree structure shows the OID tree (object identification).



You can recognize the objects that are always available by default by the absence of a selection field. This includes:

- objects of the SNMP library
- objects for the general properties of *ibaPDA*, such as version and dongle information
- objects for acquisition, e.g., "IsMeasuring" object (measurement running)
- objects for various data records; these objects are grouped according to the data record type.
- objects with information about the *ibaPDA* client connections

The use of these objects for monitoring the *ibaPDA* system can make the configuration, e.g., of a watchdog telegram, redundant.

The availability of the additional license for user-defined SNMP objects is displayed above the OID tree. If this license is available, you make any signal configured in *ibaPDA* available in the SNMP server. Check the requested signals in node "3. Modules" of the OID-tree.

<Create MIB files> button
You start the generation of MIB (management information base) files using this button. The MIB files are generated by the *ibaPDA* server.

If you have made changes to the object selection and would like to save these in MIB files, you have to click <Apply> in the I/O Manager dialog first. Then, after restarting acquisition, you can create the MIB files. After pressing the button, select a folder where the files are to be stored. Two MIB files are always generated:

- IBA-GENERAL-MIB.txt
  This file contains the objects that are common to all iba products.
- IBA-PRODUCT-IBAPDA-MIB.txt
  This file contains the *ibaPDA*-specific objects.

Publish all signals
If you enable this option, all signals existing in *ibaPDA* will be published automatically. Hence, newly defined signals will be published automatically when applying the configuration. You don't need to activate the new signals manually. If you have an *ibaPDA-SNMP-Server+* license, the signals listed in the *Modules* branch are affected too.

Object description
This description is shown with the individual objects in the MIB file. When importing the MIB-file in an SNMP tool, the user sees the description together with the selection of objects. The user can select either option "Comment 1", "Comment2" or the combination of both "Comment1 | Comment 2".

Object tree
The available objects are listed in a structured tree, the so-called OID tree. If you select an object, you'll get the following information in the fields below:

- Full OID
- MIB name
- Current value
- Data type

Object tree – node 1. ibaPDA – 1. Product – 1. Acquisition
The essential *ibaPDA*-specific indicators and enumerations for the reason for start of data acquisition “StartReason” are as following:

Column	Description	Values
IsMeasuring	Acquisition is running yes/no	True/False
DisabledSignals	Disabled signals are available yes/no	True/False
StartReason	Possible reasons for the start of data acquisition	0...none 1...start button (startButton) 2...new I/O-configuration (newIOConfig) 10...automatic start (automaticStart) 11...remote configuration (remoteConfig)
RunTime	Elapsed time since last start or acquisition, given in seconds	1234

Object tree – node 1. ibaPDA – 1. Product – 2. Data Stores

Below this node you'll find information about the various data stores, which can be configured in *ibaPDA*. For each data store type (ibaPDA table, ibaQDR table, ibaHD time table etc.) there is a table object containing the information about all configured data stores of this type.

The columns of the table objects are represented as nodes. The values of all rows of a column are displayed in the *Value* field, separated by semicolon (;).

The following table shows the objects of *ibaPDA* data stores as example.

Column	Description	Values
Name	Name of the data store	[PDA_REC_1; PDA_REC_2;...]
Status	Status of the data store 0...none 1...start button (startButton) 2...new I/O-configuration (newIOConfig) 10...automatic start (automaticStart) 11...remote configuration (remoteConfig)	[2;1;..]
FileName	Path and filename of the data file	[c:\iba\datastores\Store1\pda1_23.dat; c:\iba\datastore\Store2\pda2_10.dat;..]
FreeSpace	Indication of free space available on harddisk for this data store	[213763;213763;..]
RecordingTime	Elapsed time since start of the current data file, given in seconds	[283;283;..]

Other data store types may have different indicators and values.

Retrieving and allocating values

You can configure multiple data stores per data store type in *ibaPDA*.

The value fields of the "Columns" show as many values, separated by semicolon (;), as data stores are used. The order of the values read from left to right corresponds to the data store index as indicated in the *ibaPDA* Data Store Manager.

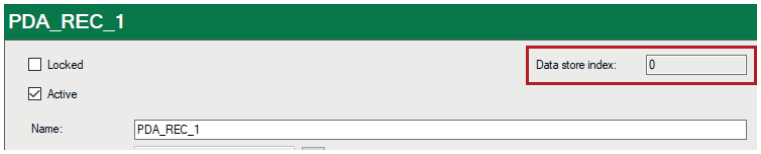
The first value corresponds to index 0, the second value to index 1 etc. Hence, the index corresponds to the rows of the SNMP table object.

The correct OID of a single value is created by the OID of the table object (column) extended by the data store index.

Disabled data stores have and keep their index.

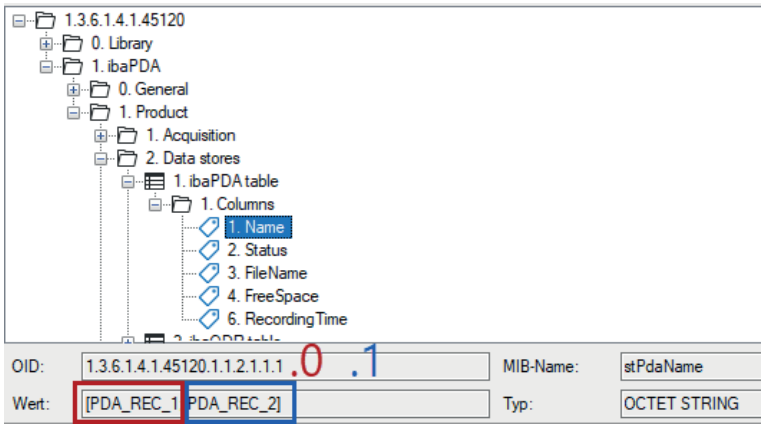
Example of two ibaPDA data stores with index 0 and 1

Data store PDA_REC_1 has index 0



Data store PDA_REC_2 has index 1

Extend the OID by 0 or 1 to read the desired value.



OID of the *Name* of data store PDA_REC_1: 1.3.6.1.4.1.45120.1.1.2.1.1.1.0

OID of the *Name* of data store PDA_REC_2: 1.3.6.1.4.1.45120.1.1.2.1.1.1.1

Object tree – node 1. ibaPDA – 1. Product – 4. Clients – 1. Connections – 1. Columns

Under this node, you'll find information about the connected *ibaPDA* clients.

The information is stored in a table structure, whose columns correspond to the nodes. The values of all rows of a selected column are displayed in the *Value* field, separated by semicolon.

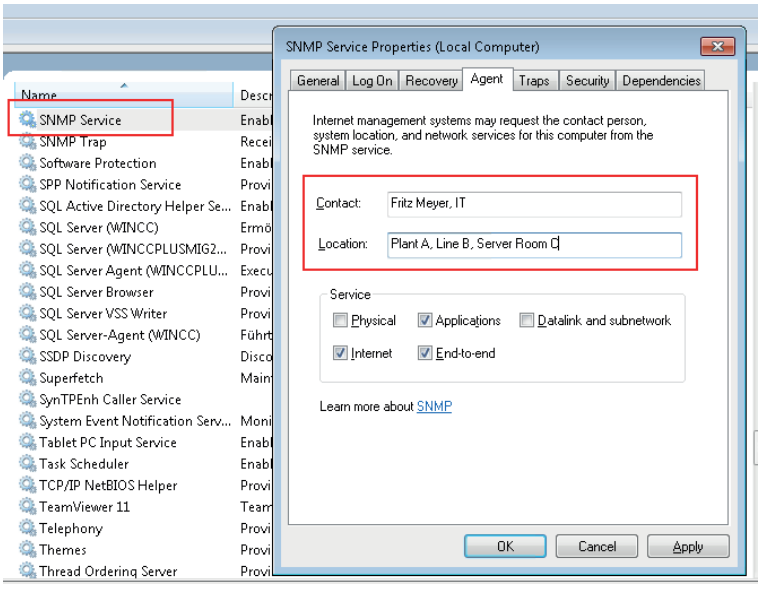
Column	Description	Example (value)
Connected	Connected clients (True/False, True = connected)	True;True;True;False;False;…: 3 clients connected
Name	Hostname of each connected client and Windows user	MY-PC01\JonDoe;MY-PC02\JonDoe;MY-PC03\Jane;....
User	Logged on ibaPDA user for each client	admin;operator;admin;…
Address	IP address of each client	127.0.0.1;192.168.80.22;192.168.80.35;…
Start Time	Date and time of last connection establishment for each client	dd.mm.yyyy hh:mm:ss;… (format acc. to Windows regional settings)
NrReqSignals	Number of signals requested by a client, e. g. for display	8;8;0;...
Client License	Client license taken by a particular (e.g. remote) client connection; (True/False, True = License taken)	
QPanelLicense	QPanel license taken by a particular (e.g. remote) client connection; (True/False, True = License taken)	
Version	ibaPDA version installed on each client	8.11.0;8.11.0;8.9.2;…

3.3 System-OIDs 1.3.6.1.2.1.1.

iba supports the system-OIDs 1.3.6.1.2.1.1.x, which are used by SNMP tools for automatic server detection.

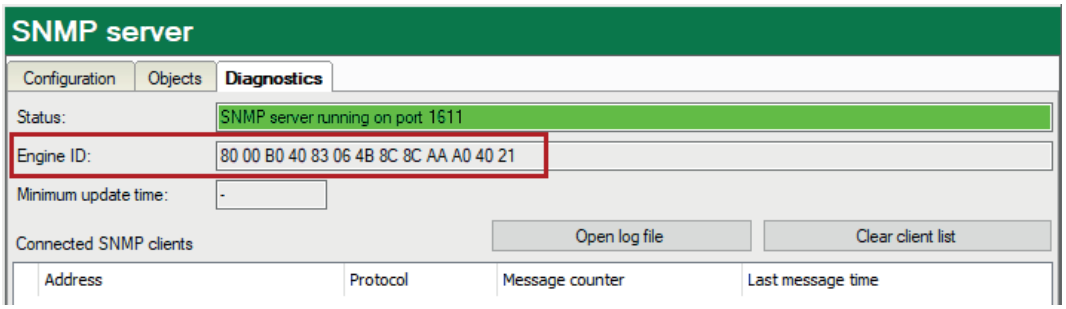
OID	Description
1.3.6.1.2.1.1.1	sysDescr: sysDescr: fix value "ibaSNMP agent for ibaPDA"
1.3.6.1.2.1.1.2	sysObjectID: fix value "1.3.6.1.4.1.45120.1". This is iba AG OID +"1" for the product ibaPDA fix value "1.3.6.1.4.1.45120.2". This is iba AG OID +"2" for the product ibaDatCoordinator fix value "1.3.6.1.4.1.45120.4". This is iba AG OID +"4" for the product ibaHD-Server fix value "1.3.6.1.4.1.45120.6". This is iba AG OID +"6" for the product ibaCapture
1.3.6.1.2.1.1.3	sysUpTime: Dynamic:Time since starting ibaPDA service (in 1/100 seconds)
1.3.6.1.2.1.1.4	sysContact: Dynamic: Must be manually configured in the SNMP-service settings.
1.3.6.1.2.1.1.5	sysName: automatically generated: computer name plus domain suffix, e.g. iba-fue-wks123.iba-ag.local
1.3.6.1.2.1.1.6	sysLocation: Dynamic:Must be manually configured in the properties of the Windows SNMP-service
1.3.6.1.2.1.1.7	not supported

Contents of the system-OIDs `sysContact` and `sysLocation` are set by default in the *Agent* tab in the Windows service “SNMP-service”.



3.4 Engine-ID

The SNMP server uses a unique Engine ID, which is indicated on the *Diagnostics* tab of the SNMP interface.



4 Diagnosis

4.1 License

If you cannot publish the configured signals as SNMP variables, check whether your “ibaPDA-SNMP-Server+” license is detected correctly in *ibaPDA* I/OManager under *General – Settings -– License Info* or in the *ibaPDA*-service status application.

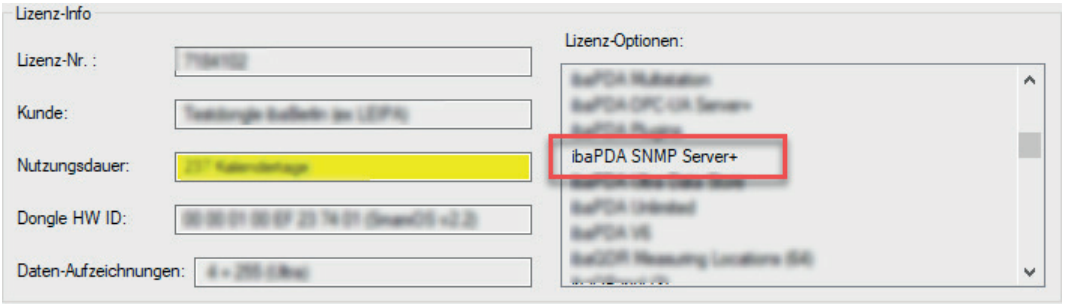


Fig. 1: License displayed in the ibaPDA I/O Manager.

If no license is available, you will be also be notified in the I/O Manager under branch*General – SNMP Server*, *Objects* tab

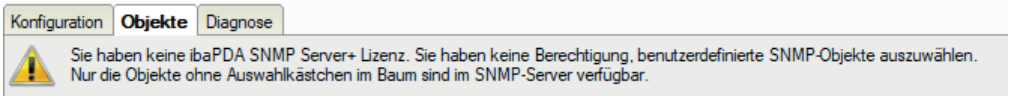
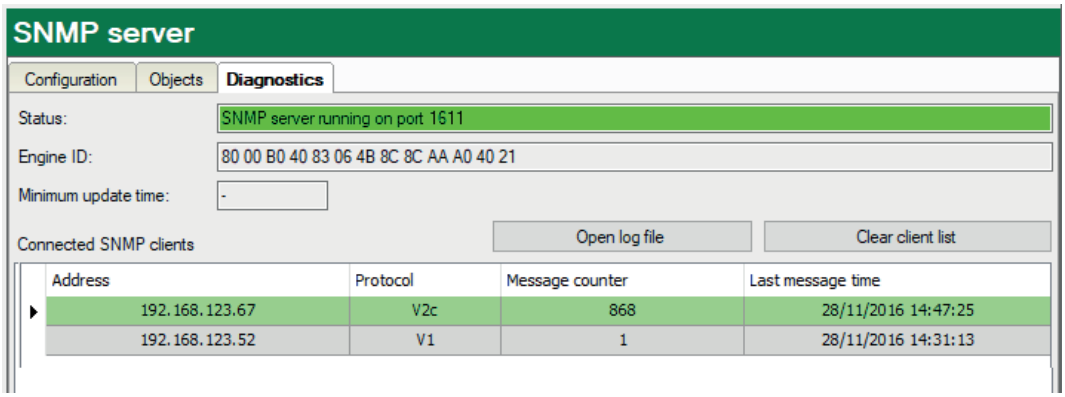


Fig. 2: Notice on missing license

4.2 Diagnostics tab

In the *Diagnostics* tab you will receive information about the state of the SNMP server.



Engine-ID
The SNMP server uses a unique engine ID.

Minimum update time
This value shows the current minimum update time for the published information.

Connected SNMP clients
There is also a list of all the clients who have accessed the SNMP server within the last hour. Clients who have accessed the SNMP server within the past 10 minutes are highlighted in green and the rest in gray.

<Open log file>
All connection specific actions are recorded in a text file. Using this button, you can open and check this file. In the file system on the hard disk, you find the log files of this interface in the path …\ProgramData\iba\ibaPDA\Log.
The file name of the current log file is InterfaceLog.txt; the name of the archived log files is InterfaceLog_yyyy_mm_dd_hh_mm_ss.txt.

<Clear client list>
With the <Clear client list> button, you can remove all entries from the list.

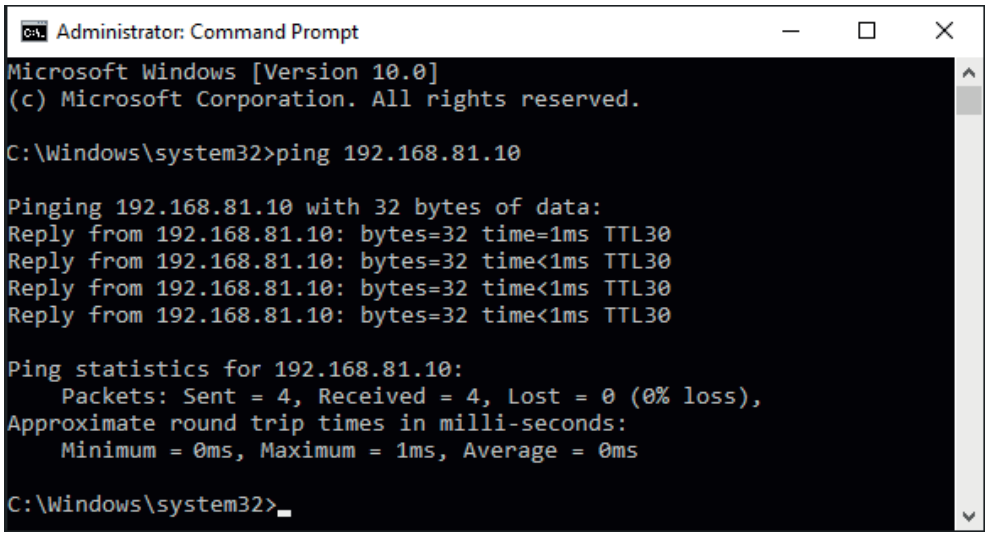
4.3 Connection diagnostics with PING

PING is a system command with which you can check if a certain communication partner can be reached in an IP network.

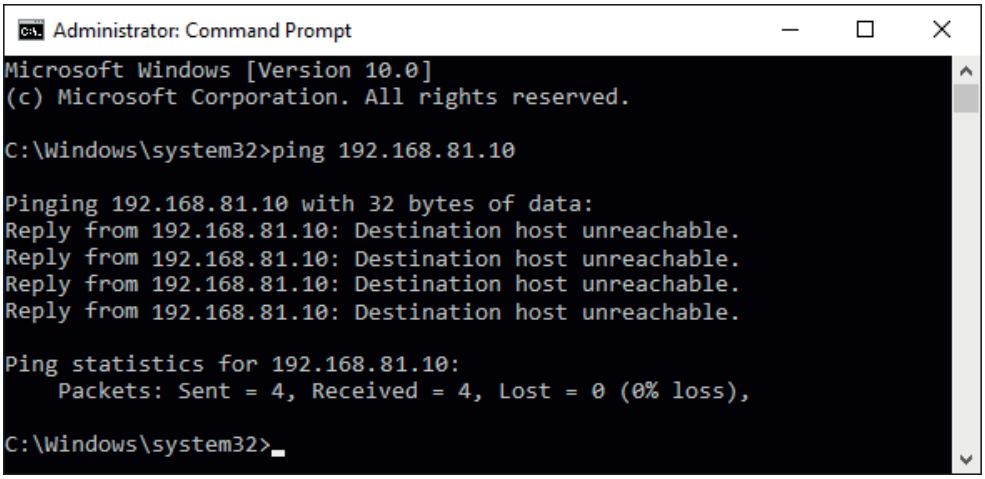
1. Open a Windows command prompt.

2. Enter the command "ping" followed by the IP address of the communication partner and press <ENTER>.

→ With an existing connection you receive several replies.



→ With no existing connection you receive error messages.



5 Support and contact

Support

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Note

If you need support for software products, please state the number of the license container. For hardware products, please have the serial number of the device ready.

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