

Integration Objects' SNMP to OPC Driver

OPC Server for SNMP

Version 1.2 Rev. 1

USER GUIDE

OPC Compatibility

OPC Data Access 3.00 OPC Data Access 2.05a OPC Data Access 2.0 OPC Data Access 1.0





OPC Server for SNMP User's Guide Version 1.2 Rev .1 January 2020

Copyright © 2017-2020 Integration Objects. All rights reserved.

All rights reserved. No part of this document may be reproduced, stored in a retrieval system, translated, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of Integration Objects.

Windows®, Windows NT® and .NET are registered trademarks of Microsoft Corporation.



TABLE OF CONTENTS

PRE	АСЕ	8
About this User Guide		
Targe	t Audience	8
Docu	ment Conventions	8
Cust	omer Support Services	9
INTR	DDUCTION	0
1.	Overview	0
2.	System Architecture 1	0
3.	Features	1
4.	OPC Compatibility	2
5.	Operating Systems Compatibility	2
6.	System Requirements	3
GET	ING STARTED	4
1.	Pre-Installation Considerations	4
2.	Installing OPC Server	4
3.	Starting-up	9
4.	Server Registration	20
5.	Removing the OPC Server	20
USIN	G OPC SERVER FOR SNMP	21
1.	User Interface Overview	21
2.	File Menu	22
3.	OPC Server Menu	22
4.	Settings Menu	23
5.	Address Space Configuration	27
5	1. Add Device	28
5	2. Add Multiple Devices	31
5	3. Refresh Address Space	33
5	4. Edit Device	33
5	5. Delete Device	35
5	6. Duplicate Device	35



5.	7.	Import MIB	. 36
5.	8.	View Device Properties	. 38
5.	9.	Add Tag	. 40
5.	10.	Add Smart Tag	. 42
5.	11.	Add offline Tag	. 43
5.	12.	Edit Tag	. 45
5.	13.	Delete Tag	. 46
5.	14.	Write Tag Value	. 47
5.	15.	View Tags Properties	. 48
5.	16.	Save Configuration	. 50
6.	Со	nnection to the OPC Server	53
TRAC	CINC	G CAPABILITIES	55
TROL	JBL	ESHOOTING	59
SET U	JP	WINDOWS SNMP SERVICE	66
1.	Ins	tall SNMP Service	66
2.	Со	nfigure SNMP Service	66



Table of Figures

Figure 1: System Architecture	11
Figure 2: Installation Welcome Dialog	14
Figure 3: License Agreement Dialog	15
Figure 4: Customer Information Dialog	16
Figure 5: Choose Destination Folder Dialog	17
Figure 6: Installation Dialog	18
Figure 7: Installation Completed Dialog	19
Figure 8: OPC Server for SNMP Start Menu	19
Figure 9: Uninstaller Shortcut	20
Figure 10: Main User Interface	21
Figure 11: File Menu	22
Figure 12: OPC Server Menu	23
Figure 13: Settings Menu	23
Figure 14: Settings Configuration Window	24
Figure 15: Agent Dialog Box	25
Figure 16: Add Agent Dialog Box	26
Figure 17: OPC Server SNMP Address Space Tree View	28
Figure 18: New Device Dialog	28
Figure 19: New Device Dialog	29
Figure 20: Test Device Connection	31
Figure 21: Add Multiple Devices	31
Figure 22: Add Multiple Devices Dialog	32
Figure 23: Refresh Address Space	33
Figure 24: Edit Device	34
Figure 25: Edit Device Dialog	34
Figure 26: Delete Device	35
Figure 27: Duplicate Device	35
Figure 28: Duplicate Device Dialog	36
Figure 29: Import MIB	36
Figure 30: Choose a MIB file Dialog	37
Figure 31: MIB Browser	37
Figure 32: Visualize Device Properties	38
Figure 33: Device Properties	39
Figure 34: Device Properties Dialog	39
Figure 35: New Tag	40
Figure 36: New Tag Dialog	40
Figure 37: Tag Browser Dialog	41
Figure 38: New Smart Tag	43



Figure 39: Add Smart Tag Dialog	43
Figure 40: Add Offline Tag	44
Figure 41: New Offline Tag Dialog	44
Figure 42: Edit Tag	45
Figure 43: Edit Tag Dialog	46
Figure 44: Delete Tag	46
Figure 45: Delete All Tags	47
Figure 46: Delete Multiple Tags	47
Figure 47: Write Value	47
Figure 48: Write Value Dialog	48
Figure 49: Add to List	48
Figure 50: Display Selected Tag Properties	49
Figure 51: Tag Properties	49
Figure 52: Tag Properties Dialog	50
Figure 53: Save File as Dialog	51
Figure 54: Configuration File Example	53
Figure 55: OPC DA Client - Connect to OPC Server for SNMP	54
Figure 56: "SrvToolkit_CfgFile.ini" File	58
Figure 57: "OPCSNMPConfig.ini" File	58
Figure 58: OPC Server for SNMP Start Menu	59
Figure 59: License Authorization	60
Figure 60: License Registration	60
Figure 61: OPC Server for SNMP Service Properties	61
Figure 62: CPU Usage Tag Properties	62
Figure 63: Edit Device Properties	63
Figure 64: Agent properties	64
Figure 65: Refresh Option	65
Figure 66: : Adding SNMP Feature	66
Figure 67: Windows Services	67
Figure 68: SNMP Service Action List	67
Figure 69: SNMP Service Properties	68



Table of Tables

Table 1: Supported OPC DA Interfaces	12
Table 2: Minimum System Requirements	13
Table 3: OPC Server for SNMP Registry Entries	20
Table 4: Server Configuration Parameters	24
Table 5: Log Settings	25
Table 6: Added Agent Parameters	27
Table 7: Device Parameters	
Table 8: Multiple Devices Parameters	33
Table 9: Tag Parameters	41
Table 10: Smart Tag List	42
Table 11: Offline Tag Parameters	45
Table 12: Devices Configuration Section	52
Table 13: Tags Configuration Section	52
Table 14: Log Settings of the "SrvToolkit_CfgFile.ini"	56
Table 15: Configuration Settings of "OPCSNMPConfig.ini"	57



PREFACE

About this User Guide

This guide:

- Describes the main features of Integration Objects' OPC Server for SNMP.
- Lists the system requirements for installing and running the OPC Server for SNMP.
- And explains how to use and run this OPC server.

Target Audience

This document is intended for users that are looking for applications providing standard OPC DA (Data Access) connectivity to SNMP enabled devices. Knowledge of the basics of OPC DA specification is assumed. It is also expected that you have some prior knowledge of the SNMP protocol.

Document Conventions

Convention	Description
Bold	Click/selection action required
	Information to be noted
Blue bold italics	Reference to other sections, or to other Integration Objects user guides



Customer Support Services

Phone	Email
Americas:	Support:
+1 713 609 9208	customerservice@integrationobjects.com
Europe-Africa-Middle East	Sales:
+216 71 195 360	sales@integrationobjects.com
	Online:
	www.integrationobjects.com



INTRODUCTION

1. Overview

Integration Objects' OPC Server for SNMP is an OPC Server software designed to provide an OPC DA standard interface to SNMP enabled devices such as network routers, switches, firewalls, UPS (Uninterrupted Power Supply) systems, PLCs and other network devices. It establishes connection with one or more SNMP enabled devices via TCP/IP protocol in order to collect data in real-time and provide monitoring features for these devices to OPC compliant client applications.

Simple Network Management Protocol (SNMP) is a popular protocol for network management. It is used for collecting information from, and configuring, network devices, such as servers, printers, hubs, switches, and routers on an Internet Protocol (IP) network.

The OPC Server for SNMP helps in reducing the gap between the plant-floor operation and the IT operation as both parties have the information they need to monitor equipment and diagnose problems.

2. System Architecture

This OPC Server reads and updates data from/to devices such as routers, PLCs and firewalls. It can be accessed locally or remotely via DCOM by any OPC DA compliant client.

The following figure illustrates the client/server architecture and demonstrates the interaction between the OPC DA clients, the OPC Server for SNMP and the various SNMP enabled devices.





Figure 1: System Architecture

3. Features

The OPC Server for SNMP offers the following features:

- **Devices monitoring**: This server offers the possibility to manage and monitor unlimited number of devices and servers of different vendors using the SNMP protocol.
- **Network discovery**: The server discovers all the devices present within a provided IP range using both SNMP (version1, version2 and version3) and ICMP methods to discover SNMP or non-SNMP enabled devices in the network.
- **Trap recognition**: The user can manage all the agents he wants in order to receive their SNMP traps messages. The server then will process the received messages and expose them in OPC DA tags format.
- **Intuitive user interface**: The end user has access to a configuration tool allowing him to easily set-up the network equipment, machines and properties to be monitored.
- **Support of multiple client connections**: Any compliant OPC DA client can easily connect to the OPC Server and get different tags' values. The server also supports multiple OPC DA client connections.
- **Traceability of events**: The server contains log capabilities to log different events in text files.



The following table lists the supported OPC DA interfaces:

Object	Interface	Supported
	IUnknown	Yes
	IOPCCommon	Yes
	IOPCServer	Yes
OPC DA Server	IConnectionPointContainer	Yes
	IOPCBrowseServerAddressSpace (Optional)	Yes
	IOPCItemProperties	Yes
	IUnknown	Yes
	IOPCItemMgt	Yes
OPC DA Group	IOPCGroupStateMgt	Yes
	IOPCPublicGroupStateMgt (Optional)	Yes
	IOPCSynclO	Yes
	IOPCAsynclO	Yes

Table 1: Supported OPC DA Interfaces

4. OPC Compatibility

Integration Objects' OPC Server for SNMP implements OPC Data Access specification version 1.0, 2.05 and 3.0.

5. Operating Systems Compatibility

This OPC Server was successfully installed and executed under the following operating systems:

- Windows XP SP3
- Windows 7
- Windows 8
- Windows 10
- Windows Server 2003 SP2
- Windows Server 2008
- Windows Server 2012
- Windows Server 2016
- Windows Server 2019



6. System Requirements

The following table summarizes the minimum requirements to run the OPC Server for SNMP:

	Description
Processor	1 GHz (higher recommended)
RAM	1 Gb (higher recommended)
Disk Space	100 Mb hard disk space for full installation

Table 2: Minimum System Requirements

Also, refer to the next section for more details about installation pre-requisites.



GETTING STARTED

1. Pre-Installation Considerations

In order to properly run the OPC Server for SNMP, the following software components need to be installed on the target system:

- The **OPC core components 3.00** which consists of all shared OPC modules including the DCOM proxy/stub libraries, the OPC Server Enumerator, .NET wrappers, etc.
- .NET framework version 4.0 or higher.

Make sure there is no firewall or antivirus blocking the application.

2. Installing OPC Server

To install the OPC Server for SNMP:

1. Double-click on the **Integration Objects' OPC Server for SNMP** installation package. The installation welcome dialog box will appear.



Figure 2: Installation Welcome Dialog



2. Click the Next button. The license agreement will be displayed



Figure 3: License Agreement Dialog

3. After reading the license agreement, select the first option and click the **Next** button. By proceeding, you are accepting all of the license agreement terms. Otherwise, you can cancel the installation. If you choose the first option, the customer information dialog will then appear.



Integration Objects' OPC Server for SNMP - InstallShield Wizard		
Customer Information Please enter your information.		
	Please enter your name and the name of the company for which you work. User Name: Company Name: Integration Objects	
Insta II Shield	< <u>B</u> ack <u>N</u> ext > Cancel	

Figure 4: Customer Information Dialog

4. Enter the user name and the company name and then click the **Next** button. The dialog box for selecting the destination folder will be displayed.



Integration Objects' OPC Server for SNMP - InstallShield Wizard			
Choose Destination Location Select folder where setup will install files.			
	Setup will install Integration Objects' OPC Server for SNMP in the following folder. To install to this folder, click Next. To install to a different folder, click Browse and select another folder. Destination Folder C:\\Integration Objects' OPC Server for SNMP		
InstallShield	< Back Next> Cancel		

Figure 5: Choose Destination Folder Dialog

5. Click the **Next** button to continue the installation, or the **Browse** button to choose a different destination folder. The installation dialog box will then appear.



Integration Objects' OPC Server for SNMP - InstallShield Wizard		
Ready to Install the Program The wizard is ready to begin inst	allation.	
	Click Install to begin the installation. If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.	
InstallShield	< <u>B</u> ack [Install] Cancel	

Figure 6: Installation Dialog

- 6. Click the **Install** button to start installation. The setup will then:
 - Copy the necessary files to the selected target folder,
 - Create shortcut icons to launch the OPC Server for SNMP and license authorization program from the start menu and the desktop,
 - Make an un-installation entry in the Programs and Features in the Control Panel.
- 7. Click the **Finish** button.



Integration Objects' OPC Server for SNMP - InstallShield Wizard			
	InstallShield Wizard Complete		
	Integration Objects' OPC Server for SNMP has been successfully installed on your computer. Press Finish button to exit this installation.		
InstallShield	< Back Finish Cancel		

Figure 7: Installation Completed Dialog

3. Starting-up

The OPC Server for SNMP service is started automatically with the host machine restart. It can be started and stopped manually from the Windows services manager. The user interface can be launched from the start menu shortcut.



Figure 8: OPC Server for SNMP Start Menu

The server can also be launched automatically when the first OPC DA client connects to it.



4. Server Registration

In compliance with the OPC and COM specifications, the OPC Server for SNMP creates the following registry entries under HKEY_CLASSES_ROOT when installed on the target system. These entries will be removed when the server is uninstalled.

Registry Entry	Description			
IntegrationObjects.OPC.SNMP.1	Integration Objects' OPC Server for SNMP; http://www.integrationobjects.com			
IntegrationObjects.OPC.SNMP.1\CL SID	{ <i>CLSID</i> } = {81A0F806-9F39-4776-845E-0AD85AB3306B}			
CLSID\{ CLSID }	Integration Objects' OPC Server for SNMP; http://www.integrationobjects.com			
CLSID\{ CLSID }\AppID	{CLSID}			
CLSID\{ CLSID }\ProgID	IntegrationObjects.OPC.SNMP.1			

Table 3: OPC Server for SNMP Registry Entries

5. Removing the OPC Server

You can remove the server from your machine by clicking the **Uninstall OPC Server for SNMP** shortcut from the start menu.



Figure 9: Uninstaller Shortcut

This OPC Server can also be removed manually as follows:

- 1. Click on the Start Menu.
- 2. Go to the Control panel.
- 3. Click **Programs and Features**.
- 4. In the **Programs and Features** dialog screen, select "**Integration Objects' OPC** Server for SNMP".
- 1. Click Uninstall then OK.



USING OPC SERVER FOR SNMP

In this section, you will find an overview of the OPC Server for SNMP user interface as well as the steps required to configure and use the application.

1. User Interface Overview

Users can configure the OPC Server for SNMP with an intuitive graphical user Interface. The following figure illustrates the main user interface.

🖳 Integration Objects' OPC Server for SNMP 💦 👘 📼 🗴					
File OPC Server	Settings Hel	p			
New Open	Save Save As	Exit	1		
Op	en	Exit			
	P	X Device Tag			•
Address Space	e	Alias	Name	IP Address	Timeout
		*			
2		<	3		
Server Statistics	0		Log Message	S	*
Status	Stopped	Timestamp	Message		
Connected Clients	0	2017/01/19 05:28:51	The configuration has	been loaded successfull	у
Created Groups	• 4	2017/01/19 05:28:51	Integration Objects' OF	PC Server for SNMP GUI	was initialized
Added Items	0		5		
Last Opdate Time	U	2 Messages	1		

Figure 10: Main User Interface

The main user interface includes four main sections:



- Menu bar (1): This part contains the File menu, the OPC Server menu, the Settings menu and the Help menu. These menus provide access to functions that help the user interact with the application.
- Server address space tree view (2): allows configuring the OPC Server address space. All added devices and tags will be displayed in this tree view.
- Tag & Device data grid (3): The Tag Tab displays the properties of the selected tag and the device tab displays the properties of the selected device in the tree view.
- Server statistics summary (4): displays server status (running or suspended...), the number of connected clients, the number of created groups, the number of created items and the last updated time.
- Log messages (5): displays the different log messages.



Figure 11: File Menu

Using the File menu, you can:

- Create new configuration by clicking on New,
- Open an existing configuration by clicking on **Open** and selecting the appropriate XML configuration file,
- Save your current configuration by clicking on Save or Save As,
- Close the application by clicking the **Exit** button.

3. OPC Server Menu

The OPC Server is registered automatically during the installation. The end user can also use the OPC Server menu to manually **register** and **unregister** the server.

Make sure to run the OPC Server for SNMP configuration tool as administrator when registering or unregistering the server.





Figure 12: OPC Server Menu

4. Settings Menu

Using the Settings menu, you can:

- **Define** the default configuration that will be loaded automatically when you restart the server.
- **Remove** the default configuration.
- Select the style of the graphical user interface, which is set by default to "Windows7Blue".
- Configure the server setting when clicking the **Configure** button.



Figure 13: Settings Menu

When the user clicks the **Configure** button, the window below will be prompted:



📩 Settings Configurati	on	x
		Log Configuration
Configuration	Auto Append *	🖉 True 🔺
- 🕞 Application	Buffer Size	200
Service	File Extension *	log
	File Max Size	10
:	File Name *	LogServerForSNMPGUI
	Folder Path *	C:\Program Files (x86)\Integration Objects\Integrati
	Level	Error
4	Maximum Files	5
	Save Timeout	10
* Restart the application fo	or the changes to take effect.	
	S	erver Configuration
Server Rate (ms) :	50	0 Check Device Status Period (ms) : 30000
Default Configuration File :	C:\Program Files (x86)\Integration Obj	ects\Integration Objects' OPC Server for SNMP\DefaultConfig.xml
		OK Cancel

Figure 14: Settings Configuration Window

In this window, you can configure the following parameters:

• For the server configuration, you can update the following parameters:

Parameter	Description	Default Value	
Server Rate	The frequency at which the server handles the asynchronous reads/updates	500 milliseconds	
Check Device Status Period	The frequency at which the server will check the device connection status	60 000 milliseconds	
Default Configuration File	The full path of the server XML configuration file	C:\ProgramFiles(x86)\Integratio nObjects\IntegrationObjects' OPCServerforSNMP\DefaultCo nfig.xml	

Table 4: Server Configuration Parameters

Log Setting	Description	Default Value
Auto append	Set to true to continue writing log messages in the existed log file or to false to create a new file.	True
Buffer size	The maximum number of messages to be stored in the	200



	runtime memory before launching writes action in the hard disk. It must be greater than 100.	
File extension	The log file extension	log
File max size	The maximum size of the log file (in Mb)	10 Mb
File name	The log file name	 LogServerforSNMPGUI: log file of the configuration user interface LogServerforSNMPService: log file of the service
Folder path	The application folder path	Installation Folder
Level	The type of log messages to be logged. The value can be Control, Error, Warning, Inform, and Debug.	Error
Maximum files	Maximum number of files	5
Auto save timeout	Time to wait to read all messages from the buffer	10

Table 5: Log Settings

When the user clicks the **Agent** button, the window below will be prompted:

🛋 Ag	entList						- ×
Agent							•
	Address	Port	Read Community	Write Community	SNMP Version	User	Auth Protocol
Þ	192.168.0.124	162	public	public	Version2		
•							
			Add	Delete			
						ОК	Cancel

Figure 15: Agent Dialog Box



In the agent dialog box, the user can either add or delete agent (equipment) from the list. The user can only receive trap messages from the agent added to this list. After clicking on the **Add** button, the next dialog box will be displayed.

📼 Agent	_ X
P	roperties
Address:	127.0.0.1 I
Port:	162
Read Community:	public
Write Community:	public
SNMP Version:	Version1
Dynamic Trap Tags Gen	eration
SNMP	Authentication
User:	
Authentication Protocol:	•
Authentication Password:	
Privacy Protocol:	•
Privacy Password:	
ОК	Cancel

Figure 16: Add Agent Dialog Box

In this window, you can configure the following parameters:

Parameter	Description	
Address	The SNMP enabled device IP address.	
Port	The server will listen to trap messages that will come through this port.	
Connection Timeout	The waiting period for an unresponsive server.	
Read community	The SNMP read Community string is a user Id or password that allows access to device's information.	



Write community	The SNMP write Community string is a user Id or password that allows access to device's information.			
SNMP version	The SNMP version of the device (Version1 or Version2 or Version3).			
Dynamic Trap Tags Generation	If checked, all of the variables contained in the trap message are created and added to server address space dynamically. If not checked, the server will only update the value of existing tags.			
	SNMP version3 requires user credentials to be passed on within each SNMP request. Three attributes are associated to this parameter:			
	User: user name			
SNMP Authentication	 Authentication Password: private key name if the agent requires SHA or MD5 authentication. 			
	 Authentication Protocol: MD5 or SHA. 			
	 Privacy Password: a unique password if the agent requires privacy (DES or AES) protection. 			
	 Privacy Protocol: DES or AES. 			

Table 6: Added Agent Parameters

5. Address Space Configuration

The OPC Server address space can be configured from the tree view at the left side of the main user interface.



📱 Integration Objects' OPC Server for SNMP 📃 🗖					
File OPC Server	Settings Help				
New Open	Save Save As	kit			
Op	en E	xit			
		Device Tag	1		•
Address Spac	e	Alias	Name	IP Address	Timeout
		*			
Canada Chalimitan					
Server Statistics			Log Message	s	*
Status	Stopped	Timestamp	Message		
Connected Clients	0	2017/01/19 05:28:51	The configuration has I	peen loaded successfull	у
Created Groups	0	2017/01/19 05:28:51	Integration Objects' OF	C Server for SNMP GUI	was initialized
Added Items	0				
Last Update Time	0	2 Messages			

Figure 17: OPC Server SNMP Address Space Tree View

The sections below describe how to add, edit and delete SNMP devices and tags.

5.1. ADD DEVICE

Right click on the **Address Space** node, select **Add Device** from the displayed menu as illustrated below.



Figure 18: New Device Dialog

Then, the New Device dialog will be displayed as shown below:



🗈 New Device	x
	Properties
Alias:	Device1
IP Address:	127.0.0.1
O Name:	
SI	NMP Properties
SNMP Community:	public
SNMP Version:	Version1
SNMP Timeout (ms):	6000
SNN	IP Authentication
User Name:	
Authentication Protocol:	*
Authentication Password:	
Privacy Protocol:	V
Privacy Password:	
Cor	nection Settings
Ping Timeout (ms):	3000
Status:	
	Ping
Test Connection	OK Cancel

Figure 19: New Device Dialog

The table below summarizes the parameters to configure your SNMP device:

Parameter	Description	
Alias	The device name to be used to manipulate the device	
IP Address	The SNMP enabled device IP address	
Name	The device name in the network	
Ping Timeout	The time to wait before flagging the device as unresponsive to ICMP request	
SNMP community	The SNMP Community string is a user Id or password that allows access to device's statistics	

SNMP version	The SNMP version of the device (Version1 or Version2 or Version3)	
SNMP Timeout	The time to wait before flagging the SNMP enabled device as unresponsive.	
	SNMP version3 requires user credentials to be passed on within each SNMP request. Three attributes are associated to this parameter:	
	Use name: user name	
SNMP Authentication	 Authentication Password: private key name if the agent requires SHA or MD5 authentication. 	
	Authentication Protocol: MD5 or SHA.	
	 Privacy Password: a unique password if the agent requires privacy (DES or AES) protection. 	
	Privacy Protocol: DES or AES.	

Table 7: Device Parameters

You can ping the device by clicking on the **Ping** button. The status of the connection to the device (success, destination unreachable, etc.) will be displayed in the filed Status.

You can test the connection of the device by clicking on the **Test Connection** button. The connection status will be displayed in a message box.





🗟 New Device	x
	- Properties
Alias:	Device1
IP Address:	127.0.0.1
O Name:	
[[SNMP Properties
SNMP Community:	public
SNMP Version:	Version1
SNMP Tim OPC Serve	r for SNMP 🗶 🖃
User Name	Test connection succeeded
Authentica	<u>O</u> K
Privacy Protocol:	
Privacy Password:	
(Connection Settings
Ping Timeout (ms):	3000
Status:	
	Ping
Test Connection	OK Cancel

Figure 20: Test Device Connection

5.2. ADD MULTIPLE DEVICES

You can add multiple devices available within a certain IP range by right clicking on the **Address Space** node and selecting **Add Multiple Devices** option from the displayed menu.

0	Add Device
0	Add Multiple Devices
8	Delete All Devices
9	Refresh

Figure 21: Add Multiple Devices



SIV	IMP Auto Discovery	
Start IP Address:	127.0.0.1	
End IP Address:		[
Discovery Methods:	system description	-
Ping Timeout (ms):	3000	ł
SNMP Community:	public	
SNMP Version:	Version1	
SNMP Timeout (ms):	6000	Ŀ
SN	IMP Authentication	
User Name:		
Authentication Protocol:		
Authentication Password	d:	
Privacy Protocol:		-
Privacy Password:		

Then, the Add Multiple Devices dialog will be displayed as illustrated below:

Figure 22: Add Multiple Devices Dialog

The table below summarizes the configuration parameters for the discovery of multiple devices to be added:

Parameter	Description	
Start IP Address	The first IP address in the IP address range	
End IP Address	The last IP address in the IP address range	
	The method that the server will use to discover devices. Two methods are available:	
Discovery Methods	 system description: SNMP method (Discovers only SNMP enabled devices) 	
	 ping: ICMP method (Discovers SNMP and non SNMP enabled devices) 	



Ping Timeout	If the chosen discovery method is ping, the user will need to enter the ping timeout parameter, which is the time to wait before flagging the server as unresponsive.		
SNMP Community	The SNMP Community string is a user id or password that allows access to device's statistics		
SNMP Version	The SNMP version supported by the device (Version1 or Version2 or Version3)		
SNMP Timeout	The time to wait before flagging the SNMP enabled device as unresponsive.		
	SNMP version3 requires user credentials to be passed on within each request. Three attributes are associated to this parameter:		
	Use name: user name		
SNMP Authentication	 Authentication Password: private key name if the agent requires SHA or MD5 authentication. 		
	Authentication Protocol: MD5 or SHA.		
	 Privacy Password: a unique password if the agent requires privacy (DES or AES) protection. 		
	Privacy Protocol: DES or AES.		

Table 8: Multiple Devices Parameters

5.3. REFRESH ADDRESS SPACE

You can refresh the address space to update the tag list by right clicking on the Address Space node and selecting the **Refresh** option from the displayed menu. Or you can simply select the Address space node and press F5 in your keyboard.



Figure 23: Refresh Address Space

5.4. EDIT DEVICE

You can edit the device configuration parameters by right clicking on its node and selecting the **Edit Device** option from the displayed menu.





Figure 24: Edit Device

The "Edit Device" dialog will then be displayed as illustrated below: You can edit the IP address, name, the SNMP properties and connection settings.

📼 Edit Device	×
	Properties
Alias:	Device1
IP Address:	127.0.0.1
O Name:	VMWindowsTen
SI	NMP Properties
SNMP Community:	public
SNMP Version:	Version1
SNMP Timeout (ms):	6000
SNN	/IP Authentication
User Name:	
Authentication Protocol:	_
Authentication Password:	
Privacy Protocol:	_
Privacy Password:	
Cor	nnection Settings
Ping Timeout (ms):	3000
Status:	
	Ping
Test Connection	OK Cancel

Figure 25: Edit Device Dialog



5.5. DELETE DEVICE

You can remove a device by right clicking on its name in the tree and selecting the **Delete Device** option from the displayed menu.



Figure 26: Delete Device

5.6. DUPLICATE DEVICE

You can duplicate an existing device configuration to multiple devices by right clicking on the device name and choosing the **Duplicate** option from the displayed menu.



Figure 27: Duplicate Device

A dialog box will be displayed allowing the user to add list of the IP addresses separated with semicolon.

.



C	🖹 Duplicate	Device	-	x
F		Device		
	Alias:	Device2		
	IP Address:	192.168.0.2;192.168.0.3		
		OK Cancel		

Figure 28: Duplicate Device Dialog

5.7. IMPORT MIB

You can import a MIB file by right clicking on a device name from the tree and choosing the **Import MIB** option from the displayed menu.



Figure 29: Import MIB

A dialog box will be displayed allowing the user to add his MIB file.



Open File	x
Look in:	📔 MIB 💽 🎯 🗸 🖄 🖾 🗸 🖄 Tools 🔻
Desktop Documents Documents This PC	Name Date modified Type Size ACSServer-MIB.xml ADSL-LINE-MIB.xml FFM-CU-MIB.xml EFM-CU-MIB.xml PW-ATIM-MIB.xml FINISHER-MIB.xml PW-ATM-MIB.xml FINISHER-MIB.xml FINISHER-MIB.xml
	File name: ACSServer-MIB.xml Open
	File type: MIB (*.XML) Cancel

Figure 30: Choose a MIB file Dialog

After choosing a specific MIB file, the user can then visualize the content of the chosen file.

S MIB Browser	X
	Properties Name: acsMsidlpmStatsEntry OID: 1.3.6.1.4.1.311.1.15.3.1.1 Access Rights:

Figure 31: MIB Browser



5.8. VIEW DEVICE PROPERTIES

The OPC Server for SNMP offers two ways for the user to check the device properties.

1. After selecting a device in the tree, the user can visualize the selected device properties in the grid view on the right side.

📱 Integration Objects' OPC Server for SNMP 💦 📃 🗖					
File OPC Server	Settings Help				
New Open	Save Save As	xit			
Ope	en E	ixit			
		Device Tag			-
🖃 📗 Address Space	e	Alias	Name	IP Address	Timeout
E Device1		Device1	DEVPCSNMP22	127.0.0.1	3000
Server Statistics					
Statue	Stopped	T'	Log Message	S	*
Copported Clients	0	Timestamp	wessage		
Croated Groups	0	2017/01/19 06:12:49	Device: 127.0.0.1 Add	led successfully	
Greated Groups	0	2017/01/19 05:28:51	The configuration has	been loaded successful	ly
Added Items	0	2017/01/19 05:28:51	Integration Objects' Of	PC Server for SNMP GUI	l was initialized
Last Update Time	0	3 Messages			

Figure 32: Visualize Device Properties

2. The user can also check the properties of a device by right clicking on a device name from the tree and choosing the **Properties** option from the displayed menu.





Figure 33: Device Properties

Then, the "Device Properties" dialog will be displayed.

Device Properties	-	x
	Properties	
Alias:	Device 1	
Name:	CHAIMA-DELL-PC	
IpAddress:	127.0.0.1	
Туре:	Workstation	
Timeout:	3000	
Community Name:	public	
SNMP Version:	Version 1	
SNMP Timeout	6000	
Description:	Hardware: Intel64 Family 6 Model 42 Stepping 7 AT/AT COMPATIBLE - Software: Windows Version 6.1 (Build 7601 Multiprocessor Free)	
	ОК	

Figure 34: Device Properties Dialog



5.9. ADD TAG

The figure below shows how to add a new tag to a device.



Figure 35: New Tag

Once the **New Tag** option is selected, a dialog will be displayed allowing the user to configure the tag parameters.

촉 New Tag		x
	Identification	
Alias:	Tag1	
OID:	1.3.6.1 Browse	
Name:		
Access Right:		
Description:		
	OK Cancel	

Figure 36: New Tag Dialog

The table below summarizes the tag configuration parameters:

Parameter	Description
Alias	The name used to manipulate the tag.
OID	Object Identifier (OID): it is the unique identifier of each tag.
Name	The associated name of the OID in the MIB file. This name is not editable.
Access Right	Each tag has an access right. It could be: Read, Write, or Read/Write. This property is not editable.
Description	Textual description of the tag.

Table 9: Tag Parameters

The user can either add a specific OID manually or a click on the **Browse** button to search for a tag. The Browse button will perform a SNMP Walk starting from the entered OID and the" Tag Browser" dialog will be displayed. You can choose one or many tags from the list of tags. Besides, you can access the different properties by selecting the tag.

💁 Tag Browser			X
	$\left \right\rangle \times$		Properties
(Select All)	<u>^</u>	Name:	ipInAddrErrors
sysObjectD		OID:	12612145
sysUpTime		0.0.	1.3.0.1.2.1.4.3
sysContact		Access Rights:	readonly
syst ocation		Description	
sysServices (1)			The number of input datagrams discarded because the
ifNumber	4		IP address in their IP header's destination field was not a
ipForwarding		(2)	includes invalid addresses (e.g., 0.0.0.0) and addresses
			of unsupported Classes (e.g., Class E). For entities which are not IP Gateways and therefore do not forward
ipInHdrErrors	4		datagrams, this counter includes datagrams discarded
ipInAddrErrors			address.
ipForwDatagrams			
ipInDiscards			
ipInDelivers			
ipOutRequests			
ipOutDiscards		l	
□ ipReasmTimeout			OK Cancel
in Contraction	•		

Figure 37: Tag Browser Dialog

• <u>List of tags (1):</u> This is where all the available tags of a device are displayed. To add a tag, check the related box. If you wish to add all tags you will need to check the **Select All** node.



• <u>**Tag properties (2):**</u> When selecting a tag in the list, you can visualize its properties: name, OID, access rights and description.

5.10. ADD SMART TAG

A smart tag is a predefined and calculated tag based on a combination of different tags. The list of available smart tags is in the following table:

Smart Tag	Description
Used Memory	The total amount of real system memory allocated to all active process in Gbyte
CPU Usage	The average of percentage of time over the last minute when CPU was not idle
Core Usage	The average amount of percentage of time over the last minute where the CPU is not idle
Network Interface 's Input Utilization	The interface's input utilization in Mbps
Network Interface 's Output Utilization	The interface 's output utilization in Mbps
Network Interface 's Status	The interface's status. It can be: • up • down • testing • unknown • dormant • notPresent • loweLayerDown
Disks' Volume Used	The volume used of a disk in GB
Disks' Size	The volume size of a disk in GB
Disks' Available Space	The available space of a disk in GB
Status	 The status of the device on the network based on the device response to ping requests: Available Not Available
Ping Timeout	The number of milliseconds taken to send an ICMP echo request and receive a reply in milliseconds

Table 10: Smart Tag List



You can add a smart tag by clicking on the **New Smart Tag** option in the displayed menu of a device.



Figure 38: New Smart Tag

After clicking on **New Smart Tag**, the following dialog will be displayed.

💁 Tag Browser	22
	Properties
(Select All) Device1/Smart /Used Memory Device1/Smart /Core1 Usage Device1/Smart /Core1 Usage Device1/Smart /Core2 Usage Device1/Smart /Core3 Usage Device1/Smart /Core4 Usage Device1/Smart /WANMiniportBYF's Input Utilization Device1/Smart /WANMiniportPPT's Input Utilization Device1/Smart /WANMiniportPPPOE's Input Utilization Device1/Smart /WANMiniportPPPOE's Input Utilization Device1/Smart /WANMiniportPPOE's Input Utilization Device1/Smart /WANMiniportPY's Input Utilization	Name: Device 1/Smart /Core2 Usage Value 1 Access Rights: Read only Description: The average amount of percentage of time over the last minute where the CPU is not idle
Uevice1/Smart /VMwareVirtualEthernetAdapterfor/Mn Device1/Smart /CarteMicrosoftISATAP2's Input Utiliza'	OK Cancel

Figure 39: Add Smart Tag Dialog

5.11. ADD OFFLINE TAG

You can add one or multiple offline tags even when the device doesn't response to SNMP request.

The figure below shows how to add an offline tag to the device





Figure 40: Add Offline Tag

After clicking on **New Offline Tag**, the following dialog will be displayed.

😎 New Offline Tag 🛛 💷 🗙				
	Identification			
Alias:	Tag1			
OID:	0ID1;0ID2;0ID3			
Data Type:	VT_BOOL			
Access Right:	Read			
Description:				
	OK Cancel			

Figure 41: New Offline Tag Dialog

The table below summarizes the tag configuration parameters:



Parameter	Description		
Alias	The name used to manipulate the tag.		
OID	Object Identifier (OID): it is the unique identifier of each tag.		
Data Type	The type of data, which can be: • VT_I2 • VT_I4 • VT_R4 • VT_UI2 • VT_UI4 • VT_BSTR • VT_BOOL		
Access Right	Each tag has an access right. It could be: Read, Write, or Read/Write. This property is not editable.		
Description	Textual description of the tag.		

Table 11: Offline Tag Parameters

5.12. EDIT TAG

You can update a tag configuration by clicking on the Edit Tag option in the right click menu.



Figure 42: Edit Tag

The" Edit Tag "dialog will be displayed as illustrated below: the user is able to edit only the OID or the description of the tag.





🦈 Edit Tag	X
	Identification
Alias:	Device1/sysLocation
OID:	.1.3.6.1.2.1.1.6.0 Browse
Name:	sysLocation
Access Right:	Read/Write
Description:	The physical location of this node (e.g., telephone closet, 3rd floor'). If the location is unknown, the value is the zero-length string.
	OK Cancel

Figure 43: Edit Tag Dialog

5.13. DELETE TAG

You can delete a tag from the address space by clicking the **Delete Tag** option in the right click menu.



Figure 44: Delete Tag

You can delete all the tags of a device by selecting the **Clear All Tags** option in the right click menu of the device.





Figure 45: Delete All Tags

You can also delete multiple tags by selecting multiple tags and right clicking on them. Then, choose the delete option from the displayed menu.



Figure 46: Delete Multiple Tags

5.14. WRITE TAG VALUE

You can change the value of a tag if it has a read/write or write access by clicking the **Write Value** option in the right click menu of the tag.



Figure 47: Write Value

When selecting the Write Value option, the following dialog will be displayed.



🥜 Write Value	x
Tag Value	
Old Value: Japan	
New Value: Tokyo	
OK Cancel	

Figure 48: Write Value Dialog

5.15. VIEW TAGS PROPERTIES

Select multiple tags and right click, then choose **Add to list** option. The tags properties will be displayed in the grid view on the right side of the main user interface.



Figure 49: Add to List



📗 Integration Object	ts' OPC Server for SNMP					_ =	x
File OPC Server	Settings Options	Help					
New Open	Save Save As	xit					
Ор			Tag				-
			Name	OID	Data type	Access Right	
Address Space	.e	Þ	Device1/sysUpTime	.1.3.6.1.2.1.1.3.0	string	Read	
- 🧒 Device	1/sysObjectID		Device1/sysContact	.1.3.6.1.2.1.1.4.0	string	Read/Write	
Contro Chatistica	Add to list Oelete	4					
Server Statistics				Log Messag	jes		*
Status	Stopped	Times	tamp	Message			
Connected Clients	0	2016	/10/07 09:19:38	Tags has been added s	successfully		
Created Groups	U	2016	/10/07 09:15:30	Device: 127.0.0.1 Add	ded successfully		
Added Items	0	2016	/10/07 09:12:18	The configuration has	been loaded successful	у	_
Last Update Time	0	4 Mess	ages				Ţ

Figure 50: Display Selected Tag Properties

You can also visualize the tag properties by right clicking a specific tag and choosing the **Properties** option from the displayed menu.



Figure 51: Tag Properties

The "Tag Properties" dialog will then be prompted.





🤹 Tag Properties	x
	Properties
Tag Name:	Device1/sysDescr
Tag OID:	1.3.6.1.2.1.1.1.0
Tag Type:	VT_BSTR
Tag Access Right:	Read
Tag Description:	A textual description of the entity. This value should include the full name and version identification of the system's hardware type, software operating-system, and networking software.
	ОК

Figure 52: Tag Properties Dialog

5.16. SAVE CONFIGURATION

Save your configuration using the **Save As** or **Save** button available in the file menu.

The" Save File As" dialog illustrate in the figure below is used to choose the path where the configuration will be saved.



Save File As						x
Save in:	퉬 Data			💽 🥝 - 🖄 🔍	X 🞽	🔠 🔹 Tools 👻
Desktop Documents Documents This PC	Name AddressS	Date modified	Туре	Size		
	File name:					<u>S</u> ave
	File type:	Configuration File	(*.XML)		•	Cancel

Figure 53: Save File as Dialog

The configuration will be then saved in XML file format. The configuration is divided into devices sections, and each device section contain tag list section that holds all the SNMP tags and their associated parameters.

The table below describes the 18 attributes of the devices configuration section.

#	Field	Description
1	strName	The device name
2	strAlias	The device alias
3	deviceIPAddress	The device IP address
4	ConfgWith	ConfgWith will indicate if the device was configured with its IP address or with its name
5	intTimeout	The timeout of the ping request
6	strSNMPV	The SNMP version of the device(Version1 or Version2 or Version3)
7	strCommunity	The SNMP community name of the device
8	strUserName	The user name used for the authentication if the device supports SNMP version3



9	strAuthProtocol	The authentication protocol used for the authentication if the device supports SNMP version3
10	strPrivProtocol	The privacy protocol used for the authentication if the device supports SNMP version3
11	strAuth	The authentication password used for the authentication if the device supports SNMP version3
12	strPwd	The privacy password used for the authentication if the device supports SNMP version3
13	tagList	This parameter lists the different SNMP tags.

Table 12: Devices Configuration Section

The tagList section holds the different SNMP tags. We will detail in the table below the different attributes of a SNMP tag.

#	Field	Description		
1	strTagName	The tag name		
2	strTagDescrp	The tag description		
3	uiAccessRight	The access rights of a tag		
4	strTagOID	The tag Object Identifier (OID) is a unique identifier associated to each tag		
5	DataType	The type of data, which can be: • VT_I2 • VT_I4 • VT_R4 • VT_UI2 • VT_UI4 • VT_BSTR • VT_BOOL		
6	blsTrap	 If blsTrap is equal: True: The tag was dynamically created after receiving a trap message. False: The tag was added from the configuration tool. 		

Table 13: Tags Configuration Section





Figure 54: Configuration File Example

After saving your configuration, you need to set the default configuration, which will be loaded automatically at the OPC Server for SNMP Service start-up. To define a default configuration, click the Define button available in the Settings Menu.

6. Connection to the OPC Server

Once the OPC Server is configured, the next step will be to connect to it using an OPC Client and read/write data. To do so, you only need to:

- 1. Launch your OPC DA Client.
- 2. Enter the IP address of the machine where the OPC Server is installed
- 3. Connect to the OPC Server with the following progID: "IntegrationObjects.OPC.SNMP.1".



Integration Objects' OPC	EasyArchiver Untitled.oda *								- a ×
File OPC Server Arc	hiver DB to OPC Transfer Help								
New Open Save Save Project	Image: Settings Settings Default Configure	ove							
OPC Servers Archivers	Rules Loops Transfers	Start page OPC Data Acce	55						•
	I PIX	Select your OPC Group :	localhost(IntegrationObj	jects.OPC.SNMPS e	ver.1)Group	0	Remove Gro	up from list	
□- OPC Servers		ItemID Value	Quality	TimeStamp	Group	Server ProgID	Server Address	Data Type	Access Rights
OPC DA Servers		Device1/Smart/ 264,2155	Good, Non-Speci	2018/03/28 13:3	Group0	IntegrationObject	localhost	VT_R4	Read_Only
⊡- integrationObj	ects.OPC.SNMPServer.1 localhost	Device1/Smart/ 54,11123	Good, Non-Speci	2018/03/28 13:3	Group0	IntegrationObject	localhost	VT_R4	Read_Only
🕀 🕟 Group0		Device1/Smart/ 488,2822	Good, Non-Speci	2018/03/28 13:3	Group0	IntegrationObject	localhost	VT_R4	Read_Only
OPC HDA Servers		Device1/Smart/ 224,0667	Good, Non-Speci	2018/03/28 13:3	Group0	IntegrationObject	localhost	VT_R4	Read_Only
		Device1/Smart/ 0	Good, Non-Speci	2018/03/28 13:3	Group0	IntegrationObject	localhost	VT_R8	Read_Only
		Device1/Smart/ 0	Good, Non-Speci	2018/03/28 13:3	Group0	IntegrationObject	localhost	VT_R8	Read_Only
		Device1/Smart/ down	Good, Non-Speci	2018/03/28 13:3	Group0	IntegrationObject	localhost	VT_BSTR	Read_Only
		Device1/Smart/ 0	Good, Non-Speci	2018/03/28 13:3	Group0	IntegrationObject	localhost	VT_R8	Read_Only
		Device1/Smart/ 0	Good, Non-Speci	2018/03/28 13:3	Group0	IntegrationObject	localhost	VT_R8	Read_Only
		Device1/Smart/ down	Good, Non-Speci	2018/03/28 13:3	Group0	IntegrationObject	localhost	VT_BSTR	Read_Only
		Device1/Smart/ 0	Good, Non-Speci	2018/03/28 13:3	Group0	IntegrationObject	localhost	VT_R8	Read_Only
		Device1/Smart/ 0	Good, Non-Speci	2018/03/28 13:3	Group0	IntegrationObject	localhost	VT_R8	Read_Only
		Device1/Smart/ down	Good, Non-Speci	2018/03/28 13:3	Group0	IntegrationObject	localhost	VT_BSTR	Read_Only
		Device1/Smart/ 0	Good, Non-Speci	2018/03/28 13:3	Group0	IntegrationObject	localhost	VT_R8	Read_Only
		Device1/Smart/ 0	Good, Non-Speci	2018/03/28 13:3	Group0	IntegrationObject	localhost	VT_R8	Read_Only
		Device1/Smart/ notPresen	Good, Non-Speci	2018/03/28 13:3	Group0	IntegrationObject	localhost	VT_BSTR	Read_Only
		Device1/Smart/ 0	Good, Non-Speci	2018/03/28 13:3	Group0	IntegrationObject	localhost	VT_R8	Read_Only
		Device1/Smart/ 0	Good, Non-Speci	2018/03/28 13:3	Group0	IntegrationObject	localhost	VT_R8	Read_Only
		Device1/Smart/ notPresen	Good, Non-Speci	2018/03/28 13:3	Group0	IntegrationObject	localhost	VT_BSTR	Read_Only
		Device1/Smart/ 16	Good, Non-Speci	2018/03/28 13:3	Group0	IntegrationObject	localhost	VT_R4	Read_Only v
		Number of tags: 107			*				
🗸 🗶 🔚 🛢 👘									\$
Message Type	Timestamp	Message							A
[Inform]	2018/03/28 13:38:29	Adding items to the grou	p [Group0] succeeder	d.					
[Inform]	2018/03/28 13:38:13	Add group Group0 to sen	ver localhost Integra	ationObjects.OPC.	5NMPServe	er.1 succeeded.			
[Inform]	2018/02/28 12-38-05	Connected to center Inter	arationObjects OPC S	MMDSenver 1 Lloc	albort				▼
6 Messages									
Integration Objects' OPC Easy	Archiver								

Figure 55: OPC DA Client - Connect to OPC Server for SNMP

Add a group and select the items to be read.



TRACING CAPABILITIES

The OPC server creates two log files named "LogServerForSNMPGUI.LOG" and "LogServerforSNMPService.LOG" that record errors and debugging information for the server configuration and runtime execution. This server also generates a separate log file dedicated to the details of operations of the OPC interfaces: "SrvToolkit_LogEvent.log" log file to easily diagnose the occurred problems and it can be extremely valuable for troubleshooting. Under normal operations, the server logs very little information.

These log files are generated at start-up under the installation folder where the executable file is located.

The OPC Server for SNMP settings are based on two configuration files:

- "SrvToolkit_CfgFile.ini"
- "OPCSNMPConfig.ini"

These files include several logging parameters. To change the default configuration:

Open "OPCSNMPConfig.ini" or "SrvToolkit_CfgFile.ini" in a text editor.

Edit any of the parameters listed in the following tables:

Log Setting	Description	Default Value
LogFileName	The log file name	SrvToolkit_LogEvent
LogFileMaxSize	The maximum log file size, in bytes.2097152Once this size is reached during runtime, the log file will be overwritten.2097152	
LogLevel	The log level. Possible values are:	Error
	Control (-1): It is the lowest level. This log file contains at least a description of succeeded methods.	
	Fatal (0): Only fatal error messages are logged.	
	Critical (1): All critical error messages are logged.	
	Error (2): All errors are logged.	
	Warning (3): All warnings are logged.	
	Info (4): All information is logged.	
	Debug (5): For Debug information.	
	The higher the log level, the more information is recorded. We recommend using the default level for a better performance of the server.	

The following table describes the logging parameters saved on "SrvToolkit_CfgFile.ini":



ArchiveLastLog	TRUE: Old file is copied to an intermediate file with incremental extension, before being overwritten.	FALSE
	FALSE: Any pre-existing log file is erased and overwritten at start-up.	

Table 14: Log Settings of the "SrvToolkit_CfgFile.ini"

The following table describes the log parameters of "OPCSNMPConfig.ini" configuration file:

Setting	Description Default Value		
AppConfiguration / ServiceCo	onfiguration		
AutoAppend	Set to true to continue writing log messages in the existing log file or to false to create a new file.	True	
BufferSize	The maximum number of messages to be stored in the runtime memory before launching writes action in the hard disk. It must be greater than 100.	200	
FileExtension	The log file extension	Log	
MaxSize	The maximum size of the log file (in Mb)	10	
FileName	The log file name	 LogServerforSNMPGUI: log file of the configuration user interface LogServerforSNMPService: log file of the service 	
FilePath	Used to save the full installation directory path	Installation Folder	
MaximumFiles	Set to 0 means that log files will be created in an unlimited way.	5	
Level	The type of log messages to be logged. The value can be Control, Error, Warning, Inform, and Debug.	Error	
AutoSaveTimeOut	Time to wait to read all messages from the buffer	10	



ConfigSetting		
ConfigFilePath	Used to save the default configuration file path	OPCSNMPServiceConfig.xml
ServerRate	This parameter is the frequency at which the server handles the asynchronous reads/updates.	500 ms
CheckDeviceStatusPeriod	The period between two checks of the devices status in milliseconds	60000 ms
Style	The style of the GUI	Windows7Blue
StrSeparator	OPC Item Delimiter	1
UpdateAddressSpaceRate	The period between two updates of the Address Space	500 ms
UpdateTagRate	The period between two updates of tags	0 ms
ListenTrapPeriod	The period between listening to two trap messages	500ms
CheckDeviceConnectivity	If True: The server will check the device connectivity periodically using SNMP request. If False: the server will not check the device connectivity.	True
CheckValidationTag	If True: The server will validate each item before adding the item to the group If False: The item validation is ignored	True
UpdateOnlyOnTrapReceive	If True: the trap tag will only be updated when a trap message arrives If False: an SNMP Get will be performed to et the value of the trap tag	True

Table 15: Configuration Settings of "OPCSNMPConfig.ini"

1. Save the file and restart the server for the changes to take effect.



SrvToolkit CfgFile.ini Configuration File

[LogSetting]

LogFileName=SrvToolkit_LogEvent LogFileMaxSize=2097152 LogLevel=5

ArchiveLastLog=false

Figure 56: "SrvToolkit_CfgFile.ini" File

OPCSNMPConfig.ini Configuration File:

[AppConfiguration] AutoAppend=true BufferSize=200 FileExtension=log MaxSize=10 FileName=LogServerForSNMPGUI FilePath=C:\Program Files (x86)\Integration Objects\Integration Objects' OPC Server for SNMP\LogFiles\ MaximumFiles=5 Level=Error AutoSaveTimeOut=10 [ServiceConfiguration] AutoAppend=true BufferSize=200 FileExtension=log MaxSize=10 FileName=LogServerforSNMPService FilePath=C:\Program Files (x86)\Integration Objects\Integration Objects' OPC Server for SNMP\LogFiles\ MaximumFiles=5 Level=Error AutoSaveTimeOut=10 [ConfigSetting] ConfigFilePath=C:\Program Files (x86)\Integration Objects\Integration Objects' OPC Server for SNMP\OPCSNMPServiceConfig.xml ServerRate=500 UpdateAddressSpaceRate=500 UpdateTagRate=0 CheckDeviceStatusPeriod=30000 ListenTrapPeriod=500 CheckServerStaticticsPeriod=4000 Style=Windows7Blue StrSeparator=/ CheckDeviceConnectivity=true CheckValidationTag=true UpdateOnlyOnTrapReceive=true

Figure 57: "OPCSNMPConfig.ini" File



You can also update these parameters through the OPC Server for SNMP user interface.



TROUBLESHOOTING

Case 1: Cannot launch the OPC Server for SNMP?

You should check the license validity by launching the License Authorization tool existing under the OPC Server for SNMP installation folder, or start it directly from the start up menu:



Figure 58: OPC Server for SNMP Start Menu

If the License Authorization tool shows that the demo has expired and you want to activate it using your full activation license, you should follow the following steps:

1. Open the License Authorization tool and click on the **Register** button.



🐉 Integration Objects' License Authorization Tool 🛛 🔹 🗙
Vour partner for operational excellence
General Information
Product Name : Integration Objects' OPC Server for SNMP
Company Name : Integration Objects
User Name : io
Demo Version
You have 16 days left since today.
Manual Registration
To register the OPC Server for SNMP.
Buy and activate the license with our activation process based on User ID and Activation code.
Please contact our Support Service at:
customerservice@integrationobjects.com www.integrationobjects.com

Figure 59: License Authorization

1. Copy and send the User ID to the sales team so they can generate the dedicated activation code.

	x
User ID :	1A2C330764B182ABB33D9EEC00B71365F0A45A0EF0A5B6540BB457539E524329
Activation code :	
	Register Cancel

Figure 60: License Registration

2. Copy and paste the received activation code and click on the **Register** button.



Case 2: Cannot start the OPC Server for SNMP Service?

In case the local connection to the OPC Server for SNMP failed due to an access deny you need to follow the steps below:

- 1. Open the windows service manager
- 2. Select the Integration Objects' OPC Server for SNMP Service.
- 3. Right click and select the Log on tab.
- 4. Check the "This account" radio button.
- 5. Enter your administrator account credentials as shown in the following figure:
- 6. Click the OK button.

Integration Objects' OPC Server for SNMP Service Prop					
General Log On Recovery Dependencies					
Log on as:	Log on as:				
Local System accour Allow service to in	n t nteract with desktop				
• <u>T</u> his account:	.\Admin	<u>B</u> rowse			
Password:	•••••				
Confirm password:	•••••				
	OK Cancel	<u>A</u> pply			

Figure 61: OPC Server for SNMP Service Properties

Case 3: Why the Smart tag CPU Usage does not update more often?

The CPU Usage Tag is a smart tag that describes the average of percentage of time over the last minute when CPU was not idle. Thus the value is expected to change every one minute.



😻 Tag Properties	X
	Properties
Tag Name:	Device1/Smart/CPU Usage
Tag OID:	
Tag Value:	32
Tag Type:	VT_R4
Tag Access Right:	Read
Tag Description:	The average of percentage of time over the last minute when CPU was not idle
	ОК

Figure 62: CPU Usage Tag Properties

Case 4: Why do I get the SNMP timeout exception?

SNMP requests are timed out for many reasons such as:

- Incorrect agent configuration: The community name may be different. SNMP mandates that the agents should accept requests only if the community string in the message matches its community name.
- The listening port of the agent might be different. Management applications communicate with the SNMP agents in the managed node on a particular port number. This remote port number is the UDP port 161.
- The agent may be slow in responding to the request. To solve this problem, you must increase the timeout value.

The SNMP properties can be configured when adding a new device. You can edit the SNMP timeout and the community name of a device.



💿 Edit Device	x
	Properties
Alias:	Device1
IP Address:	127.0.0.1
O Name:	VMWindowsTen
	IMP Properties
SNMP Community:	public
SNMP Version:	Version1
SNMP Timeout (ms):	6000 🚖
SNM	IP Authentication
User Name:	
Authentication Protocol:	_
Authentication Password:	
Privacy Protocol:	
Privacy Password:	
Cor	nection Settings
Ping Timeout (ms):	3000
Status:	
	Ping
Test Connection	OK Cancel

Figure 63: Edit Device Properties

Case 5: Why I am not getting trap tags?

To be able to receive trap messages, you need to add first the trap sender address and other parameters correctly in the list of agent down below. You also need to make sure to check the "Dynamic Trap Tags Generation" option.

When you enable this option the server will create dynamically the tags associated to the trap message (Please refer to the section Setting Menu for more details).





agent 🔁	– ×
Ē	Properties
Address:	127.0.0.1 I
Port:	162
Read Community:	public
Write Community:	public
SNMP Version:	Version1
Dynamic Trap Tags Ger	neration
SNMP	Authentication
User:	
Authentication Protocol:	•
Authentication Password:	
Privacy Protocol:	•
Privacy Password:	
ОК	Cancel

Figure 64: Agent properties

Case 6: The trap tags are not visible in the OPC Server for SNMP GUI.

In order to see the trap tag, you need to click the **Refresh** option available in the context menu of the "Address Space" node.



📱 Integratio	on Objects	' OPC Serve	r for SNMP						-		x
File OP	C Server	Settings	Help								
New	a Open	Save Sa	ave As) cit							
	Ope	n	E	xit]_						
			X	Device	lag		N	15 4 11			
J. Addr	ess 😱	Add Devid	ce		Alias		Name	IP Address	limeout		
		Add Multi	iple Devices								
	\odot	Delete All	Devices								
	64	Refresh									
	_										
				1							
				1							
- Server Statist	tics			<u> </u>			Log Message	5			*
Status		Stopped		Timesta	mp		Message	-			
Connected C	lients	0		2017/	0.2 /06 00 E	0.12	The configuration has b	apparent land of successful	by .		
Created Grou	ups	0		2017/	02/00 09:5	0.10	The configuration has t	seen loaded successful	· · · · ·		
Added Items		0		2017/0	02/06 09:5	0:13	Integration Objects' OP	'C Server for SNMP GUI	was initiali	zed	
	T	0									
Last Update	lime	U		2 Messad	ges						

Figure 65: Refresh Option



SET UP WINDOWS SNMP SERVICE

1. Install SNMP Service

To install SNMP on Windows 7, follow the steps given below:

- 1. Click Start and go to the Control Panel, double-click Programs and Features.
- 2. Click **Turn Windows features on or off** in the left-hand side of the page.
- 3. Select the Simple Network Management Protocol check box, and click OK.

Windows Features	
Turn Windows features on or off	0
To turn a feature on, select its check box. To turn a feature check box. A filled box means that only part of the feature i	off, clear its s turned on.
RIP Listener	•
🕀 🔲 🚡 Services for NFS	
Simple Network Management Protocol (SNMP)	
WMI SNMP Provider	
Simple TCPIP services (i.e. echo, daytime etc)	
Subsystem for UNIX-based Applications	
Tablet PC Components	+
ОК	Cancel

Figure 66: : Adding SNMP Feature

2. Configure SNMP Service

To configure SNMP agent, follow the steps below:

Click on Start → Control Panel → System and Security → Administrative Tools → Services.



2 I B I I						Y	
	Shortcut Tools	A	aministrative 100	IS			_
File Home Share	View Manage					$^{\sim}$?
Copy Paste	ntcut Nove Copy trov tov Delete Rename	New item * Easy access * New folder	roperties	Select all Select none			
Clipboard	Organize	New	Open	Select			
🤄 🕘 🔻 🕇 👼 🕨 Ca	ntrol Panel 🔸 System and Security 🕨 Ad	ministrative Tools		v ¢	Search Administrative Tools	,P	
👉 Favorites	Name	Date modified	Туре	Size			^
A 1010110	🔁 Local Security Policy	8/21/2013 11:54 PM	Shortcut	2 KB			
🛤 This PC	DDBC Data Sources (32-bit)	8/21/2013 4:56 PM	Shortcut	2 KB			
Desktop	📆 ODBC Data Sources (64-bit)	8/21/2013 11:59 PM	Shortcut	2 KB			
Documents	Performance Monitor	8/21/2013 11:52 PM	Shortcut	2 KB			
Downloads	Resource Monitor	8/21/2013 11:52 PM	Shortcut	2 KB			
Music	🛃 Security Configuration Wizard	8/21/2013 11:45 PM	Shortcut	2 KB			
Pictures	🕫 Server Manager	8/21/2013 11:55 PM	Shortcut	2 KB			
📔 Videos	Services	8/21/2013 11:54 PM	Shortcut	2 KB			
🊢 Local Disk (C:)	🔂 System Configuration	8/21/2013 11:53 PM	Shortcut	2 KB			
	🔁 System Information	8/21/2013 11:53 PM	Shortcut	2 KB			
👽 Network	🛞 Task Scheduler	8/21/2013 11:55 PM	Shortcut	2 KB			=
	😭 Windows Firewall with Advanced Se	curity 8/21/2013 11:45 PM	Shortcut	2 KB			
	🔊 Windows Memory Diagnostic	8/21/2013 11:52 PM	Shortcut	2 KB			
	🔝 Windows PowerShell (x86)	8/22/2013 8:37 AM	Shortcut	3 KB			
	🔝 Windows PowerShell ISE (x86)	8/21/2013 11:55 PM	Shortcut	2 KB			
	Windows PowerShell ISE	8/21/2013 11:55 PM	Shortcut	2 KB			
	🛞 Windows Server Backup	8/21/2013 11:53 PM	Shortcut	2 KB			~
24 items 1 item selected	1.13 KB						

Figure 67: Windows Services

- 2. In the details pane, scroll down and click **SNMP Service**.
- 3. On the action menu, click **Properties**.

9,	Se	ervices				_	. 🗆 X
File Action View	Help						
🤹 Services (Local)	Name ^		Desc	ription	Status	Startup Type	Log On As \land
	🛸 Secondary Logon		Enables star Manual			Manual	Local Syste
	🔍 Secure Socket Tunneling Protocol Service		Provides su			Manual	Local Servi
	🖓 Security Accounts Manager		The	startup	Running	Automatic	Local Syste
	🔍 Server		Supp	orts fil	Running	Automatic	Local Syste
	🔍 Shell Hardware Detection		Prov	ides no	Running	Automatic	Local Syste
	🧠 Smart Card		Man	ages ac		Disabled	Local Servi
	🧠 Smart Card Device Enumeration Service		Creat	tes soft		Manual (Trig	Local Syste
	🍓 Smart Card Removal Policy		Allov	vs the s		Manual	Local Syste
	SNMP Service	1	Fnah	les Sim	Running	Automatic	Local Syste
	🔍 SNMP Trap	Start		ves tra	Running	Automatic	Local Servi
	🔍 Software Protection	Stop		es the		Automatic (D	Network S.
	Special Administration Console Helper	Pause		s adm		Manual	Local Syste
	🔍 Spot Verifier	Resume		es pot		Manual (Trig	Local Syste
	🔍 SQL Server VSS Writer	Portart		des th	Running	Automatic	Local Syste
	SSDP Discovery	Nestan		vers n		Disabled	Local Servi 😑
	🔍 Still Image Acquisition Events	All Tasks	•	:hes a		Manual	Local Syste
	🔍 Storage Tiers Management	Refresh		nizes t		Manual	Local Syste
	🔍 Superfetch	D (*		ains a		Manual	Local Syste
	System Event Notification Service	Properties		tors sy	Running	Automatic	Local Syste
	🔍 System Events Broker	Help		linates	Running	Automatic (T	Local Syste
	🔍 Task Scheduler		Enab	les a us	Running	Automatic	Local Syste
	🖓 TCP/IP NetBIOS Helper		Prov	ides su	Running	Automatic (T	Local Servi
	A Talaahaa		D	T-I		Manual	Nation C
Extended > Standard							
Defeath as the summer a							
refreshes the current s	election.						

Figure 68: SNMP Service Action List

4. On the **Security** tab, select Send authentication trap if you want a trap message to be sent whenever authentication fails.



- 5. Under Accepted community names, click Add.
- 6. Under Community Rights, select a permission level for this host to process SNMP requests from the selected community.
- 7. In Community Name, type a case-sensitive community name, and then click Add.
- 8. Specify whether or not to accept SNMP packets from a host:
- 9. To accept SNMP requests from any host on the network, regardless of identity, click **Accept SNMP packets from any host**.
- 10. To limit acceptance of SNMP packets, click **Accept SNMP packets from these hosts**, click **Add**, type the appropriate host name and IP or IPX address, and then click **Add** again.
- 11. Click **Apply** to apply the changes, and restart the service.

SNMP Service Properties (Loc	al Computer)
General Log On Recovery	Agent Traps Security Dependencies
Send authentication tran	
Community	Rights
bublic	READ ONLY
A <u>d</u> d	Edit
Accest CNMD context	
Accept SNMP packet Accept SNMP packet	s from any nost
Add	Edịt Re <u>m</u> ove
Learn more about <u>SNMP</u>	
	OK Cancel Apply

Figure 69: SNMP Service Properties

You must be logged in as an administrator or a member of the Administrators group to complete this procedure. If your computer is connected to a network, network policy settings may also prevent you from completing this procedure.



For additional information on this guide, questions or problems to report, please contact:

Offices

- Americas: +1 713 609 9208 _ Europe-Africa-Middle East : -

+216 71 195 360

Email

- Support Services: customerservice@integrationobjects.com
- Sales: sales@integrationobjects.com

To find out how you can benefit from other Integration Objects products and custom-designed solutions, please visit our website: www.integrationobjects.com