



Station Automation COM600 3.5 SNMP OPC Server User's Manual

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1. About this manual

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1.3. General

This manual provides thorough information on the SNMP OPC Server on COM600 and the central concepts related to it. You find instructions on how to configure SNMP OPC Server related objects. The basic operation procedures are also discussed.

Information in this user's manual is intended for application engineers who configure the SNMP OPC Server.

As a prerequisite, you should have basic knowledge of the SNMP protocol.

This user's manual is divided into following sections:

Introduction

This section gives an overview of the SNMP OPC Server and its features.

Configuration

In this section you will find an overview of configuration. You are given instructions on how to configure SNMP OPC Server related objects and the model of a substation or system.

Operation

This section covers the basic operation procedures you can carry out when transferring or activating Station Automation COM600 (later referred to as COM600) with new configurations.

1.4. Document conventions

The following conventions are used for the presentation of material:

- The words in names of screen elements (for example, the title in the title bar of a window, the label for a field of a dialog box) are initially capitalized.
- Capital letters are used for the name of a keyboard key if it is labeled on the keyboard. For example, press the ENTER key.
- Lowercase letters are used for the name of a keyboard key that is not labeled on the keyboard. For example, the space bar, comma key, and so on.
- Press CTRL+C indicates that you must hold down the CTRL key while pressing the C key (to copy a selected object in this case).
- Press ESC E C indicates that you press and release each key in sequence (to copy a selected object in this case).
- The names of push and toggle buttons are boldfaced. For example, click **OK**.
- The names of menus and menu items are boldfaced. For example, the **File** menu.
 - The following convention is used for menu operations: **MenuName > MenuItem > CascadedMenuItem**. For example: select **File > New > Type**.
 - The **Start** menu name always refers to the **Start** menu on the Windows taskbar.
- System prompts/messages and user responses/input are shown in the Courier font. For example, if you enter a value out of range, the following message is displayed:

`Entered value is not valid. The value must be 0 - 30 .`

- You can be asked to enter the string MIF349 in a field. The string is shown as follows in the procedure:

MIF349

- Variables are shown using lowercase letters:

sequence name

1.5. Use of symbols

This publication includes warning, caution, and information icons that point out safety-related conditions or other important information. It also includes tip icons to point out useful information to the reader. The corresponding icons should be interpreted as follows.



The electrical warning icon indicates the presence of a hazard which could result in electrical shock.



The warning icon indicates the presence of a hazard which could result in personal injury.



The caution icon indicates important information or warning related to the concept discussed in the text. It may indicate the presence of a hazard which could result in corruption of software or damage to equipment or property.



The information icon alerts the reader to relevant facts and conditions.



The tip icon indicates advice on, for example, how to design your project or how to use a certain function.

1.6. Terminology

The following is a list of terms associated with COM600 that you should be familiar with. The list contains terms that are unique to ABB or have a usage or definition that is different from standard industry usage.

Term	Description
Alarm	An abnormal state of a condition.
Alarms and Events; AE	An OPC service for providing information about alarms and events to OPC clients.
Data Access; DA	An OPC service for providing information about process data to OPC clients.

Term	Description
Data Object; DO	Part of a logical node object representing specific information, for example, status, or measurement. From an object-oriented point of view, a data object is an instance of a class data object. DOs are normally used as transaction objects; that is, they are data structures.
Data Set	The data set is the content basis for reporting and logging. The data set contains references to the data and data attribute values.
Device	A physical device that behaves as its own communication node in the network, for example, protection relay.
Event	Change of process data or an OPC internal value. Normally, an event consists of value, quality, and timestamp.
Intelligent Electronic Device	A physical IEC 61850 device that behaves as its own communication node in the IEC 61850 protocol.
Logical Device; LD	Representation of a group of functions. Each function is defined as a logical node. A physical device consists of one or several LDs.
Logical Node; LN	The smallest part of a function that exchanges data. An LN is an object defined by its data and methods.
LON	A communication protocol developed by Echelon.
LON Application Guideline for substation automation; LAG	A proprietary method of ABB on top of the standard LON protocol.
OPC	Series of standards specifications aiming at open connectivity in industrial automation and the enterprise systems that support industry.
OPC item	Representation of a connection to the data source within the OPC server. An OPC item is identified by a string <object path>:<property name>. Associated with each OPC item are Value, Quality, and Time Stamp.
Property	Named data item.
Report Control Block	The report control block controls the reporting processes for event data as they occur. The reporting process continues as long as the communication is available.
SPA	ABB proprietary communication protocol used in substation automation.
SPA device	Protection and/or Control Product supporting the SPA protocol version 2.5 or earlier.
Substation Configuration Language; SCL	XML-based description language for configurations of electrical substation IEDs. Defined in IEC 61850 standard.

1.7. Abbreviations

The following is a list of abbreviations associated with COM600 that you should be familiar with. See also 1.6, Terminology.

Abbreviation	Description
AE	Alarms and Events
ASDU	Application Service Data Unit
BRCB	Buffered Report Control Block
DA	Data Access
DMCD	Data Message Code Definition
DO	Data Object
GW	Gateway, component connecting two communication networks together
HMI	Human Machine Interface
IEC	International Electrotechnical Commission
IED	Intelligent Electronic Device
LAG	LON Application Guideline for substation automation
LAN	Local Area Network
LD	Logical Device
LMK	LonMark interoperable device communicating in LonWorks network. In this document, the term is used for devices that do not support the ABB LON/LAG communication.
LN	Logical Node
LSG	LON SPA Gateway
NCC	Network Control Center
NUC	Norwegian User Convention
NV	Network Variable
OLE	Object Linking and Embedding
OPC	OLE for Process Control
P&C	Protection & Control
RTS	Request To Send
SA	Substation Automation
SAB600	Station Automation Builder 600
SCL	Substation Configuration Language
SLD	Single Line Diagram
SNMP	Simple Network Management Protocol
SNTP	Simple Network Time Protocol

Abbreviation	Description
SOAP	Simple Object Access Protocol
RCB	Report Control Block
URCB	Unbuffered Report Control Block
XML	eXtended Markup Language

1.8. Related documents

Name of the manual	MRS number
COM600 User's manual	1MRS756125

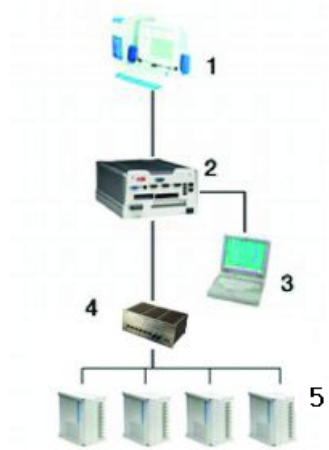
1.9. Document revisions

Document version/date	Product revision	History
A/30.6.2011	3.5	Document created

2. Introduction

2.1. Functional overview

The SNMP OPC Server provides methods for OPC clients to exchange data with SNMP compliant devices, such as network switches, UPS systems (Uninterrupted Power Supply) and other network devices.



SNMP_overview.png

Figure 2.1-1 System overview

1. NCC (Network Control Center)
2. COM600 with SNMP OPC Server
3. Station Automation Builder 600 (SAB600)
4. SNMP compliant network switch
5. Protection and control devices

2.2. SNMP OPC Server features

The SNMP OPC Server is intended for providing methods for OPC clients to monitor network attached devices.

The SNMP OPC Server supports the following features:

- SNMP V1, SNMPv2c and SNMPV3 network monitoring
- IEC 61850 data modeling
- System supervision
 - SNMP channel communication
 - SNMP device communication

3. Configuration

3.1. About this section

This section guides you in the configuration tasks required before you can start using the SNMP OPC Server. For information on the IEC 61850 data modeling, refer to COM600 User's Manual.

Start Station Automation Builder 600 (later referred to as SAB600) to open a project. You can also open and name a new project.

1. Select **File > Open/Manage Project...**
2. In the Open/Manage Project dialog, select the required location for the project:
 - Projects on my computer
 - Projects on network
3. Select **New Project** on the left.
 - Enter a Project Name. The Description is optional.
4. Click **Create**.
5. Click **Open Project**.

3.2. Overview of configuration

Before you can start using the SNMP OPC Server, you need to build and configure an object tree in SAB600 to define the Communication structure within the Gateway object.

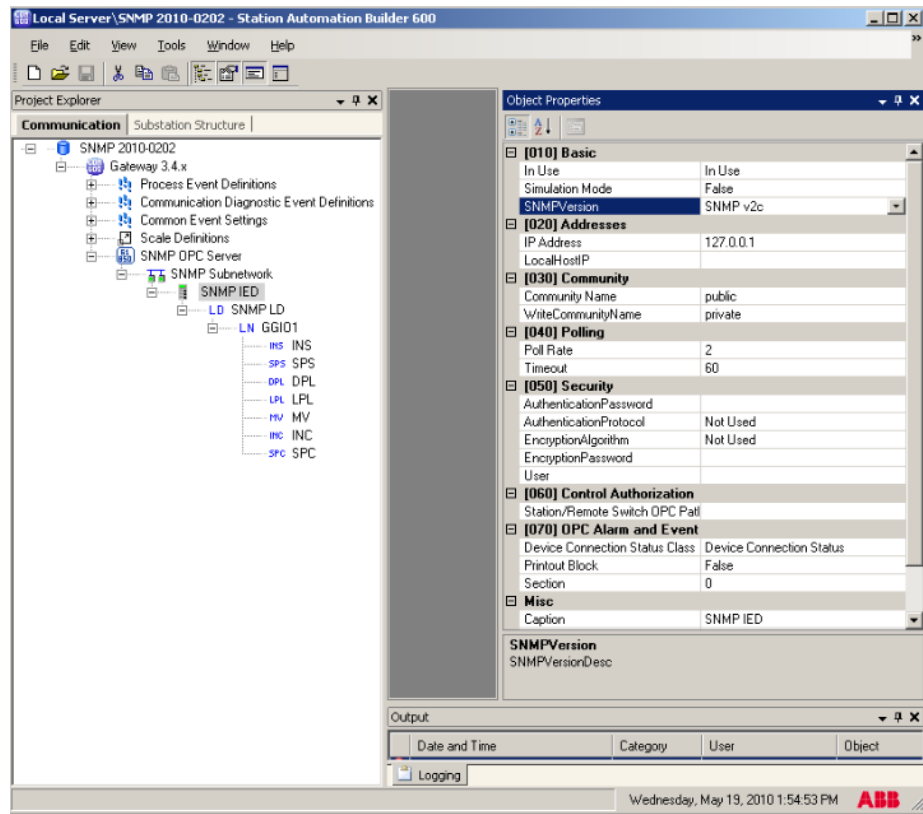
The possible objects are:

- Gateway
- SNMP OPC Server
- SNMP Subnetwork
- SNMP IED
- Logical Device objects
- Logical Node objects
- Data objects

Figure 3.2-1 shows an example view of SAB600 including an object tree in the communication structure on the left and Object Properties window displaying the object properties on the right.



When configuring OPC servers the following characters cannot be used in object names: \ ` ' ' #



example_view.png

Figure 3.2-1 Example view of SAB600

The configuration work can basically be divided into two separate tasks:

1. building an object tree, and
2. configuring object properties.

First, you need to build an object tree. This is done by adding objects to the object tree, see 3.3.1, General about building object tree.

Figure 3.2-1 shows an example of how the object tree may look like after it has been built. In the example tree you can see the SNMP OPC Server object and its child objects like subnetworks, devices, and data objects. Indentation is used to indicate the parent-child relationship between the objects.

After you have added the necessary objects to the object tree in the communication structure, you need to configure them, see 3.4.1, General about configuring objects.

Table 3.2-1 SNMP OPC Server related objects

Object	Description
SNMP OPC Server	An object representing the SNMP OPC Server.
SNMP OPC Subnetwork	An object representing the network which the SNMP device resides.

Object	Description
SNMP IED	An object representing a network device that supports SNMP protocol.
SNMP OPC Logical Device (LD)	An object representing a group of functions. Each function is defined as a Logical Node. A device consists of one or several LDs.
Logical Node (LN)	An object defined by its data and methods. LN is the smallest part of a function that exchanges data.
Data Object (DO)	Data object is an instance of one of the IEC 61850 Data Object Classes such as Single point status and Measured Value. Depending on the class, each data object has a set of attributes for monitoring and controlling the object, e.g. value, quality, and control.

3.3. Building object tree

3.3.1. General about building object tree

The object tree is built in the Communication structure of SAB600, see Figure 3.2-1. It is built by adding objects in a logical order starting from the Gateway.

You have several possible ways to add objects to the object tree in the Communication structure:

- You can right-click the object to which you want to add a child object. Then select **New > Object type group > Object name**, for example **New > SNMP > SNMP OPC Server**.
- You can right-click the object type and select **New > New**. A New Object window appears. Select the object type you want to add and click **OK** or double-click it.
- You can copy the object.

Add the objects in the following order:

1. Gateway
2. SNMP OPC Server
3. SNMP Subnetwork
4. SNMP IED
5. Logical Device objects
6. Logical Node objects
7. Data objects

3.3.2. Adding Gateway object

To start building the object tree, add a Gateway object in the Communication structure by selecting the project name, right-click it and select **New > Communication > Gateway**.

3.3.3. Adding SNMP OPC Server object

After the Gateway object has successfully been added, you can continue building the object tree by adding an SNMP OPC Server object.

To add an SNMP OPC Server object:

1. Select the Gateway object in the communication structure and right-click it.
2. Select **New > SNMP > SNMP OPC Server**.

By using the SCL Import function, it is possible to import an entire server's or individual device's configurations without having to insert them manually. To open the SCL Import function, right-click the desired object, and select **SCL Import**.

For more information about the SCL Import function, see COM600 User's Manual.

3.3.4. Adding SNMP Subnetwork objects

After the server object has been successfully added, you can continue building the object tree by adding subnetwork objects.

To add SNMP OPC subnetwork object:

1. Select SNMP OPC Server object.
2. Right-click the SNMP OPC Server object.
3. Select **New > New** or **New > SNMP > SNMP Subnetwork**.

3.3.5. Adding SNMP IED objects

After adding a subnetwork you can add device objects.

To add an SNMP Subnetwork object:

1. Select a Subnetwork object.
2. Right-click on the Subnetwork object and select **New > New** or **New > SNMP > SNMP IED**.

With SCL import function, you can import new objects with configurations from an existing file. Right-click the device and select **SCL Import** from the shortcut menu.

To import a new configuration file:

1. Click **Select File**.
2. Browse to a new configuration file from the appearing dialog.
3. Select the file and click **Open**.
4. Select the device to import from the drop-down list. You can preview the configuration on the right.
5. Click **Import**.

The new preconfigured objects appear in the object tree. If the configuration file is large, the import may take time. To import a configuration file for a different device, right-click the device, select **SCL Import** again and repeat the steps above.

For more information about the SCL Import function, see COM600 User's Manual.

3.3.6. Adding Logical Device objects

To add a Logical Device object:

1. Select an SNMP IEC object and right-click it.
2. Select **New > New** or **New > Communication > SNMP LD**.



Each SNMP IED must have at least one Logical Device object as a child object.

3.3.7. Adding Logical Node objects

To add a Logical Node:

1. Select a Logical Device object and right-click it.
2. Add a Logical Node object.
3. Rename the new object. The names of the Logical Node objects have to be unique.



You should have only one Logical Node 0 (LLN0) as a child object to a Logical Device object.

3.3.8. Adding data objects

To add a data object:

1. Select a Logical Node object and right-click it.
2. Add a data object.
3. Rename the new object. The names of the data objects have to be unique. However, you can have a data object with same name under a different Logical Node.

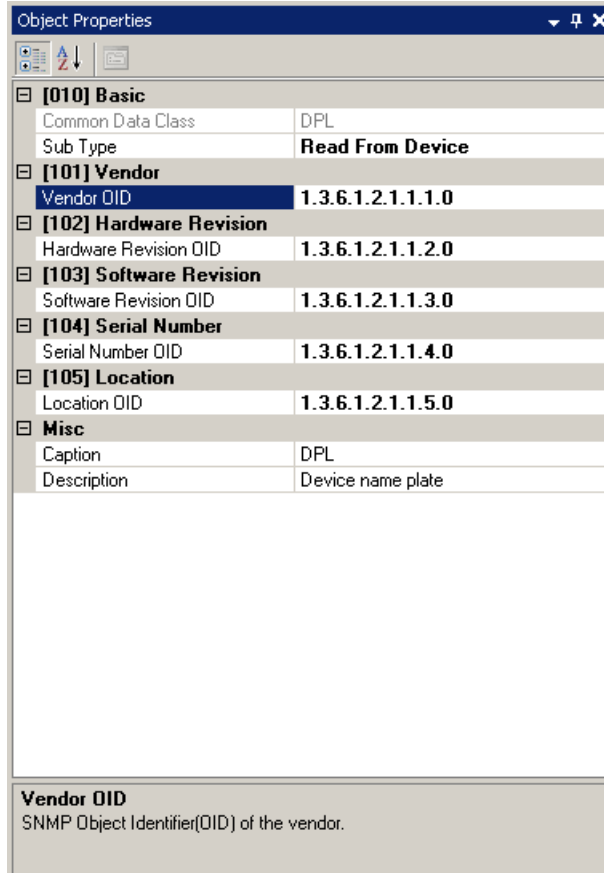
3.4. Configuring objects

3.4.1. General about configuring objects

After the objects have been added, configure the object properties. Figure 3.4.1-1 shows an example of how to use SAB600 to configure the object properties for SNMP OPC Server.

To configure an object:

1. Select an object in the object tree of the communication structure.
 - The object properties appear now in the Object Properties window. The properties and their values can be viewed as shown in Figure 3.4.1-1.



SNMP_object_properties_example

Figure 3.4.1-1 Example of object properties in the Objects Properties window

2. Select the property you want to configure. Depending on the property value type, configuring is always done either by
 - selecting a predefined value from a drop-down menu, or
 - entering a text string or a numerical value in a text field.

The available properties for different objects are listed in the following subsections.

3.4.2. Configuring SNMP Server properties

SNMP OPC Server does not have any configurable properties.

3.4.3. Configuring SNMP Subnetwork properties

The SNMP OPC Server subnetwork properties that can be configured and value ranges for them can be found in Table 3.4.3-1. The actual configuration by using SAB600 is performed as described in 3.4.1, General about configuring objects.

Table 3.4.3-1 SNMP Subnetwork properties

Property/Parameter	Value or Value range/ Default	Description
Basic		
In Use	In Use Not In use Default: In Use	Controls if the device communication is initially in use or not.

3.4.4. Configuring SNMP IED properties

The SNMP OPC Server IED properties that can be configured and value ranges for them can be found in Table 3.4.4-1. The actual configuration by using SAB600 is performed as described in 3.4.1, General about configuring objects.

Table 3.4.4-1 SNMP IED properties

Property/Parameter	Value or Value range/ Default	Description
Basic		
In Use	In Use Not In use Default: In Use	Specifies whether IED is in use or not.
Simulation Mode	False True Default: False	Defines whether IED is used in simulation mode.
SNMP Version	SMNP v1 SNMP v2c SNMP v3 Default: SNMP v2c	SNMP version supported by the network device.
Addresses		
IP Address	127.0.0.1	IP address of the IED.
Community		

Property/Parameter	Value or Value range/ Default	Description
Community Name	public	Community name defined on the network device. Community name is used to authenticate SNMP packets, which must match the community name that is specified on the agent.
Write Community Name	private	Community name used for the writing operation. The community name is used to authenticate SNMP packets, which must match the community name that is specified on the agent.
Polling		
Poll Rate	0 to 3600 Default: 2	Polling rate in seconds.
Timeout	0 to 3600 default: 5	A timeout of the component in seconds. Timeout property is set to 0, all operations return immediately. If the timeout is set to a positive value, the system will wait for the operation to complete before returning.
Security		
Authentication Password		The password used for SNMPv3 authentication.
Authentication Protocol	Not Used MD5 SHA Default: Not Used	The authentication protocol used for SNMPv3.
Encryption Algorithm	Not Used DES AES 3DES Default: Not Used	The encryption algorithm used for SNMPv3 packets.
Encryption Password		The encryption password used for SNMPv3 privacy.
User name		The user name used for SNMPv3 authentication.
Control Authorization		

Property/Parameter	Value or Value range/ Default	Description
Station/Remote Switch OPC Path		<p>Station/Remote Switch OPC Path</p> <p>OPC Path of the station remote switch position to be used with this device. The format is Node#ProgID For OPC Server#Channel Name\IED Name\Logical Device Name\Logical Node Name\Data Object Name E.g. GW#ABBDNP_LAN_OPC_DA_ServerInstance1#Channel1\IED1\LD1\GGIO1\loc</p>

3.4.5. Configuring Logical Device properties

Table 3.4.5-1 Logical Device properties

Property/Parameter	Value or Value range/ Default	Description
Basic		
Station/Remote Switch OPC Path		<p>OPC path of the station remote switch position to be used with this logical device.</p> <p>The format is Node#ProgID For OPC Server#Channel Name\IED Name\Logical Device Name\Logical Node Name\Data Object Name e.g. GW#ABBconn_OPC_DA_ServerInstance1#Channel1\IED1\LD1\GGIO1\loc</p>

3.4.6. Configuring Logical Node properties

Table 3.4.6-1 Logical Node properties

Property/Parameter	Value or Value range/ Default	Description
Basic		
Logical Node Class	LLN0 and Logical Node	Logical node class.

Property/Parameter	Value or Value range/ Default	Description
Logial Node Class	ANCR, ARCO, ATCC, AVCO, LPHD, CALH, CCGR, CILO, CPOW, CSWI, GAPC, GGIO, GSAL, IARC, IHMI, ITCI, ITMI, MDIF, MHAI, MHAN, MMTR, MMXN, MMXU, MSQI, MSTA, PDIF, PDIR, PDIS, PDOP, PDUP, PFRC, PHAR, PHIZ, PIOC, PMRI, PMSS, POPF, PPAM, PSCH, PSEF, PTEF, PTOC, PTOF, PTOV, PTRC, PTTR, PTUC, PTUV, PUPF, PTUF, PVOC, PVPH, PZSU, RDRE, RADR, RBDR, RDRS, RBRF, RDIR, RFLO, RPSB, RREC, RSYN, SARC, SIMG, SIML, SPDC, XCBR, XSWI, TCTR, TVTR, YEFN, YLTC, YPSH, YPTR, ZAXN, ZBAT, ZBSH, ZCAB, ZCAP, ZCON, ZGEN, ZGIL, ZLIN, ZMOT, ZREA, ZRRC, ZSAR, ZTCF, ZTCR Default: GGIO	Logical node class.

3.4.7. Configuring data objects for Internal OPC Data

3.4.7.1. General about configuring data objects for Internal OPC Data

Internal data objects describe internal status information of an OPC server, for example whether the connection between the SNMP OPC Server and the device (IED) is working or not. When internal information of an OPC server needs to be transferred, that is information that does not originate from a device, to an OPC Client, virtual data objects must be created.

The SNMP OPC Server supports three internal data object types that provide status information:

- 3.4.7.2, Integer status (INS) for OPC internal data
- 3.4.7.3, Controllable single point (SPC) for SNMP OPC internal data
- 3.4.7.4, Single point status (SPS) for OPC internal data

3.4.7.2. Integer status (INS) for OPC internal data

Table 3.4.7.2-1 Configurable INS (for OPC internal data) properties for OPC Servers

Property/Parameter	Value or Value range/ Default	Description
Basic		
Common Data Class	INS	Common data class according to IEC 61850
Addresses		
Item Tag Path	Default: None	Item tag path for the internal status information. The internal server tags that can be used are located in the Attributes nodes that are located under the root, line, and IED nodes. When an attribute tag is referred to in the internal item definitions below, it is possible to use either the whole tag path or just the path relative to the IED (the internal tags are configured per IED); for example, Attributes\Diagnostic counters\Transmitted data messages. When the whole path is used, it must be preceded by a slash (/) character, for example, /Channel Name\Attributes\Diagnostic counters\Transmitted data messages.

3.4.7.3. Controllable single point (SPC) for SNMP OPC internal data

Table 3.4.7.3-1 Configurable SPC (for OPC internal data) properties for OPC Servers

Property/Parameter	Value or Value range/ Default	Description
Basic		
Common Data Class	SPC	Common data class according to IEC 61850.
Addresses		

Property/Parameter	Value or Value range/ Default	Description
Item Tag Path	Default: None	Item tag path for the internal status information. The internal server tags that can be used are located in the Attributes nodes that are located under the root, line and IED nodes. When an attribute tag is referred to in the internal item definitions below it is possible to use either the whole tag path or just the path relative to the IED (the internal tags are configured per IED) e.g. Attributes\Diagnostic counters\Transmitted data messages. When the whole path is used it must be preceded by a slash (/) character e.g. /Channel Name\Attributes\Diagnostic counters\Transmitted data messages.

3.4.7.4. Single point status (SPS) for OPC internal data

Table 3.4.7.4-1 Configurable SPS (for OPC internal data) properties for OPC servers

Property/Parameter	Value or Value range/ Default	Description
Basic		
Common Data Class	SPS	Common data class according to IEC 61850
Addresses		
Item Tag Path	Attributes\Device connection status	Item tag path for the internal status information. The internal server tags that can be used are located in the Attributes nodes that are located under the root, line, and IED nodes. When an attribute tag is referred to in the internal item definitions below, it is possible to use either the whole tag path or just the path relative to the IED (the internal tags are configured per IED); e.g. Attributes\Diagnostic counters\Transmitted data messages. When the whole path is used, it must be preceded by a slash (/) character, e.g. /Channel Name\Attributes\Diagnostic counters\Transmitted data messages.

3.4.8. Configuring data objects for SNMP Device

3.4.8.1. General about configuring data objects for SNMP Device

Object Identifiers (OIDs) are used in data object configuration. Each OID identifies a variable that can be read or set via SNMP. The SNMP device uses a hierarchical namespace Management Information Base (MIB) to contain OIDs. You can find all available OIDs from the MIB file published by the device. The MIB files have the extension .mib and are generally distributed with the device.

SNMP OPC Server supports the following data object types that provide status information:

- 3.4.8.2, Device name plate (DPL)
- 3.4.8.3, Controllable integer status (INC)
- 3.4.8.4, Integer status (INS)
- 3.4.8.5, Logical Node name plate (LPL)
- 3.4.8.6, Measured value (MV)
- 3.4.8.7, Controllable Single point (SPC)
- 3.4.8.8, Single point status (SPS)
- 3.4.8.9, Binary counter reading (BCR)

The parameters are stored in Object Properties in SAB600, see the tables for each data object type. The actual configuration by using SAB600 is performed as described in 3.4.1, General about configuring objects.

3.4.8.2. Device name plate (DPL)

Table 3.4.8.2-1 Configurable DPL properties for SNMP OPC Server, subtype Basic

Property/ Parameter	Value or Value range/ Default	Description
Basic		
Common Data Class	DPL	Common data class according to IEC 61850
Sub Type	Basic	Object subtype.
Vendor		
Vendor	ABB	Text string describing the vendor.
Hardware Revision		
Hardware Revision	1.0	Text string describing the hardware revision.
Software Revision		
Software Revision	1.0	Text string describing the software revision.

Property/ Parameter	Value or Value range/ Default	Description
Serial Number		
Serial Number	ABB123456789	Text string describing the serial number.
Location		
Location	Vaasa	Textstring describing the location.

Table 3.4.8.2-2 Configurable DPL properties for SNMP OPC Server, subtype Read From Device

Property/ Parameter	Value or Value range/ Default	Description
Basic		
Common Data Class	DPL	Common data class according to IEC 61850
Sub Type	Read From Device	Object subtype.
Vendor		
Vendor OID		SNMP Object Identifier (OID) of the vendor.
Hardware Revision		
Hardware Revision OID		SNMP Object Identifier (OID) of the device hardware revision.
Software Revision		
Software Revision OID		SNMP Object Identifier (OID) of the device software revision.
Serial Number		
Serial Number OID		SNMP Object Identifier (OID) of the device serial number.
Location		
Location OID		SNMP Object Identifier (OID) of the device location.

3.4.8.3.

Controllable integer status (INC)

Table 3.4.8.3-1 Configurable INC properties for OPC servers with SNMP device

Property/Parameter	Value or Value range/ Default /Example	Description
Basic		
Common Data Class	INC	Common data class according to IEC61850.
Object Identifier		

Property/Parameter	Value or Value range/ Default /Example	Description
Object Identifier	1.3.6.1.2.1.25	SNMP Object Identifier (OID) of the managed object.
Scale and Unit		
Output Scale	Lookup Table Scale Stepwise Linear Scale Default: None	Scale for output.
Scale	Lookup Table Scale Stepwise Linear Scale Default: None	Scale for status.

3.4.8.4.**Integer status (INS)**

You can select the subtype in the Object Properties of SAB600.

Table 3.4.8.4-1 Configuring INS properties for OPC Servers with SNMP Device

Property/Parameter	Value or Value range/ Default	Description
Basic		
Common Data Class	INS	Common data class according to IEC 61850.
Object Identifier		
Object Identifier	1.3.6.1.2.1.25	SNMP Object Identifier (OID) of the managed object.
Scale and Unit		
Scale	Lookup Table Scale Stepwise Linear Scale Default: None	Scale to be used with this type.

3.4.8.5. Logical Node name plate (LPL)

Table 3.4.8.5-1 Configurable LPL properties for SNMP OPC Server, subtype Basic

Property/Parameter	Value or Value range/ Default /Example	Description
Basic		
Common Data Class	LPL	Common data class according to IEC 61850.
Sub Type	Basic	Object subtype.
Vendor		
Vendor	ABB	A text string describing the vendor.
Software Revision		
Software Revision	1.0	A text string describing software revision.

Table 3.4.8.5-2 Configurable LPL properties for SNMP OPC Server, subtype Read From Device

Property/Parameter	Value or Value range/ Default /Example	Description
Basic		
Common Data Class	LPL	Common data class according to IEC 61850.
Sub Type	Read From Device	Object subtype.
Vendor		
Vendor OID	Default: None	SNMP Object Identifier (OID) of the vendor.
Software Revision		
Software Revision OID	Default: None	SNMP Object Identifier (OID) of device software revision.

3.4.8.6. Measured value (MV)

Table 3.4.8.6-1 Configurable MV properties for SNMP OPC Servers, subtype MV Simple

Property/Parameter	Value or Value range/ Default /Example	Description
Basic		
Common Data Class	MV	Common data class according to IEC 61850
Sub Type	MV Simple	Object subtype.
Object Identifier		

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Property/Parameter	Value or Value range/ Default /Example	Description
Object Identifier	1.3.6.1.2.1.25	SNMP Object Identifier (OID) of the managed object.
Scale and Unit		
Multiplier	yocto, zepto, atto, femto, pico, nano, micro, milli, centi, deci, No multiplier, deka, hecto, kilo, mega, giga, tera, petra, exa, zetta, yotta Default: Deka	Specifies the multiplier for current SI unit.
Number of Decimals	Default: 0	Specifies the number of decimals shown in HSI. (0..9)
Scale	Lookup Table Scale Stepwise Linear Scale Default: None	Scale to be used with this type.

Property/Parameter	Value or Value range/ Default /Example	Description
Unit	meter, kilogram, second, ampere, kelvin, mole, candela, degrees, radian, steradian, gray (J/Kg), becquerel (l/s), degrees (Celsius), sievert (J/Kg), farad, coulomb, siemens, henry, volt, ohm, joule (Nm), newton (kg m/s ²), hertz, lux (lm/m ²)lx, lumen (cd sr), weber (V s), tesla (Wb / m ²), watt (J/s), pascal (N/m ²), square meter (m ²), cubic meter (m ³), meters per second (m/s), meters per second ² (m/s ²), cubic meters per second (m ³ /s), mass per cubic meter (kg/m ³), kilogram meter (kg m), kilogram per cubic meter (kg/m ³), meter square / second (m ² /s), watt per meter kelvin (W / m K), joule per kelvin (J / K), parts per million, rotations per second (1 / s), radian per second (rad / s), volt ampere (VA), watts (I ² R), volt ampere reactive (VlSin), degrees, (dimensionless) Cos, volt seconds (Ws / A), volt square (W ² / A ²), amp second (As), amp square (A ²), amp square second (A ² s), volt ampere hours, watt hours, volt ampere reactive hours, volts per hertz Default: Dimensionless	SI unit for measurement as described in IEC61850.
Limit Value Supervision		
Max	20000	Maximum value for measurement.
Min	0	Minimum value for measurement.

Table 3.4.8.6-2 Configurable MV properties for SNMP OPC Servers, subtype MV Limit Check

Property/Parameter	Value or Value range/ Default /Example	Description
Basic		
Common Data Class	MV	Common data class according to IEC 61850
Sub Type	MV Limit Check	Object subtype.

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Property/Parameter	Value or Value range/ Default /Example	Description
Object Identifier		
Object Identifier	1.3.6.1.2.1.25	SNMP Object Identifier (OID) of the managed object.
Scale and Unit		
Multiplier	yocto, zepto, atto, femto, pico, nano, micro, milli, centi, deci, No multiplier, deka, hecto, kilo, mega, giga, tera, petra, exa, zetta, yotta Default: Dekka	Specifies the multiplier for current SI unit.
Number of Decimals	0 to 9 Default: 0	Specifies the number of decimals shown in HSI.
Scale	Lookup Table Scale Stepwise Linear Scale Default: None	

Property/Parameter	Value or Value range/ Default /Example	Description
Unit	meter, kilogram, second, ampere, kelvin, mole, candela, degrees, radian, steradian, gray (J/Kg), becquerel (l/s), degrees (Celsius), sievert (J/Kg), farad, coulomb, siemens, henry, volt, ohm, joule (Nm), newton (kg m/s ²), hertz, lux (lm/m ²)lx, lumen (cd sr), weber (V s), tesla (Wb / m ²), watt (J/s), pascal (N/m ²), square meter (m ²), cubic meter (m ³), meters per second (m/s), meters per second ² (m/s ²), cubic meters per second (m ³ /s), mass per cubic meter (kg/m ³), kilogram meter (kg m), kilogram per cubic meter (kg/m ³), meter square / second (m ² /s), watt per meter kelvin (W / m K), joule per kelvin (J / K), parts per million, rotations per second (1 / s), radian per second (rad / s), volt ampere (VA), watts (I ² R), volt ampere reactive (VlSin), degrees, (dimensionless) Cos, volt seconds (Ws / A), volt square (W ² / A ²), amp second (As), amp square (A ²), amp square second (A ² s), volt ampere hours, watt hours, volt ampere reactive hours, volts per hertz Default: Dimensionless	SI unit for measurement as described in IEC61850.
Limit Value Supervision		
High	0	High limit for measurement. Event is created, when value crosses the limit.
High-High	0	High-high limit for measurement. Event is created, when value crosses the limit.
Low	0	Low limit for measurement. Event is created, when value crosses the limit.
Low-Low	0	Low-low limit for measurement. Event is created, when value crosses the limit.
Max	20000	Maximum value for measurement.
Min	0	Minimum value for measurement.

3.4.8.7. Controllable Single point (SPC)**Table 3.4.8.7-1 Configurable SPC properties for OPC servers with SNMP device, subtype Basic**

Property/Parameter	Value or Value range/ Default /Example	Description
Basic		
Common Data Class	SPC	Common data class according to IEC61850
Sub Type Basic	Bit Mask Default: Basic	Object subtype
Object Identifier		
Object Identifier	1.3.6.1.2.1.25	SNMP Object Identifier (OID) of the managed object.
Scale and Unit		
Output Scale	Lookup Table Scale Stepwise Linear Scale Default: None	Scale for output.
Scale	Lookup Table Scale Stepwise Linear Scale Default: None	Scale for status.

Table 3.4.8.7-2 Additional configurable properties for Sub-Type Bit Mask

Property/Parameter	Value or Value range/ Default /Example	Description
Basic		
Common Data Class	SPC	Common data class according to IEC61850
Sub Type	Bit Mask	Object subtype.
Object Identifier		
Object Identifier	1.3.6.1.2.1.25	Object Identifier (OID) of the managed object.
Addresses		
Output Bit Mask	0..65535 Default: 1	Bit Mask for output.
Status Bit Mask	0..65535 Default: 1	Bit Mask for status.
Scale and Unit		

Property/Parameter	Value or Value range/ Default /Example	Description
Output Scale	Lookup Table Scale Stepwise Linear Scale Default: None	Scale for output.
Scale	Lookup Table Scale Stepwise Linear Scale Default: None	Scale for status.

3.4.8.8. Single point status (SPS)

Table 3.4.8.8-1 Configurable SPS properties for SNMP OPC Servers, subtype Basic

Property/Parameter	Value or Value range/ Default	Description
Basic		
Common Data Class	SPS	Common data class according to IEC 61850.
Sub Type	Basic	Object subtype
Object Identifier		
Object Identifier	Default: 1.3.6.1.2.1.25	SNMP Object Identifier (OID) of the managed object.
Scale and Unit		
Scale	Lookup Table Scale Stepwise Linear Scale Default: None	Scale to be used with this type.

Table 3.4.8.8-2 Configurable SPS properties for SNMP OPC Servers, subtype Bit Mask

Property/Parameter	Value or Value range/ Default	Description
Basic		
Common Data Class	SPS	Common data class according to IEC 61850.
Sub Type	Bit Mask	Object subtype
Object Identifier		
Object Identifier	Default: 1.3.6.1.2.1.25	SNMP Object Identifier (OID) of the managed object.
Addresses		

Property/Parameter	Value or Value range/ Default	Description
Bit Mask	0 to 65535 Default: 1	Bit Mask for the value.
Scale and Unit		
Scale	Lookup Table Scale Stepwise Linear Scale Default: None	Scale to be used with this type.

3.4.8.9.**Binary counter reading (BCR)****Table 3.4.8.9-1 Configuring BCR properties for OPC Servers with SNMP Device**

Property/Parameter	Value or Value range/ Default	Description
Basic		
Common Data Class	BCR	Common data class according to IEC 61850.
Object Identifier		
Object Identifier	1.3.6.1.2.1.25	SNMP Object Identifier (OID) of the managed object.
Scale and Unit		
Scale	Lookup Table Scale Stepwise Linear Scale Default: None	Scale to be used with this type.

4. Operation

4.1. About this section

This section describes the basic operation procedures you can carry out after the been configured.

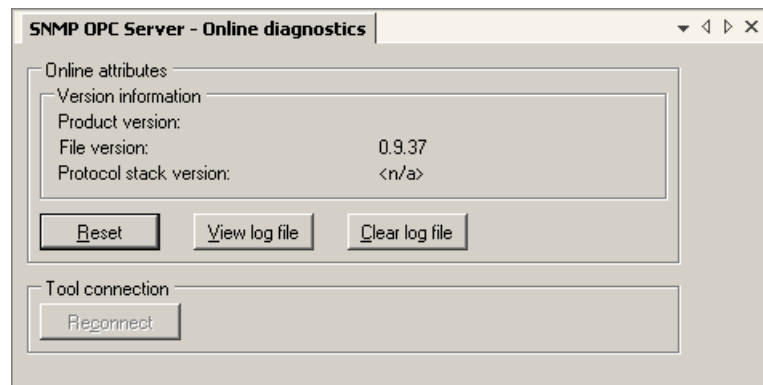
After this, you can, for example, monitor and control the condition of connections in network. This is done by using the Online diagnostics function in SAB600.

4.2. Activating COM600 with new configurations

For information about activating COM600 with new configuration, see COM600 User's Manual.

4.3. SNMP OPC Server diagnostics

To view the SNMP OPC Server diagnostics, right-click the SNMP OPC Server object and select **Online diagnostics**, see Figure 4.3-1.

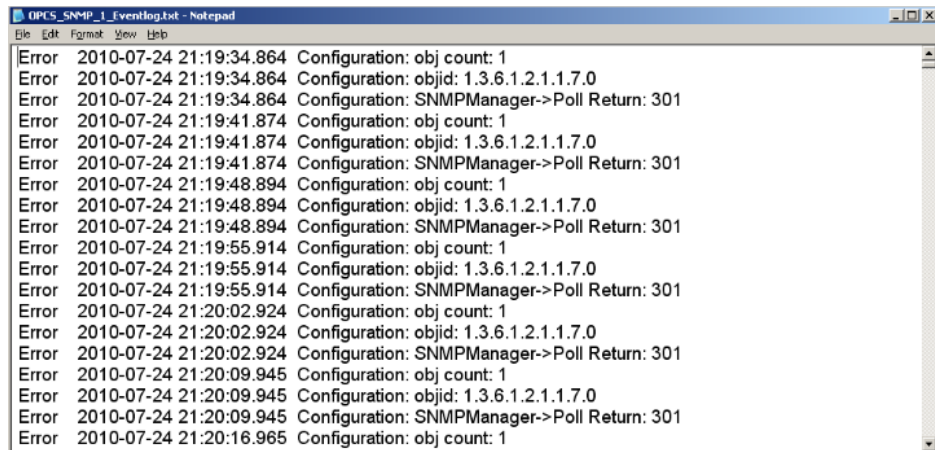


SNMP_Online_diagnostics.png

Figure 4.3-1 SNMP OPC Server diagnostics

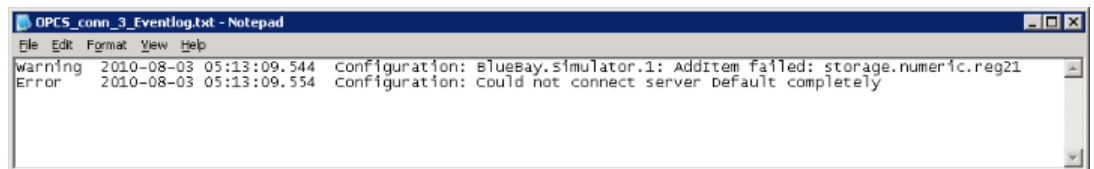
You have the following alternatives:

- to view version information
- to reset the SNMP OPC Server
- to view the event log file
- to clear the log file



SNMP_event_log.png

Figure 4.3-2 Event log file



Ext_Event_log_file.png

Figure 4.3-3 Event log file

Diagnostic AE Client

Diagnostic events can be monitored and controlled using the Diagnostic AE Client function. Click **Refresh** to update the status information. To be able to receive events from a certain device, diagnostic events must be enabled for this respective device.

To enable diagnostic events:

1. Right-click the device.
2. Select **Online diagnostics**.

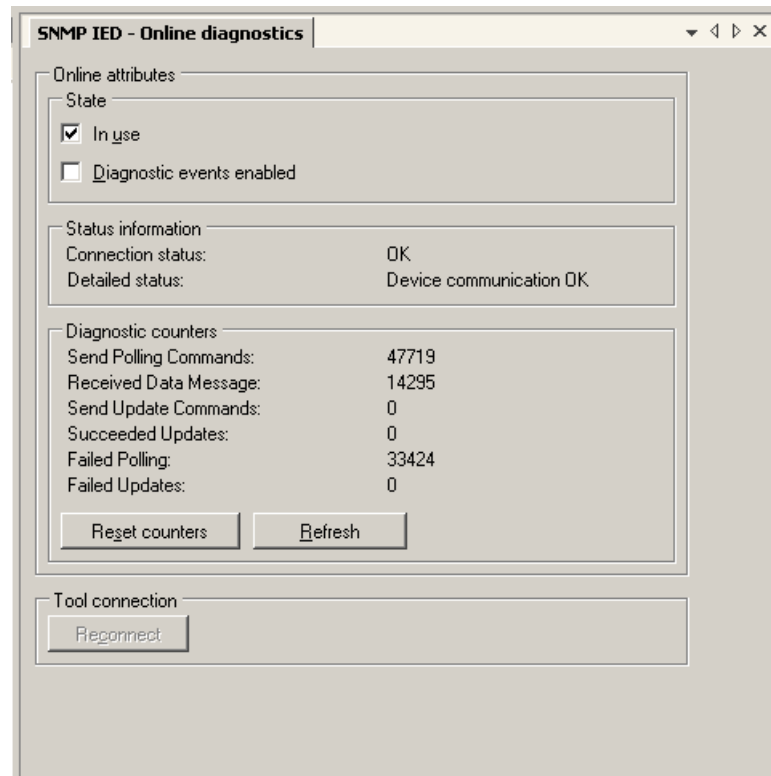
4.4. Monitoring and controlling SNMP IED communication

The SNMP IED communication can be monitored with the Online diagnostics function. You can also take a device or module into use or out of use as described in this section.

To monitor and control SNMP IED communication:

1. Select the device you want to monitor in the object tree of SAB600.
2. Right-click the device.
3. Select **Online diagnostics**.

- In the Status information field, you can monitor the device status.
- The Diagnostic counters field provides information on device activity. To reset diagnostic counters, click **Reset counters**.
- Take the SNMP device into use by selecting the **In use** check box. If you clear the check box, the device is taken out of use.
- Diagnostic counters are updated every 2 seconds. To update them manually, click **Refresh**.



SNMP_IED_online_diagnostics.png

Figure 4.4-1 SNMP IED Online diagnostics

4.5. Data object diagnostics

For information on data object diagnostics, refer to COM600 User's Manual.

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