User Manual
-
OPC Server Milestone
-Enterprise-

Version 1.0.1

Revision History

Version	Date
1.0.0	13/11/2012
1.0.1	29/01/2013

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1. Glossary

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

2. Introduction

This is a User Manual for the Milestone - Enterprise OPC Server. The Server communicates with Enterprise Milestone system over Ethernet and supports data exchange with Client's via Microsoft's Object Linking and Embedding (OLE) for Process Control (OPC).
The manual is organized to give an overview of OPC technology and the Server, details on the configuration environment, detailed procedurally steps involved in a simple configuration.
While an overview of OPC is presented, a complete description of OPC is beyond the scope of this manual. References are provided where additional details can be found. While an in-depth understanding of OPC is not required to use the Server with OPC Clients, a good understanding of OPC can help you optimize configurations and may prove invaluable when trying to get multiple Clients working with a single Server instance.

3. About the OPC Server Milestone - Enterprise

The OPC Server is a Windows-based application that allows OPC compatible clients, such as SCADA systems, to connect to one or more Enterprise - Milestone systems.
The OPC Server Milestone – Enterprise is based on OPC Data Access, known as 'DA', which provides real-time data from Milestone system to OPC Clients.

The server communicates with the Enterprise - Milestone system through MIP SDK 3.6a version and Central API.

The OPC Server reads and writes data to and from Enterprise - Milestone system 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-Milestone-Enterprise.exe
OPC NAME	: S4S.OPC-Milestone-Enterprise
OPC DESCRIPTION	: S4S OPC Server – Milestone Enterprise
OPC GUID	: { DF1E9D9C-679A-4C4C-AE46-D35F585A9F27 }

4. OPC Server Overview

4.2 Hardware Requirements

4.2.1 Network Hardware Requirements

Since the Server communicates with the Enterprise - Milestone systems over Ethernet, an Ethernet network must be in place. Depending on the cabling, distances, inter connectivity requirements, etc., this system may include bridges, routers, hubs, etc.. 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.

4.2.2 Computer Hardware Requirements

The following minimum computer hardware items are required for the computer that will be running the Server:
1. CPU – Entry level
2. 512 Mb of RAM
3. 10 GB hard disk space
4. SVGA display adapter (required for configuration only)
5. Ethernet adapter with proper interface type to attach to the Ethernet network.

While these are considered minimums, actual requirements will vary greatly depending upon the operating system, operating system options installed and the Server's configuration and the operation it will be requested to perform on behalf of Clients.
Faster CPUs and more memory will greatly enhance the performance of the Server.

4.3 Software Requirements

The following software requirements must be met in order to configure and/or use the Server:

- Windows Server 2003, Windows XP or Windows 7 with DCOM installed.
- Milestone Integration Platform MIP SDK (Version 3.6a)

4.4 Installation of the OPC Server

The OPC server requires a system with DCOM Installed and the installation of the OPC proxy DLLs.
The OPC Server proper functioning needs the installation of the OPC Server Milestone using its specific setup. The setup includes all the dependencies that your system must meet (ex. *WtOPCSvr.DLL* - OPC server library) in order to ensure the proper functioning of the application.

VideoOS.Platform.dll	*mfc100.dll*
VideoOS.Platform.SDK.dll	*msvcp100.dll*
WtOPCSvr.dll	*msvcr100.dll*
S4S_OPC_Library.dll	*mfcm100.dll*

4.5 Registration of the OPC Server

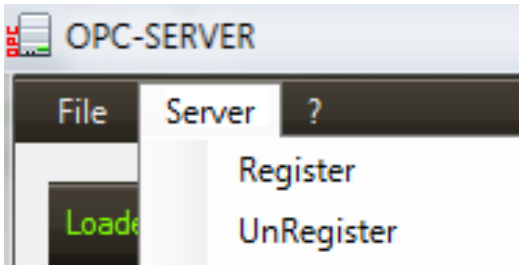

Figure 1 Register and UnRegister

- 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'.

4.6 Authentication level and Permissions of the OPC Server

After OPC Server registration is necessary to enable the COM security, so OPC Client can automatically call the OPC Server.
Below are showed the 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,

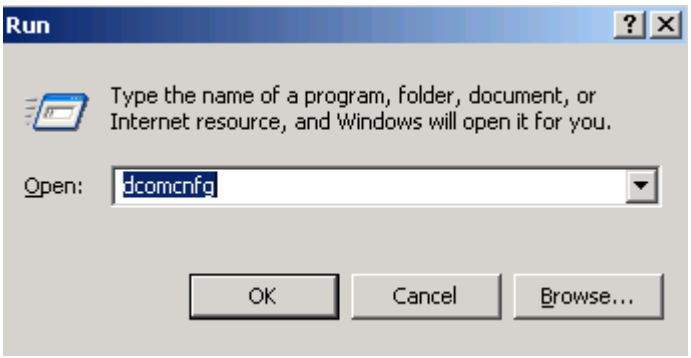

Image 1 DCOMCNFG - Run

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.

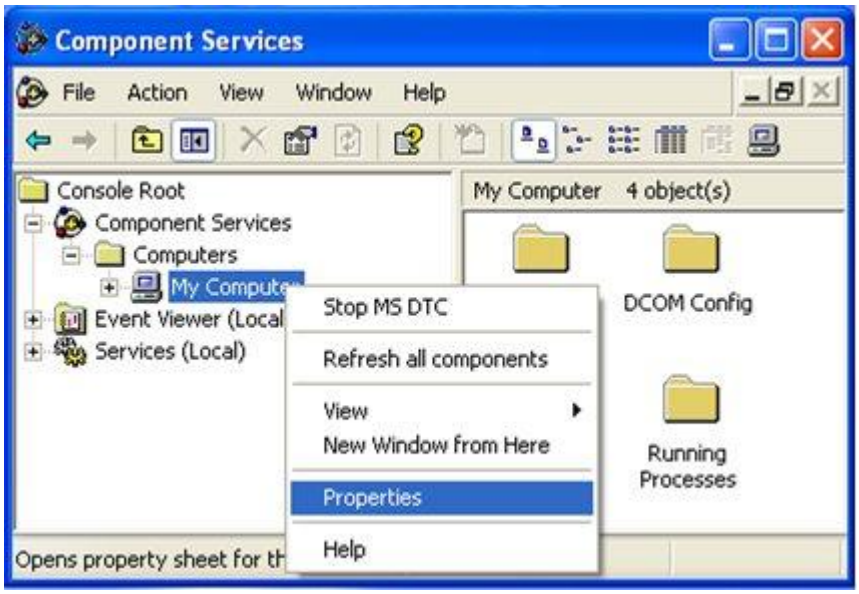

Image 2 Component Services Property

5. Go to the COM Security tab. Edit the default settings for 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.

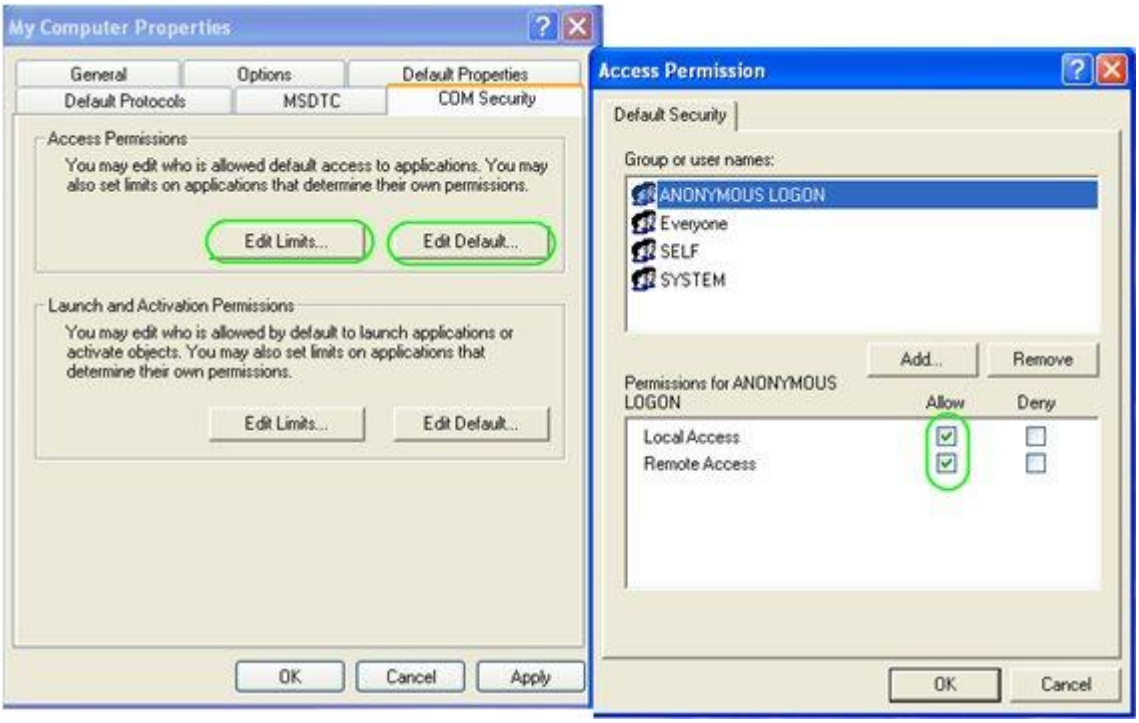

Image 3 COM Security Access Permissions

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.

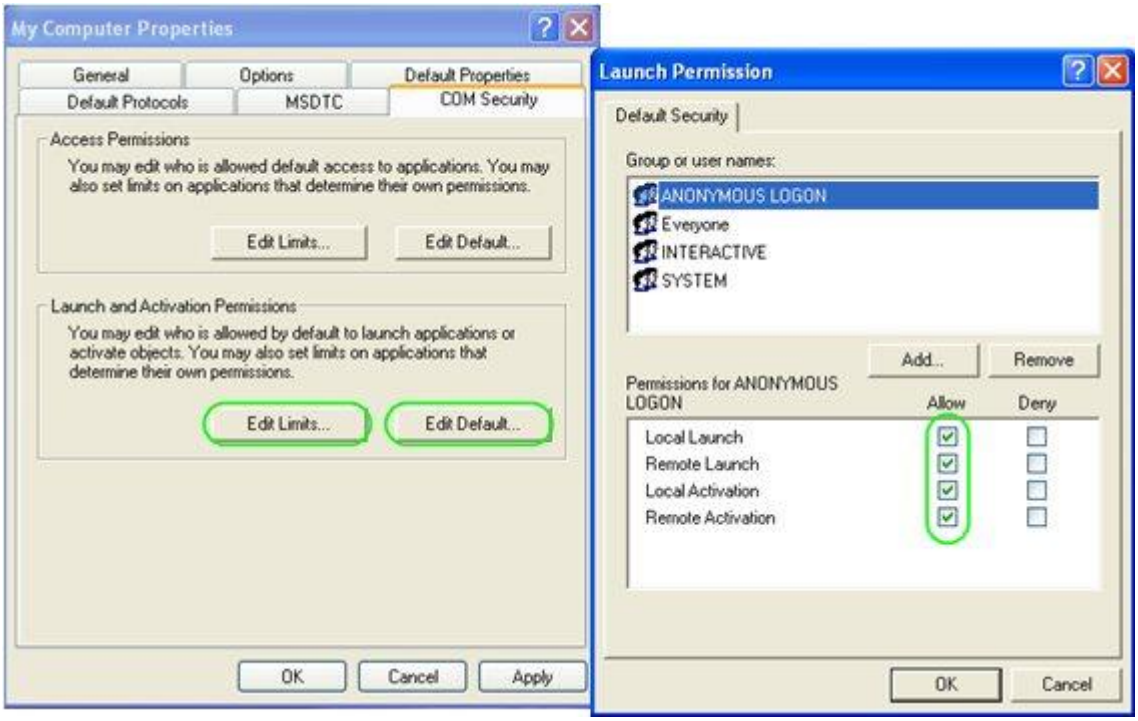

Image 4 COM Security Launch and Activation Permissions

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.

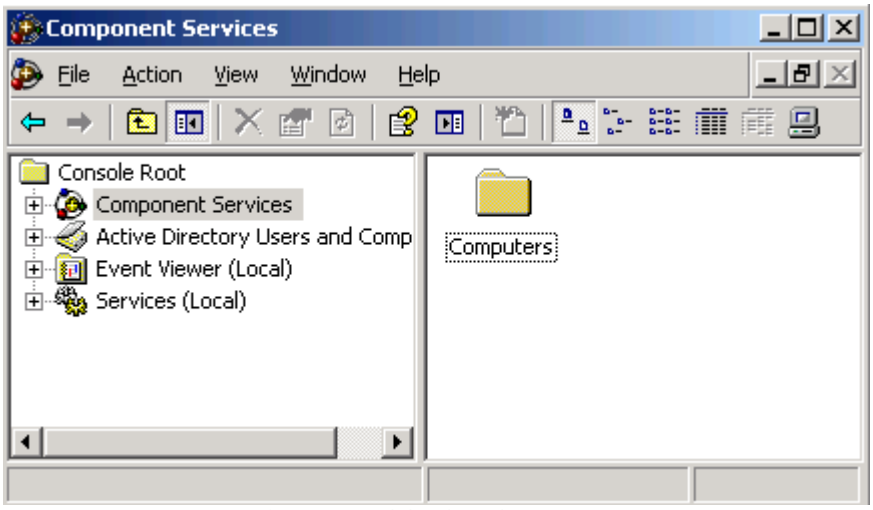

Image 5 DCOMCMFG

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 - Milestone" />
```

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

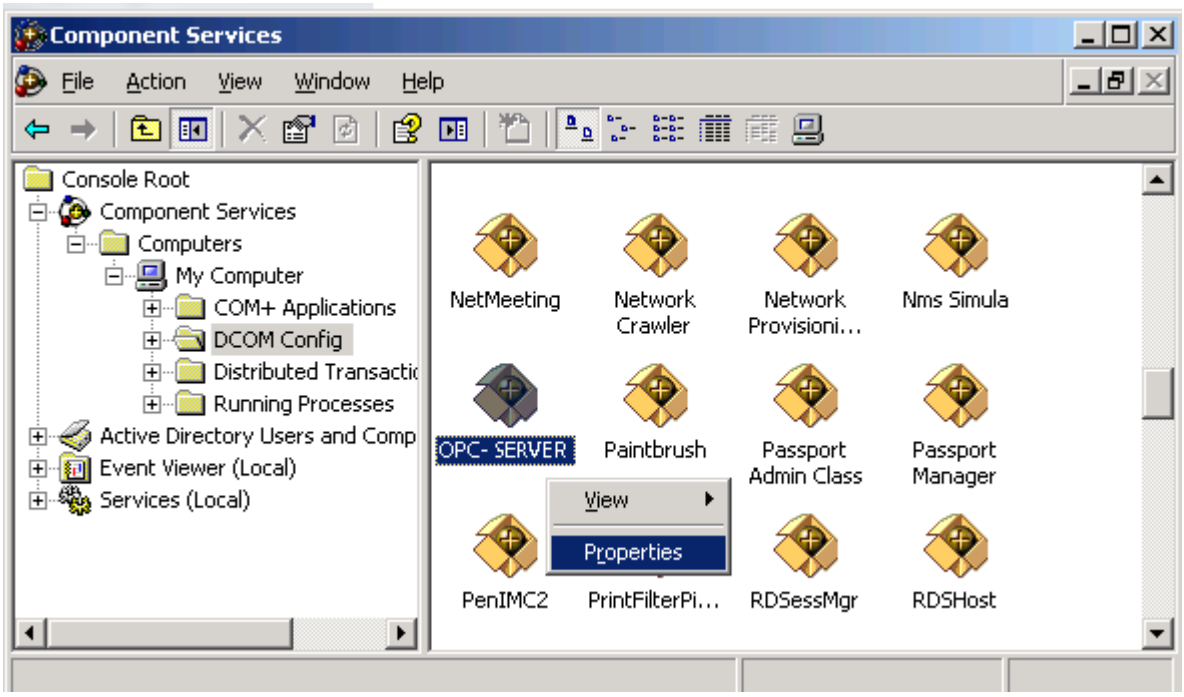

Image 6 DCOMCNFG - Find OPC Server

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.**

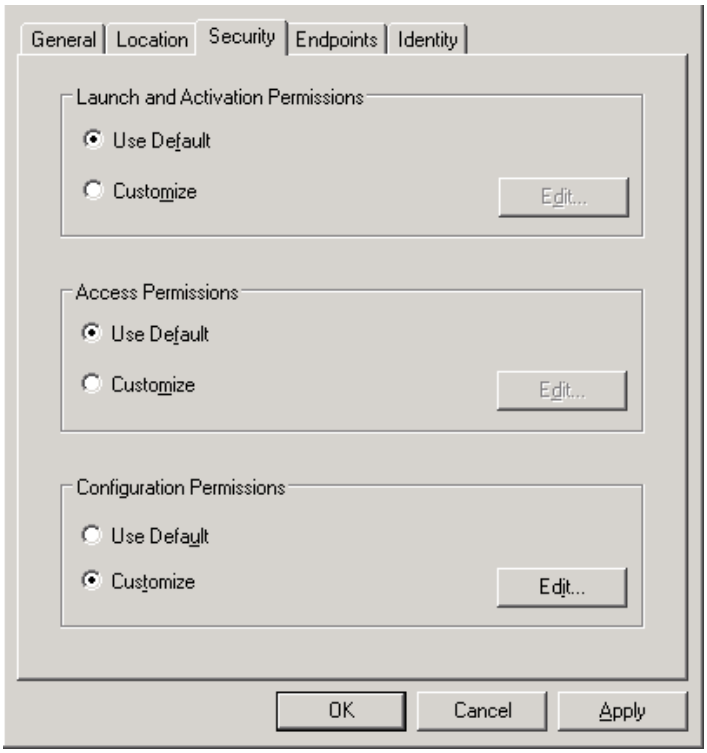

Image 7 DCOMCNFG – Configuration Permissions

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.

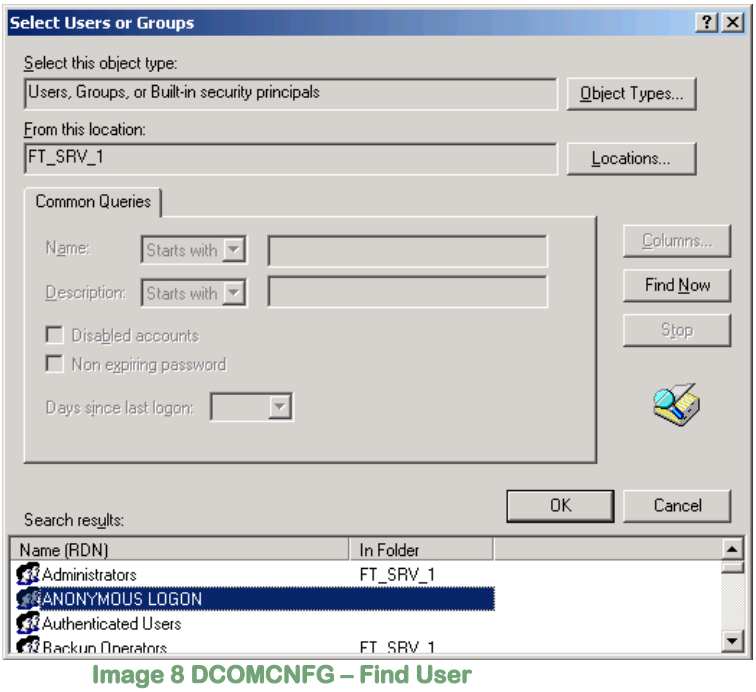

Image 8 DCOMCNFG – Find User

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

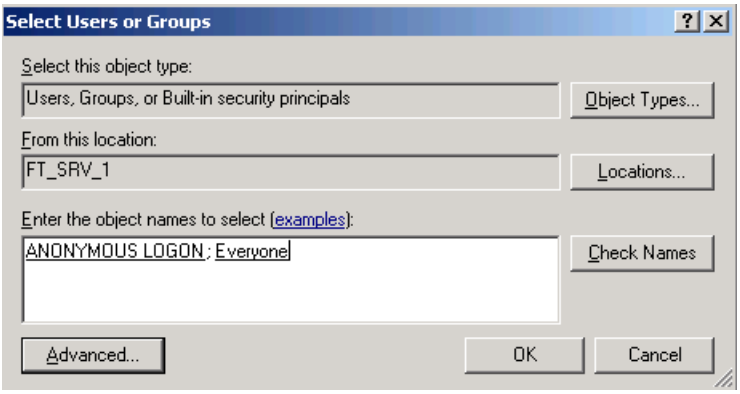

Image 9 DCOMCNFG - Add users

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 USER.

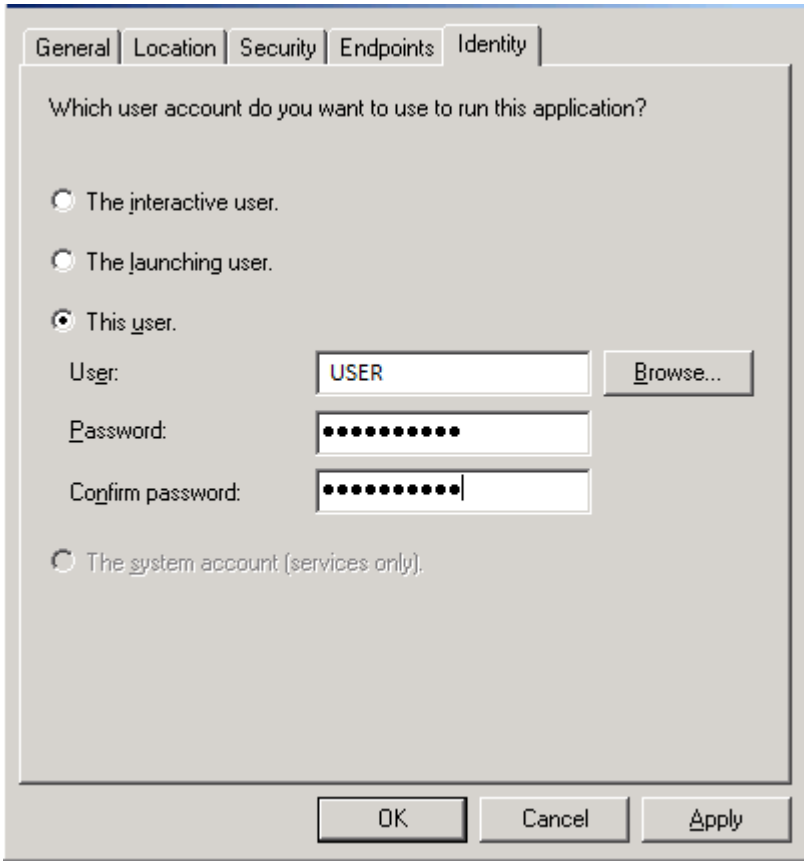

Image 10 DCOMCNFG – Identity

4.7 Demo and Unlocking

The OPC-Milestone can be used in demo version with full functionality of the program for up two hours. To get unlimited functionality of the product you need to buy the license from S4S

4.7.1 Request your license

To apply for a license to S4S is need to access via OPC-Milestone GUI to the 'About' / 'View License' / 'Product Activation' dialog.
In the 'Product Activation' dialog you must complete the following steps:

- complete the form (user name, organization, email field);
- generate code (via the 'Generate new user code' button);
- save the code and directly send it to 'info@s4s.it ' or send it via 'Send' button if is configured a mail box on the computer.

4.7.2 Activate the license

To activate your license you must access to 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.

4.8 Configuration

The Server must be configured to know about Enterprise - Milestone system(s) with which it will communicate. In the Server configuration environment, each GATEWAY is referred to as a Enterprise - Milestone system.
Configuration of System includes defining Communication Paths to access GATEWAY(s), GATEWAY address information and the Global Variables available in the GATEWAY(s) to be accessed.

The configuration of the communication parameters and of the GATEWAYs connected to the OPC Server is done using an XML page.
The configuration page should be placed in the OPC-Milestone application folder. If the configuration page is not present in the OPC Server application folder, the program automatically creates a template configuration page.
The first OPC activation, OPC creates an example configuration with only one gateway. The gateway description is setted to "EXAMPLE", OPC doesn't consider the gateway, with description "EXAMPLE", as configured, you must rename the gateway if you want configure it.

```
<?xml version="1.0" encoding="utf-16"?>
<Configurator>
  <!--OPC Server Configurator. Version 1.0.0.5, DateTime 18/09/2012 10.56.34-->IMPORTANT: This is an internal file
that has been generated by OPC-Milestone-Enterprise  program.
Any direct editing or changes made to this file may result in unpredictable
behavior or data corruption.  It is strongly advised that
users do not edit the contents of this file.-->
  < Configurator>
<!--OPC Property Configuration.-->
<OPC_PROTOCOL  Delimiter="."  OPC_name="S4S.OPC-Milestone-Enterprise"  OPC_description="S4S  OPC  Server  –
Milestone Enterprise" />
<!--TCP Detector.-->
<TCP_DETECTOR Enable="false" ID="0" Port="11800" />
<!--System Configuration.-->
<SETTINGS  ReconnectionFrequency_ms="10000"  System_status_update_ms="5000"  Maximum_number_Gateway="1"
Maximum_number_Entity_to_Gateway="30" />
<!--Milestone System(s)-->
  <GATEWAY ID="1" Description="EXAMPLE" IP="http://127.0.0.1/" User="username" Password="password" />
</Configurator>
```

XML template page

SETTINGS TAGs

The **OPC_PROTOCOL** tag defines the features of the OPC Server.
The OPC_PROTOCOL tag is defined by:

- Delimitator

TAGs delimitator.

- OPC_name

OPC name registered in the system.

- OPC_description

OPC description registered in the system.

The **TCP_DETECTOR** tag defines the features of the TCP DETECTOR protocol to manage remote OPC configuration via TCP.
The TCP_DETECTOR tag is defined by:

- Enable

System enables communication protocol.

- ID

OPC system ID.

- Port

Port used to communication protocol.

The TAG ***SETTINGS*** configure the global settings of the server:

- ReconnectionFrequency_ms

Reconnections frequency in milliseconds when a connection is broken.

- System_status_update_ms_ms

System status update in milliseconds.

- Maximum_number_Gateway

Maximum configurable gateway (Max. value 50).

- Maximum_number_Entity_to_Gateway

Maximum number configurable entities for each Gateway (Max. value 2000).

GATEWAY TAGs

The *GATEWAY* tag defines a system Enterprise - Milestone to be connected to the OPC Server.
To connect #N Gateway system, you must insert into XML page #N GATEWAY tags.
For example if You want to insert three GATEWAY You have to configure the XML page as follows:

```
<?xml version="1.0" encoding="utf-16"?>
<Configurator>
  <!--OPC Server Configurator. Version 1.0.0.5, DateTime 18/09/2012 10.56.34-->IMPORTANT: This is an internal file that has been generated by OPC-Milestone Enterprise  program.
Any direct editing or changes made to this file may result in unpredictable
behavior or data corruption.  It is strongly advised that
users do not edit the contents of this file.-->
  < Configurator>
<!--OPC Property Configuration.-->
<OPC_PROTOCOL  Delimiter="."  OPC_name="S4S.OPC-Milestone-Enterprise"  OPC_description="S4S  OPC  Server  –  Milestone Enterprise " />
<!--TCP Detector.-->
<TCP_DETECTOR Enable="false" ID="0" Port="11800" />
<!--System Configuration.-->
<SETTINGS  ReconnectionFrequency_ms="10000"  System_status_update_ms="5000"  Maximum_number_Gateway="1" Maximum_number_Entity_to_Gateway="30" />
<!--Milestone System(s)-->
    <GATEWAY ID="1" Description="EXAMPLE1" IP="http://192.168.88.12/" User="admin" Password="admin" />
    <GATEWAY ID="2" Description="EXAMPLE2" IP="http://192.168.88.13/" User="admin" Password="admin" />
   <GATEWAY ID="3" Description="EXAMPLE3" IP="http://192.168.88.14/" User="admin" Password="admin" />
  </Connections>
</Configurator>
```

The *GATEWAY* tag is defined by:

- **ID**

Server ID.

- **Description**

Server description. The first OPC activation, OPC creates an example configuration with only one gateway. The gateway description is setted to "EXAMPLE", OPC doesn't consider the gateway, with description "EXAMPLE", as configured, you must rename the gateway if you want configure it. The default value is "EXAMPLE".

- **IP**

Server IP address (ex "127.0.0.1").

- **User**

User account to login to the Enterprise Central Server.

- **Password**

Password account to login to the Enterprise Central Server.

5. OPC TAGs

TAG	DESCRIPTION	TYPE	PROPERTY	VALUE	VALUE DESCRIPTION
		S4S.OPC-Milestone-Enterprise			
		SETTINGS			
.ReconnectionFrequency_[ms]	Reconnection Frequency	Short	R/W	5000 to N	(usually N is about 5000-20000) Maximum 100000
.SystemStatusUpdate[ms]	System status update in milliseconds	Short	R/W	500 to N	(usually N is 2000-5000) Maximum 100000
.Maximum_number_Gateway	Maximum Number Gateway configurable	Short	R	1 to N	(usually N is 1-10) Maximum 50
.Maximum_number_Entity_to_Gateway	Maximum Number Entity configurable for each Gateway	Short	R	1 to N	(usually N is 10-700) Maximum 2000
.Date_XML_Update	Last date reading configuration file.	String	R		
		GATEWAY*			
.Configured	Gateway configured by XML file.	Boolean	R	true false	Configured Not configured or Description = “EXAMPLE”
.ID	Server ID	Short	R		
.Description	Description	String	R		
.IP	Address of the server (eg "192.168.0.1").	String	R		
.User	User account to login to the Gateway	String	R		
.Connection	Connection state	Short	R	0 1	Connected Disconnected
.LastUpdate	Last update.	String	R		
		GATEWAY*.ENTITY * [ENTITY can be: CAMERA]			
.Name	Entity name.	String	R		
.Type	Define entity type.	Short	R	-1 1	Unknown Camera
.Connection	Connection state	Short	R	-1 0 1	Unknown Connected Disconnected
.MotionState	Current motion state (Camera entity).	Short	R	-1 0 1 2	Unknown Stopped Started Command: ResetMotionDetector *(Camera entity)*

.State	State (All entity).	Short	R	-1	Unknown
				0	Connected
				1	Disconnected
				2	Start Motion Detector
				20	Stop Motion Detector
.Command	Connection state (Camera entity Output entity).	Short	R/W	-1	Unknown
				0	Command: ResetMotion *(Camera entity)*

Table 1 OPC TAGs