OPC Server Security Center

Installation and Configuration Manual

Revision History:

Version	Date	Status
1.0	Sep 2015	Released
1.1	Nov 2016	Added Entities with alarm state
1.2	Feb 2017	Added cameras diagnostic and macros
1.3	Feb 2017	Added alarm state property for cameras
1.4	Feb 2017	Support Genetec SDK 5.5

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1. Glossary

Acronym	Description
OPC	OLE for Process Control
OLE	Object Linking and Embedding
GUI	Graphic User Interface
SCADA	Supervisory Control And Data Acquisition

2. Introduction

This is a User Manual for the OPC Server Security Center. The Server communicates with Security Center controllers over Ethernet and supports data exchange with Client's via Microsoft's Object Linking and Embedding (OLE) for Process Control (OPC).
S4S's OPC Server is a software package that operates as an OPC driver of Siemens Management stations as MM8000, Desigo CC™ and Cerberus™ DMS. The OPC Server meets the latest standard of OPC DA2.0 that allows connections to various kinds of devices and host OPC machines.
The manual is organized to provide an overview of OPC technology, detailed information on the configuration environment and a complete list of OPC Tag's provided by the OPC Server.

3. About the OPC Server Security Center

The OPC Server Security Center is based on OPC Data Access, known as 'DA', which provides real-time data from Security Center controllers to management stations with OPC client drivers as MM8000, DesigoCC™ and Cerberus™ DM.
The server communicates with Security Center via the Genetec Security Center 5.2 SDK over TCP-IP
The OPC Server reads and writes data to and from Security Center controllers via Ethernet.
The Server has a graphical user interface (GUI) configuration environment with an "Explorer" look and feel. The configuration environment allows the Server to be configured with information such as controller IP addresses and available global variables so that the Server can communicate with these systems on behalf of Clients.

Application Name	: OPC- SecurityCenter.exe
OPC NAME	: "S4S.OPC- Security Center " (Can be configured in xml file)
OPC DESCRIPTION	: "OPC Server – Security Center " (Can be configured in xml file)
OPC GUID	: { 460761AD-5320-48F9-9140-E3D7120F81CE }

4. System Requirements

The OPC Server Security Center application runs on any hardware which supports Windows Server 2003/2008/2012, Windows XP, Windows 7 or Windows 8 with DCOM, Visual C++ 2010 Redistributable Packages and .NET Framework 4.5.1 Installed.
The system must have 10 Mb of free disk space to install the program and 1 Gb of free memory is required to load and run the application. All systems information is stored in the server's disk. For configuration purpose a monitor connected to the computer is required.
The OPC server is a 32 bit application which runs on both 32/64 bit operating systems.

Hardware characteristics recommended

- CPU i5 high-end (for example INTEL Core i5 4690K) or i7 mid-range (for example Intel Core i7-4770K)
- RAM : 4GB

Checks on the network

Since the Server communicates with the Security Center over TCP-IP, an Ethernet network must be in place. The network itself should be fully tested and be known to operate before attaching the controllers and the Server computers. Contact your system administrator for assistance or consult instructional documentation and manuals to setting up the network. It is beyond the scope of this Users Manual to discuss networking topics in any detail.
Once the network is in place and the Server computers and controllers are attached, check connectivity using available network testing tools and programs such as ping command.

5. Installation guide

Before installation of the OPC server, make sure it is installed the Visual C++ 2010 Redistributable Packages and the Genetec Security Center 5.5 SDK, if not please let install them on your computer.
The OPC Server Security Center is provided with own specific setup. The setup includes all the dependencies (ex. *WtOPCSvr.DLL* - OPC server library) in order to ensure the proper functioning of the application.

- *S4S_OPC_Library.dll*
- *S4SGenCodeInfo.dll*
- *S4SGenCodeInfoLibrary.dll*
- *ObjectListView.dll*
- *WtOPCSvr.dll*
- SysInfo.dll

OPC-Server to use the Security Center SDK and it must have a client certificate released by Genetec. Add in the "*certificates*" folder (this folder is created after opc server setup within its installation folder) the correct certificate and rename it as **"OPC-SecurityCenter.exe.cert"**. Enable SDK control in Security Center system so OPC-Server via SDK can communicate with it.
If the certificate is not added or is not right, the OPC-server will not be able to connect to the Security Center system.

Two security issues require attention:

- Installation needs Administrator rights;
- Windows Firewall must be configured;
- DCOM security settings must be configured. This guide describes how to make the necessary settings.

5.1 Registration of the OPC Server

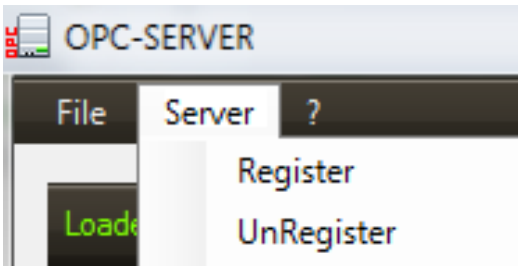


Image 1 Register and UnRegister

- To register the Server, you must click 'Register' in the menu 'Server'.
- To unregister the OPC Server, you must click 'UnRegister' in the menu 'Server'.

5.2 Authentication and Permissions

After OPC Server registration the COM security has to be enabled, so OPC Client can automatically call the OPC Server.
Below are showed all steps needed to enable the security COM, using 'DCOMCNFG1':

1. Verify that the DCOM security registration was executed successfully;
2. Run DCOMCNFG (Only the administrator can run *'Dcomcnfg.exe'*). To use '*RUN Command Windows*' or '*Command Prompt*', to open DCOMCNFG program;

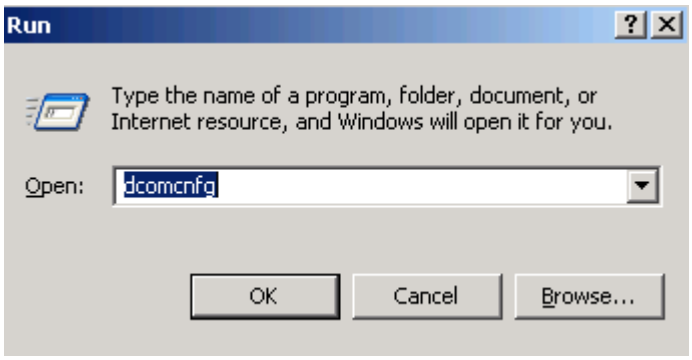


Image 2 DCOMCNFG - Run

3. Locate the My Computer item by expanding the following nodes: Component Services > Computers;
4. Right-click My Computer and select Properties.

[1] **Dcomcnfg.exe** provides a user interface for modifying certain settings in the registry. By using Dcomcnfg.exe, you can enable security either on a computer-wide or a process-wide basis. You can enable security for a particular computer so that when a process does not provide its own security settings, either programmatically or through registry values, the values set by Dcomcnfg.exe will be used. Or you can use Dcomcnfg.exe to enable security for a particular application only.
Note:You must be an administrator to run Dcomcnfg.exe.

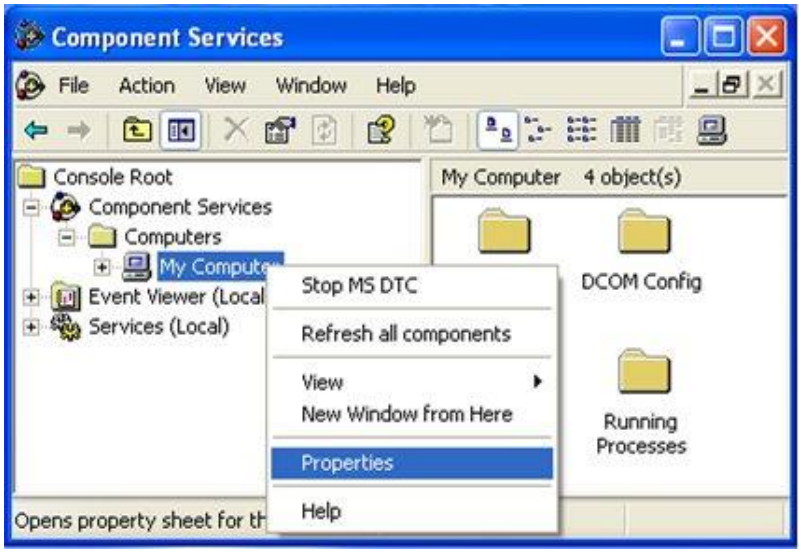


Image 3 Component Services Property

5. Go to the COM Security tab. Edit the default settings to Access Permission, hereby adding 'ANONYMOUS LOGON' and 'Everyone' and giving all access permissions to that group of users. Repeat the setup for the limit settings.

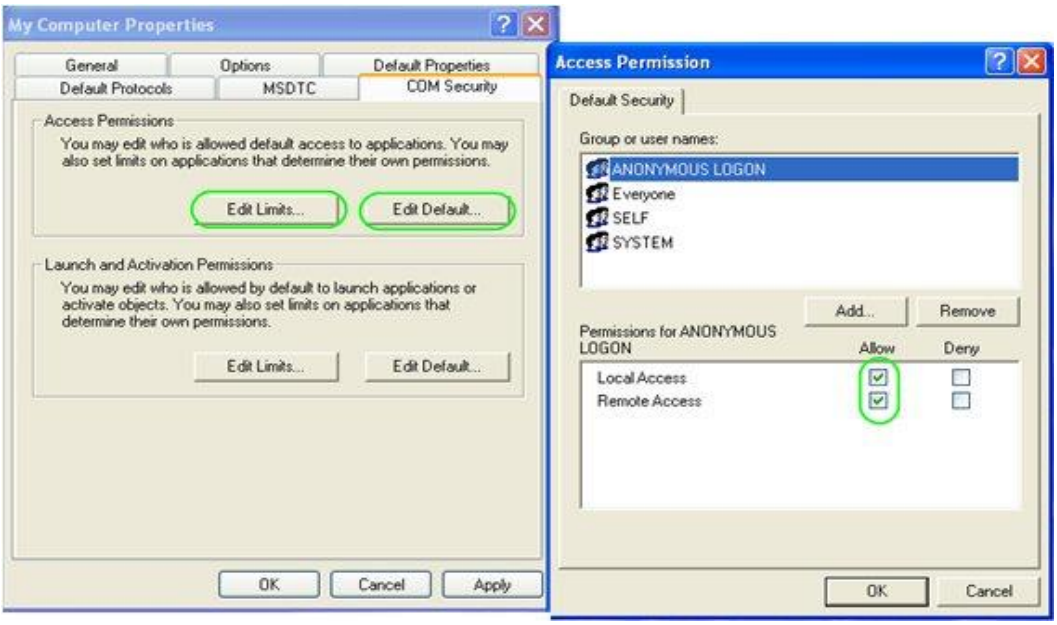


Image 4 COM Security Access Permissions

6. Now edit the default settings for Launch and Activation Permissions, hereby adding 'ANONYMOUS LOGON' and 'Everyone' and giving all access permissions to that group of users. Repeat the setup for the limit settings.

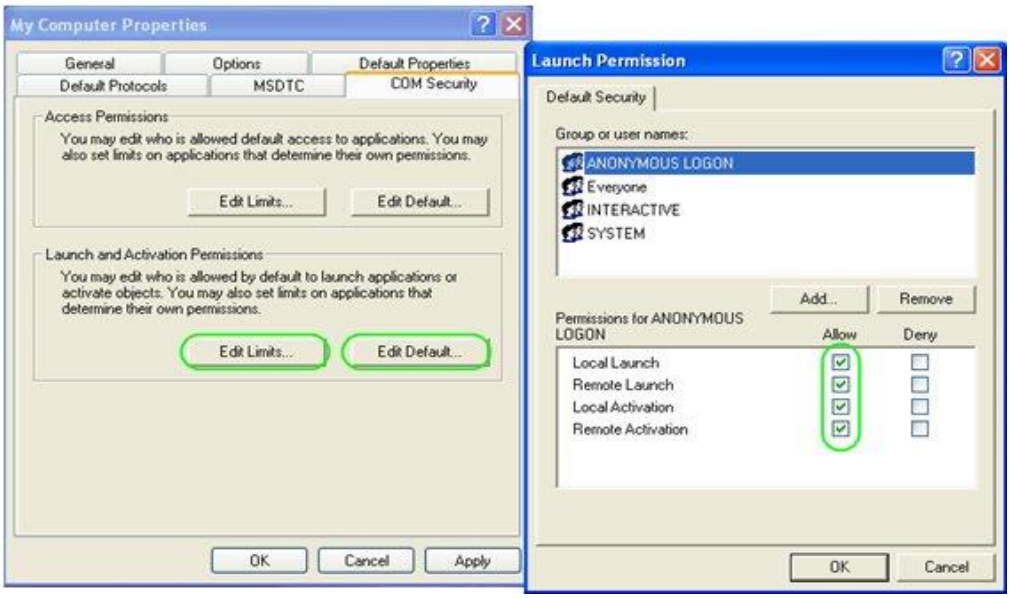


Image 5 COM Security Launch and Activation Permissions

The new settings will take effect when the OPC Client has been restarted. Therefore, close the Component Services (dcomcnfg program) and restart the OPC Client application.

7. Using tree view DCOMCMFG to check the all DCOM registered.

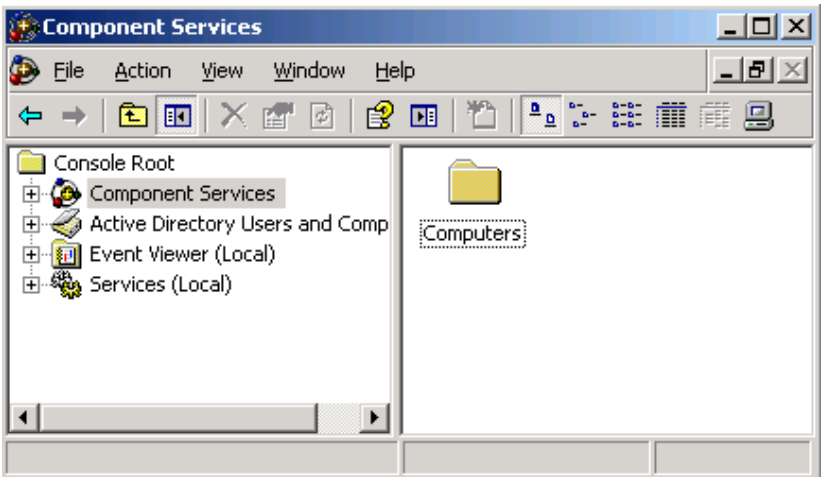


Image 6 DCOMCMFG

Select the 'Component Services' item, than 'Computers', than 'My Computer' and 'DCOM Config' item;
Find the OPC Server name registered in the DCOM list, it must be the same as configured in the xml file.

Xml file example:

*<OPC_PROTOCOL Delimiter="." **OPC_name="OPC-SERVER"** OPC_description="OPC Server – Security Center" ···>*

OPC Server name is registered: "OPC-SecurityCenter", for this example the name is "OPC-SERVER".

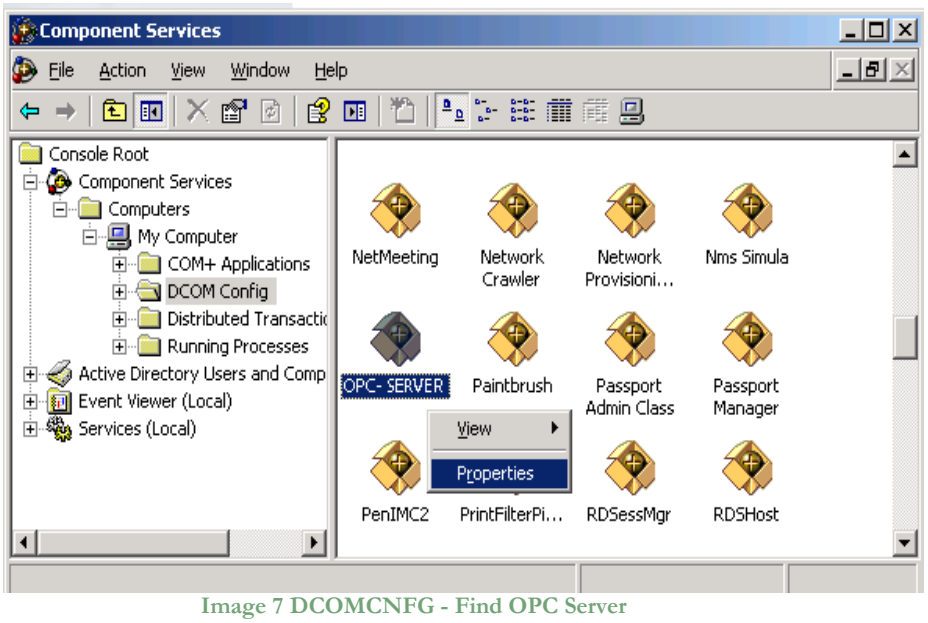


Image 7 DCOMCNFG - Find OPC Server

8. OPC Server Configuration Permissions. Select the 'OPC-SERVER' registration then the properties (pushing the right button) and then select the 'security' tab:

   a. Select '*Customize*' in the *'Configuration Permissions'* and then click the '*Edit*' button.

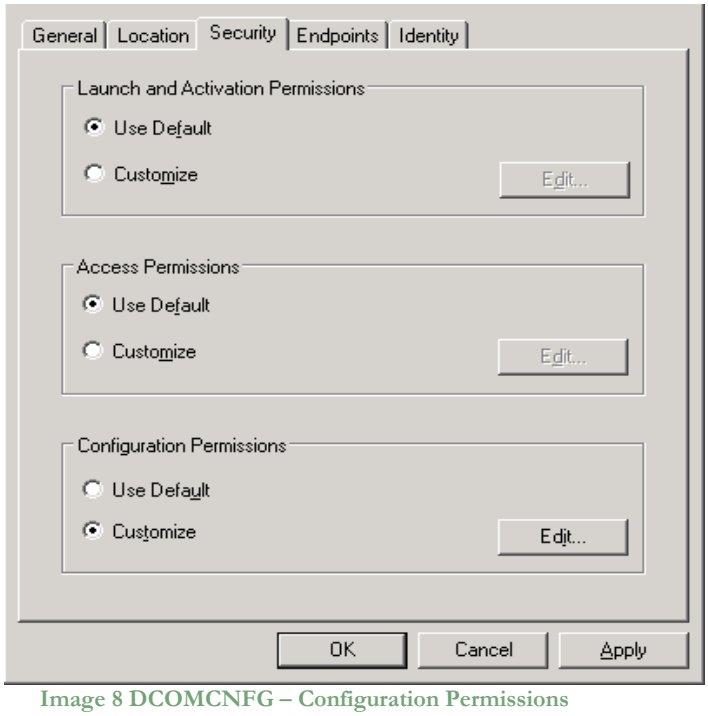


Image 8 DCOMCNFG – Configuration Permissions

   b. Select 'Add' button to add a new user and then, in the new form, select the 'Advanced' button.

c. Click the 'Find' button to search the 'everyone' and then 'ANONYMOUS LOGON ' users.

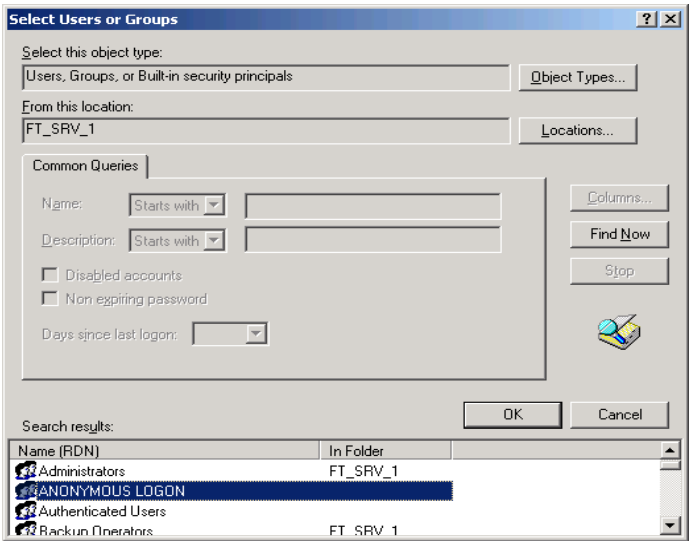


Image 9 DCOMCNFG – Find User

d. Add 'everyone' and 'ANONYMOUS LOGON ' user;

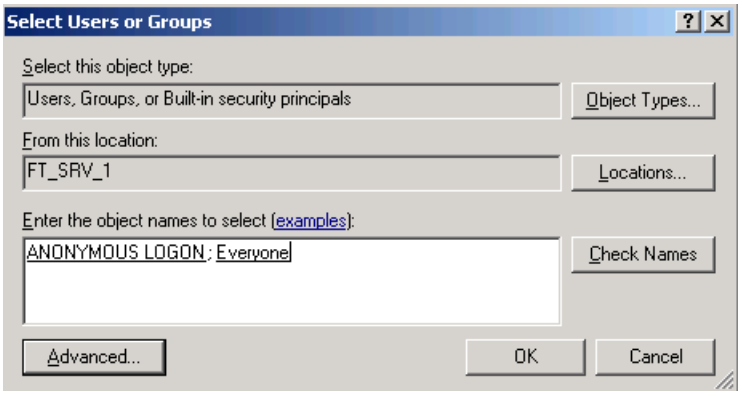


Image 10 DCOMCNFG - Add users

e. Provide all permission to added users.

9. Set OPC Server identity. Select the 'identity' tab:

   Set *'This user'* and insert User and Password used to access MM8000.

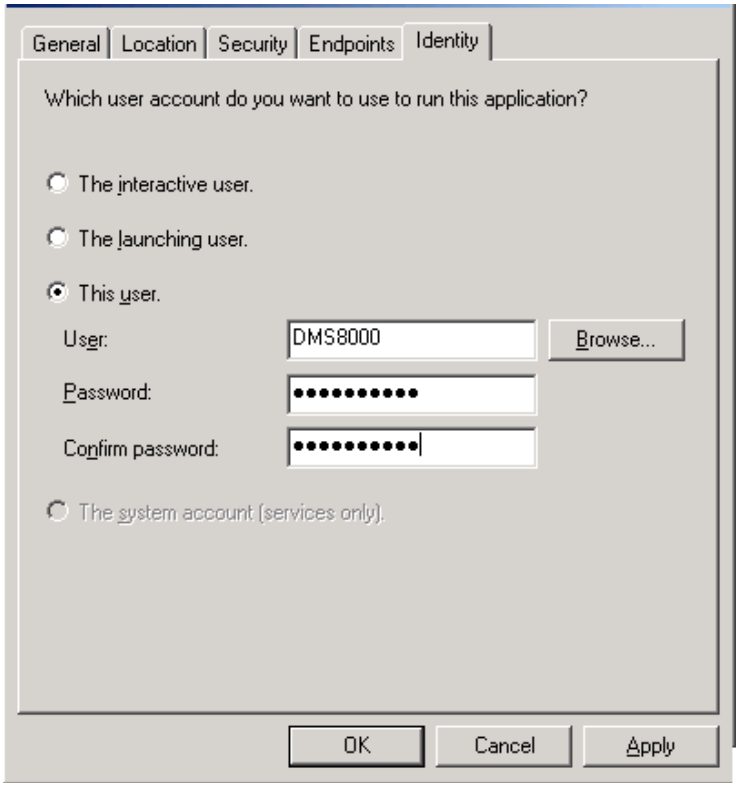


Image 11 DCOMCNFG – Identity

Note: The demo version runs only with Launching or Interactive User. A different user from Launching or Interactive can be used ONLY if the OPC-Server runs with a registered PAK.

5.3 Licensing

To run the OPC Server without any time restriction a regularly software license has to be purchased from S4S.
A software license defines the maximum configuration managed by the OPC Server in terms of:

- N° of scenari
- N° of cameras

Without the software license the OPC Server Security Center runs in demo mode with full functionality for two hours. The demo mode runs only with Launching or Interactive User (see OPC Server identity 9).

5.3.1 How to obtain a license

A software license must be obtained from S4S and the request has to be done from the computer where is installed the OPC Server. From the its User Interface selecting "?" then "Information about OPC Server Security Center" then "View license" then "Product activation".

In the 'Product Activation' the following fields have to be filled :

- Customer installation data
  - User name,
  - Organization,
  - Email,
- Security Center configuration in terms of: numbers of Scenarios;
- Code generation (via the 'Generate new user code' button);
- Save the code and directly send it to 'orders@s4s.it ' or send it via 'Send' button if it is configured a mail box on the computer.

A PAK (Program Authorization Key) code will be generated for that specific configuration and for the PC from which has been requested the software license.

5.3.2 Software license activation

To activate your license you must run OPC-Server as 'Administrator' and to access the 'Product Activation' dialog and through the 'Load New License' button you load the license file released by S4S.
A dialog will appear for feedback at the end of loading to indicate the outcome of activation.

6. System Configuration

The purpose of this section is to provide the necessary information for configuring the Security Center.

The OPC Server has to be configured in order to communicate with the Security Center and acquire data from it.
The OPC Server Security Center configuration tool consists of two sections: Settings and Subsystems.

- **SETTINGS**: Is the section where to define the OPC Server general parameters;
- **SUBSYSTEM**: Is the section where to configure the Security Center that the OPC Server has to connect.

SETTINGS

The ***SETTINGS*** section allows configuring the OPC Server name and description and the main operating parameters:

Image 12 OPC Server – SETTINGS

OPC Server

After entering the OPC Server name and description you must register the application with the command "Register". In case you want to change the name and description you must first unregister it then register it again with the new name.

Operating Parameters

- *OPC Quality behavior*
  Enables or disables the management of the quality property in accordance with the standard OPC. Default is : Enabled
- *System Status Update (s):*
  Time in seconds for updating the Security Center connection status. Range Value: 1-3600 [s] Default value: 3 [s].

- *Level Log Detail :*
  Defines the level of detail of OPC LOGs presented on the screen.
  Three levels are supported : LOW, MEDIUM and HIGH

  - LOW - [Default value] – Presents the system diagnostics and commands received from an OPC client .

- MEDIUM – Presents all OPC transactions (change of status, commands, diagnostics).
- HIGH - Presents all OPC transactions (change of status, commands, diagnostics) with the native messages sent by the OTS. \). The detail level is verbose and can slow down the application. Normally used only for Debug.

  All logs are saved on a File.txt (C:\OPC- FSecurityCenter \LOG).

- *Default Value TAG*
  Default value assigned when the OPC Server does not know the real value of TAGs, for example at the start-up of the OPC. Default value is : -1.

- *Path logo image :*
  Defines the logo to be presented on top of the application. Defaul value : S4S logo

- *MaxNumberCameraMonitorAlarmed*
  Defines the number of tiles for each monitors alarmed configured. If there are more cameras alarmed of the tiles configured the cameras are displayed in cyclic mode.

- *IDCameraDefaultMonitorAlarmed*
  Default camera displayed on the monitors alarmed configured when the tile does not show alarmed cameras. If you do not want to view any default camera set the value to 0. Default value is 0.

- *DelayCameraAlarmedCyclical*
  Display time in millisecond between one alarmed camera and other when the cameras are displayed in cyclic mode. If the number of alarmed cameras is higher of *MaxNumberCameraMonitorAlarmed* then the cameras are displayed in cyclic mode. Default value is 5000 [ms].

- *DealyMonitorAlarmedCheck*
  Display time in seconds. Waiting time to check all configured monitors alarmed. If a monitor has no alarmed camera (*AlarmedState*) will clean and the default camera (IDCameraDefaultMonitorAlarmed) will be displayed. If there is one or more cameras into the monitor is not carried out any operations. If the delay value is 0 is not carried out any operations. Default value is 1 [min].

SUBSYSTEM

The ***SUBSYSTEM*** section allows to define the properties of the subsystems (Security Center) to be connected to the OPC Server.

Image 13 Configuration - SUBSYSTEM Connection

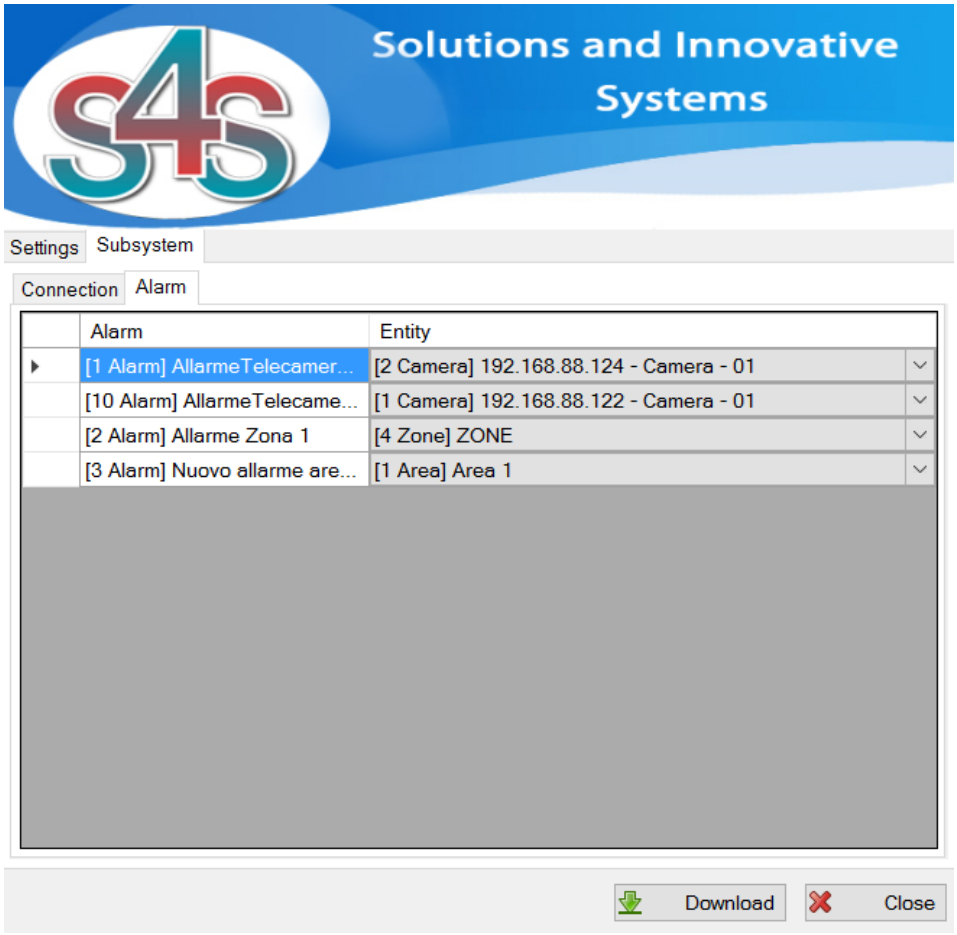
- *Description*
  Is the description of the subsystem (Security Center). At the sturt-up the OPC Server creates by default one subsystem which description is set to "EXAMPLE". The description can be freely modified.
- *TAG Name*
  The TAG name is used to identify the subsystem OPC TAG. The default value is 'SUBSYSTEM_(ID).

- *Ethernet*

- *IP Address*
  IP address of the Security Center to be connected. The default is 127.0.0.1 (localhost).
- *User Name*
  Usern name of the Security Center to be connected. The default is 'admin'.

- *User Name*

  Usern name of the Security Center to be connected. The default is '' (empty).



The Alarm section allows you to associate a particular alarm to an entity, so if an entity is alarmed the application sends the trigger alarm command to Security Center.
When Security Center sent as event of activation or acknowledge alarm the application synchronizes the Alarmed State property of the entity associated with this alarm.
Is not possible associate more than one entity for alarm.
If an entity not has nothing alarm associate when it is alarmed the application doesn't send the comand.
If the alarm should not be associated with any entity you must not select any entities through dropbox.

Scenari

OPC Server Security Center allows you to configure a series of scenarios, each scenario configured is represented as a writable OPC Tag. By OPC tag you can send a command to activate and deactivate the scenario.
You can configure a particular entity to display on activation command and a different entity on deactivation command, the entity will be showed in the first tile of the same monitor configured.

```
<SUBSYSTEM Description="EXAMPLE" TAG_Name="SUBSYSTEM_1" IP="127.0.0.1" UserNme="admin" Password="">
    <SCENARIO ID="1" ScenarioON_GenetecID="1" ScenarioOFF_GenetecID="2" Monitor_GenetecID="66" />
    <SCENARIO ID="2" ScenarioON_GenetecID="2" ScenarioOFF_GenetecID="1" Monitor_GenetecID="65" />
    <SCENARIO ID="3" ScenarioON_GenetecID="1" ScenarioOFF_GenetecID="6" Monitor_GenetecID="65" />
    <SCENARIO ID="4" ScenarioON_GenetecID="4" ScenarioOFF_GenetecID="5" Monitor_GenetecID="65" />
</SUBSYSTEM>
```

Image 14 Configuration - SCENARI

- *ID*

ID is a string that will be linked to Scenario_ to define the name of OPC Tag. This value can be a string or a number.
NOTE: It is important that the ID is unique, there must be no different scenarios with the same ID.

- *ScenarioON_GenetecID*

It is a LogicalId of the Entity viewed on the Monitor after Activation command of the scenario.

This value is read by Security Center or by OPC-Server in the List Entity dialog.

- *ScenarioOFF_GenetecID*

It is a LogicalId of the Entity viewed on the Monitor after Deactivation command of the scenario.

This value is read by Security Center or by OPC-Server in the List Entity dialog.

- *Monitor_GenetecID*

It is a LogicalId of the Monitor that visualize the Entity after after Activation/Deactivation command of the scenario.

This value is read by Security Center or by OPC-Server in the List Entity dialog.

Monitor_Alarmed Tags

Association id camera to a monitor. When an OPC-Client alarms-ON a camera this will be displayed in the monitor configured and removed when OPC-Client alarms-OFF it. If one or

more cameras are not associated to a monitor alarmed, the program automatically associates them with the first monitor alarmed configured.

The MONITOR_ALARMED tag is defined by:

- *ID*

Omnicast ID camera. When a camera is alarmed by an OPC client, is shown in the monitor defined in the field OmnicastID.

- *OmnicastID*

Omnicast ID monitor. You can associate multiple monitor alarmed to a camera, in this way when the camera is in alarm will be displayed on both monitors.

Example 1:

```
<MONITOR_ALARMED ID="1" OmnicastID="33" OmnicastID_2="34" />    2-MONITORs
<MONITOR_ALARMED ID="2" OmnicastID="33" />                      1-MONITOR
```

7. OPC TAGs

The following list introduces each tags in the OPC structure with a brief description.

TAG	DESCRIPTION	TYPE	PROPERTY	VALUE	VALUE DESCRIPTION
OPC Server SecurityCenter					
SETTINGS					
.System_status_update[s]	System Status in seconds	Int32	R/W	1-3600	Default value: 2[s]
.Date_XML_Upload	Date last upload configuration data (xml file)	String	R		DD/MM/YYYY hh:mm:ss
.License_State	Indicates the status of the license. If the license is installed but covers fewer tags than configured, tags unlicensed assume the default value (-100)	Int16	R	-1	Unknown
				0	Demo Version starting
				1	Demo Version running
				2	Demo Version Expired
				3	Licensed
SUBSYSTEM*					
. Configured	Subsystem Configured in xml file.	Int16	R	0	Configured
				1	Not Configured
.Description	Description	String	R		
.Connection	Connection State	Int16	R	0	Connected
				1	Disconnected
SUBSYSTEM*.Scenario [1-n]					
.State	Scenario State	Int16	R/W	0	Off
				1	On
				COMMAND	
				0	Activation
				1	Deactivation
SUBSYSTEM*.Camera[1-n]					
.Name	Entity name	String	R		
.Running	Define if the entity is online	Int16	R	0	Online
				1	Offline
.RecordingState	Current recording state.	Int16	R/W	0	Off by system
				1	Off by user/manual
				2	On by system
				3	On by user/manual
				COMMAND	
				10	Start recording
				11	Stop recording

.MotionState	Current motion state	Int16	R/W	0	Off
				1	On
				COMMAND	
				14	Reset
.ManualAlarm	Manual alarm state	Int16	R/W	0	Normal
				1	Alarmed
				COMMAND	
				10	Alarm
.AlarmedState	Current alarmed state	Int16	R/W	0	No Alarmed
				1	Alarmed
				COMMAND	
				12	No alarm
				13	Alarm
SUBSYSTEM*.Entity[1-n] where Entity can be: Zone, Area					
.Name	Entity name	String	R		
.ManualAlarm	Manual alarm state	Int16	R/W	0	Normal
				1	Alarmed
				COMMAND	
				10	Alarm
SUBSYSTEM*.MonitorAlarmed[ID monitor]					
.Tile[ID Tile]	Tile of the monitor (1 to n)	Int16	R/W	0	No camera alarmed
				1	One or more camera alarmed
				COMMAND	
				10	Reset. Clean the current tile with default camera configured.
SUBSYSTEM*					
.MACRO[ID macro]	Macro state	Int16	R/W	0	Stopped
				1	Started
				COMMAND	
				10	Start macro
				11	Stop macro

LICENSE NOTE:
If the license is installed but covers fewer tags than configured, tags unlicensed assume the default value (-100).

UNKNOWN VALUE:
If OPC-Server does not receive the state of one tag set the tag value with 'Default Value TAG' defined in Settings configuration if the type tag is a integer else if the type is a string set value with "".

8. Change from version OPC Security Center 1.0.3

The current version 1.2.0 has some OPC tag names different than the old version 1.0.3:

OPC Tag reference	Old OPC tag name	New OPC tag name
Subsystem	*.ConnectionState*	*.Connection*
Entity/Camera	*.AlarmState*	*.ManualAlarm*
Scenario	*.Scenario.Scenario_**	*.Scenario**

9. Change from version OPC Security Center 1.4.0.1

The current version 1.4.0.2 has some OPC tag names different than the old version 1.4.0.1:

OPC Tag reference	Old OPC tag name	New OPC tag name
Macro	*.Macro1.State*	*.MACRO1*