

**Kepware Products for Windows 95™, 98™, 2000™, NT™, and XP™**

# **DCOM Configuration for KepserverEx**



**KTSM-00010**

Version 1.2.11

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DCOM Configuration Manual

#### **Kepware Technologies**

60 Forest Falls Dr, Suite 5

Yarmouth, Maine 04096

**Sales:** (207) 846-5881

**Technical Support:** (207) 846-5881

**Fax:** (207) 846-5947

**E-mail:** Sales@kepware.com or

technical.support@kepware.com

**Home Page:** <http://www.Kepware.com>

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# Overview

This document is intended to provide the user with information and instruction on how to configure the Distributed Component Object Model (DCOM) for use with KepserverEx. Since Windows NT/ 2000 security is more advanced and options differ from Windows 95/98, we have broken this document down into two components. The first half of the document covers configuring DCOM for Windows NT/2000 and the second half covers configuring DCOM for 95/98.

*Note: In Windows NT DCOM may function differently from one Service Pack to another. Service Pack 6 was used in creating this document and therefore it is suggested that Service Pack 6 be installed before attempting the following procedures.*

*Note: In our DCOM testing we have experienced instances where DCOM configuration changes do not take effect until the PC has been rebooted. If you have DCOM settings configured correctly but cannot establish a remote connection, you may want to consider rebooting both the server and client PCs.*

Warning: The following instructions for DCOM configuration allow for **all access by all users** for all DCOM components. If security is a factor with your applications, you must set DCOM security settings appropriately. We recommend proving connectivity with open access before reducing access privileges to specific users at the application level.

# Configuring DCOM for Win NT/2000 Domains

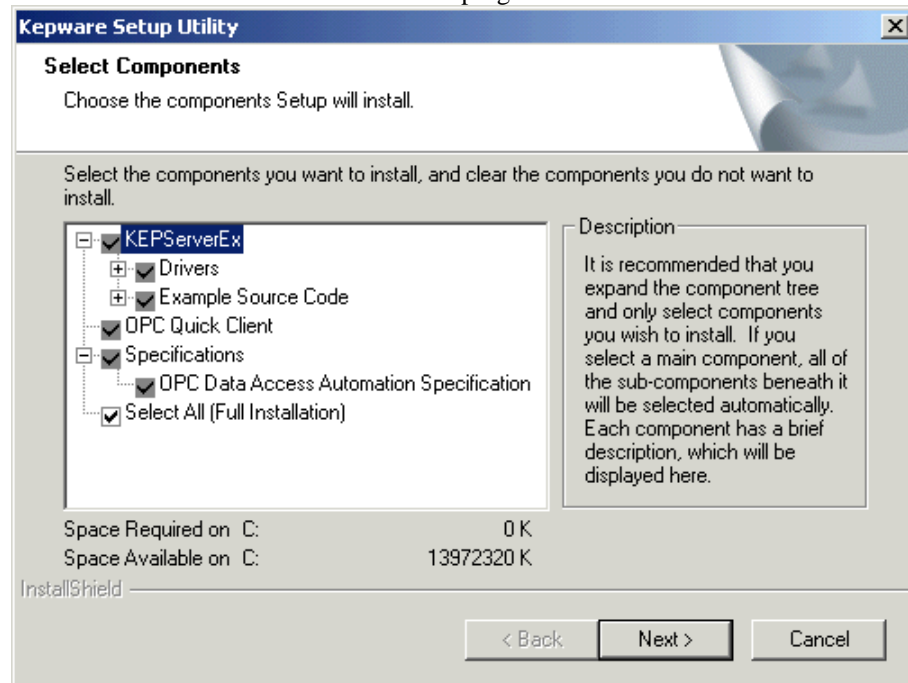
There can be minor variations between configuring DCOM for local or remote Connections to the KepserverEx. Some client applications may not browse to remote PC's to find the installed servers. For these clients you will probably need to make server registry entries on the client PC to be able to obtain the proper CLSID for the server. The preferred method is to run the Server installation program and only select the OPC Quick Client to install as defined below. If this cannot be done then you can use the OPC\_Remote.Reg file that is provided with the server install, See [Appendix A](#) for details on how to do this. If you are using another Operating Systems then see that section for instructions.

The first part of this document will explain the steps required to prepare for DCOM configuration on the remote PC.

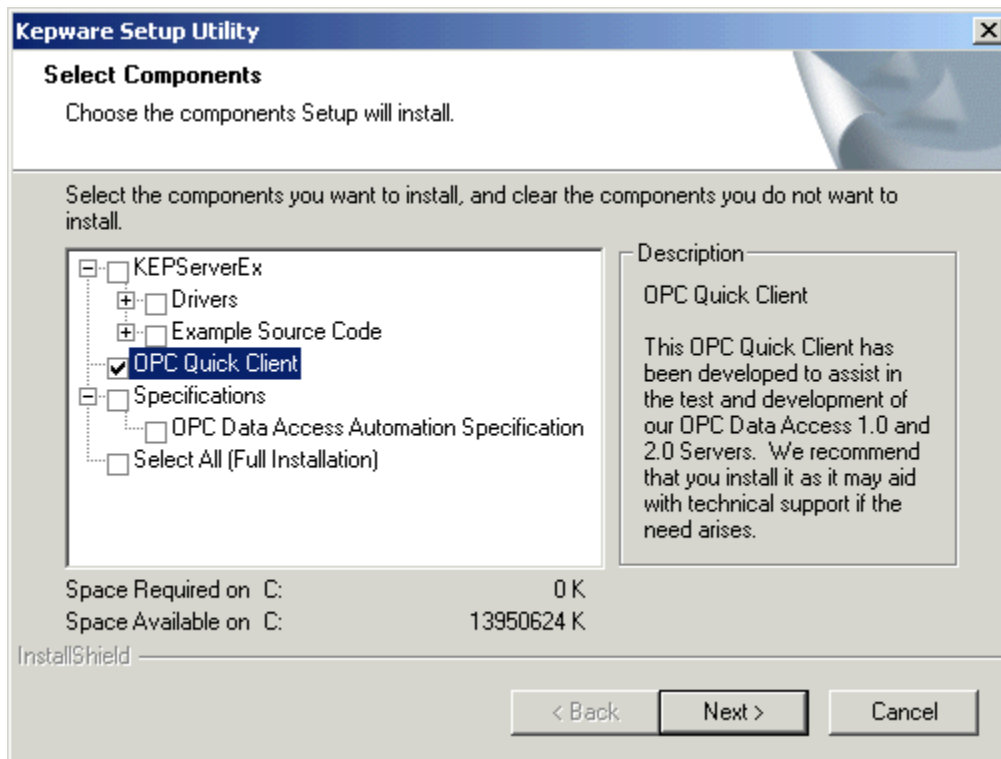
## Using the Install Program to Register the Server

You may also use the Server installation program to make the appropriate registry entries and to ensure that all of the files needed to make a remote connection are present.

1. On the remote PC run the Install program.



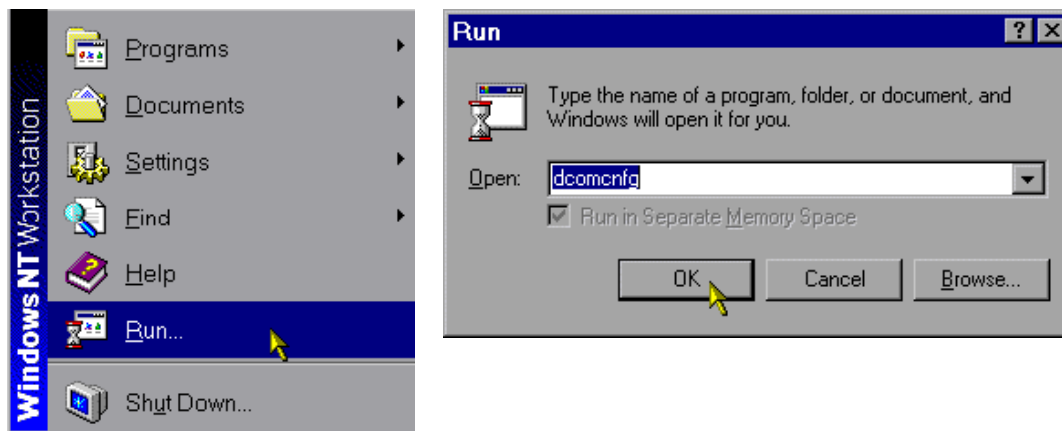
2. When asked to select the components that you would like to see installed you will uncheck all the components and click Next to continue with the install. We recommend installing the OPC Quick client at a minimum so that you may verify that you can connect to the server.



## Editing the DCOM Configuration

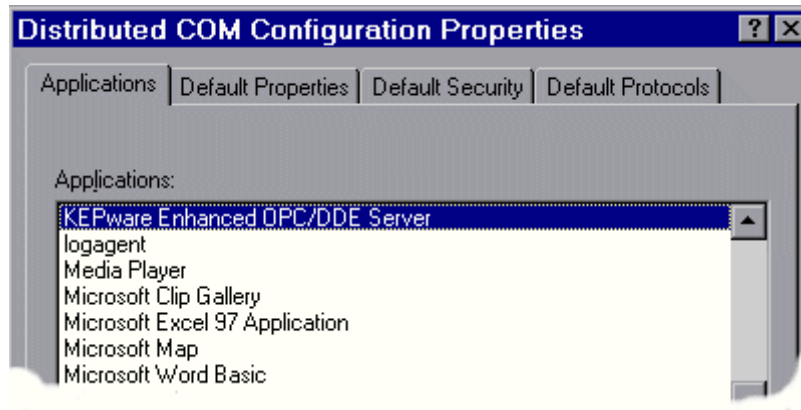
The following steps explain how to configure DCOM for remote or local connection to the KepserverEx.

1. Select the start button from the Desktop task bar and click Run... on the pop-up menu and run DCOMCNFG.EXE.



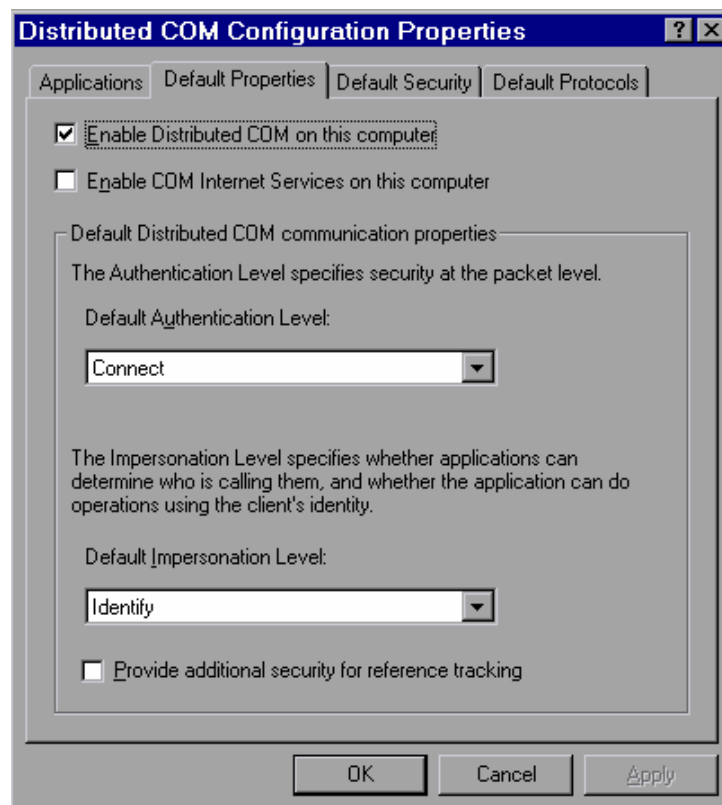
*DCOM Config (known as **DCOMCNFG.EXE**) is a utility that can be used to secure Distributed COM (DCOM) objects that have been created.*

2. A general DCOM configuration window will appear with four available pages. The foremost page is Applications, and it lists all applications that can enable DCOM. The next three pages are default configurations used for all the listed applications. Changes made to these pages affect DCOM applications globally. The approach of these instructions, security wise, is to allow all network users access to all DCOM applications. After a connection has been proven, the user may then choose individual applications from the list and customize their DCOM security properties for more control.



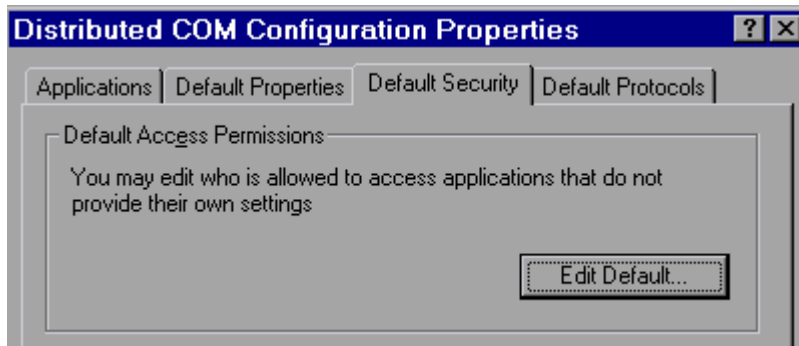
*Note: It is very important to make sure that the Apply button is selected after changes are made in a DCOM settings page.*

3. Under the Default Properties tab, “Enable Distributed COM on this computer” should be checked. Also, ensure that the “Default Authentication level:” is set to “Connect” and the “Default Impersonation Level:” is set to “Identify”. Click the Apply button if possible to administer the changes

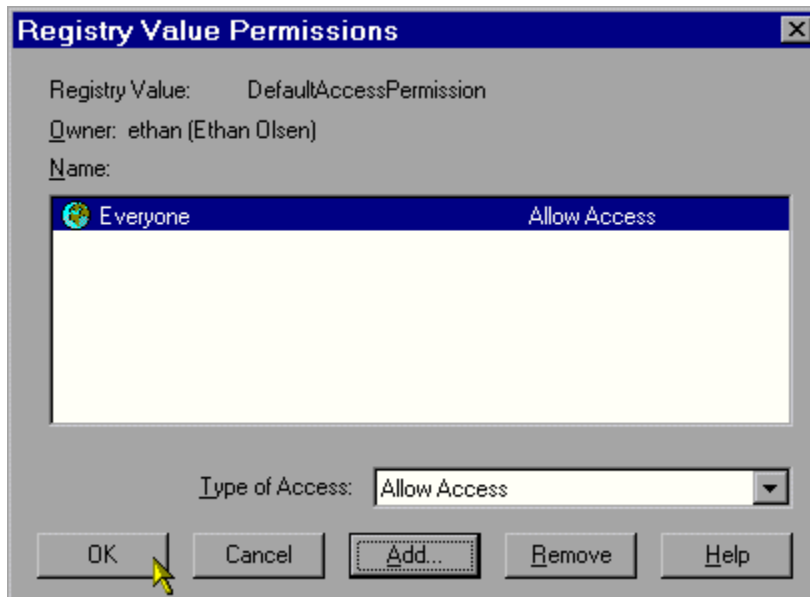


4. Select the Default Security tab and click the Edit Default... button for “Default Access Permissions”.

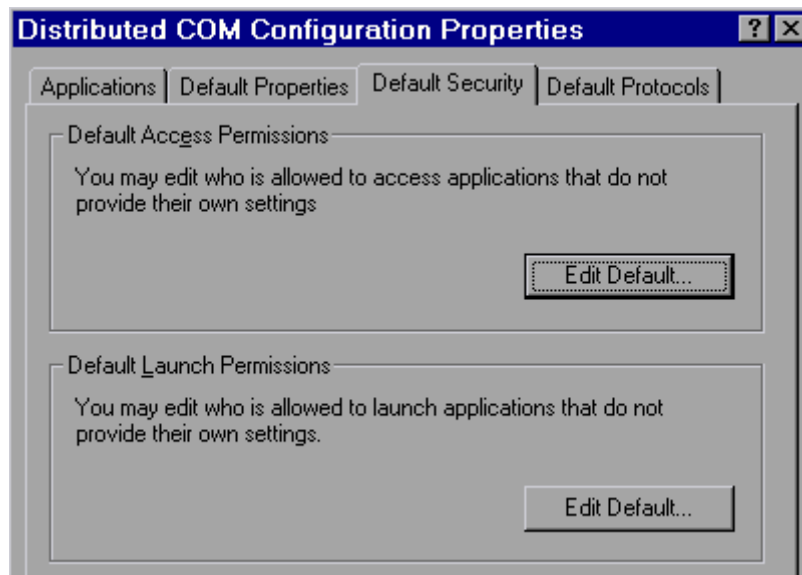




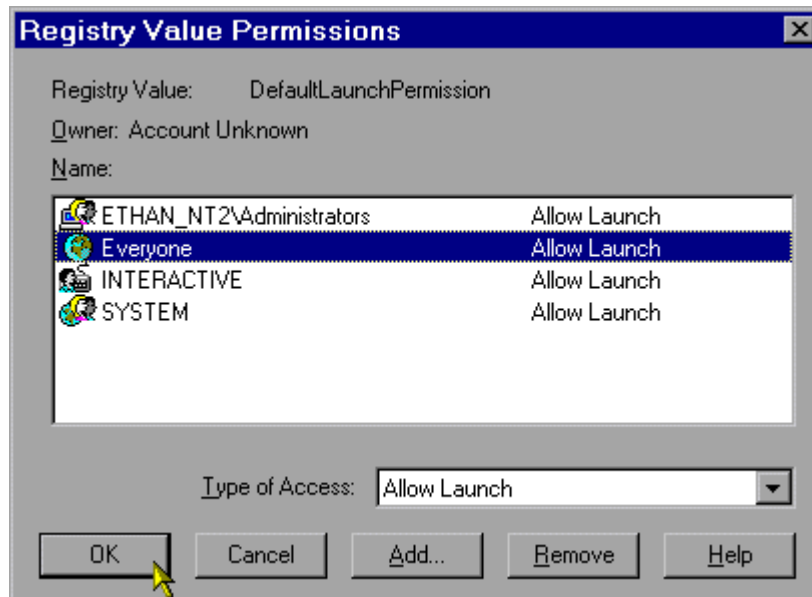
5. Add domain group "Everyone" with "Allow Access" to the permission list. Then select OK. If you are planning to run the server as a service then you will also need to add "System" with "Allow Access".



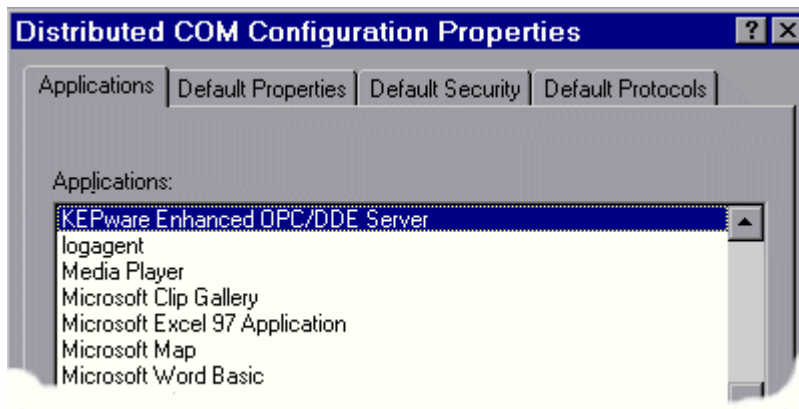
6. Now click the Edit Default... button for "Default Launch Permissions".



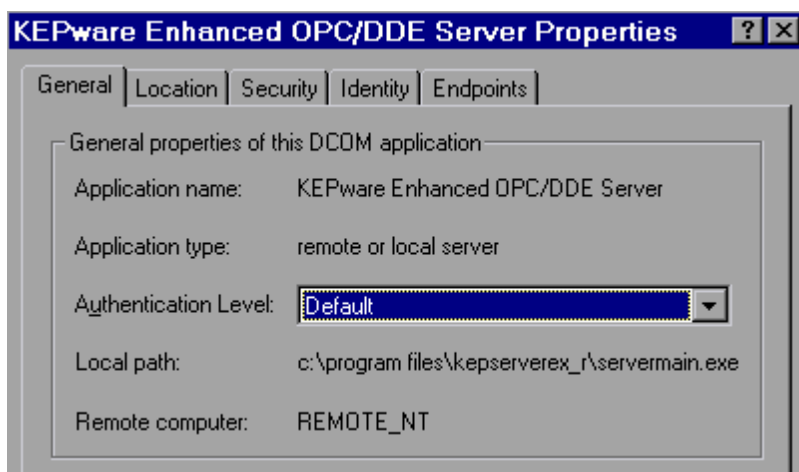
7. Add domain group “Everyone” with “Allow Launch” to the permission list. Then select OK.



8. Choose the Applications tab and double click on “KEPware Enhanced OPC/DDE Server”. This will access the application’s specific DCOM properties.



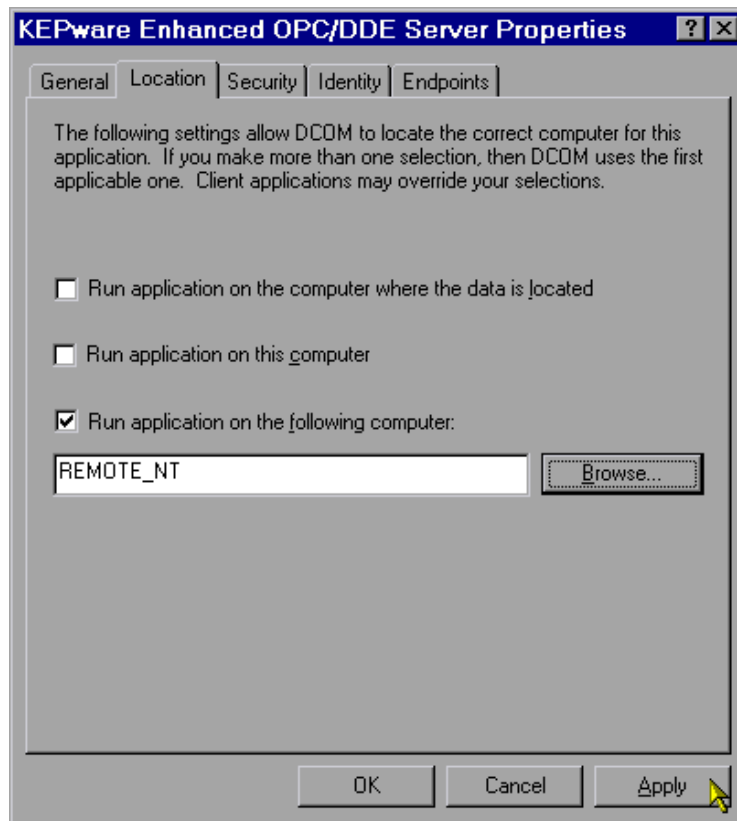
9. In the KepserverEx's application specific DCOM window, choose the Location tab.



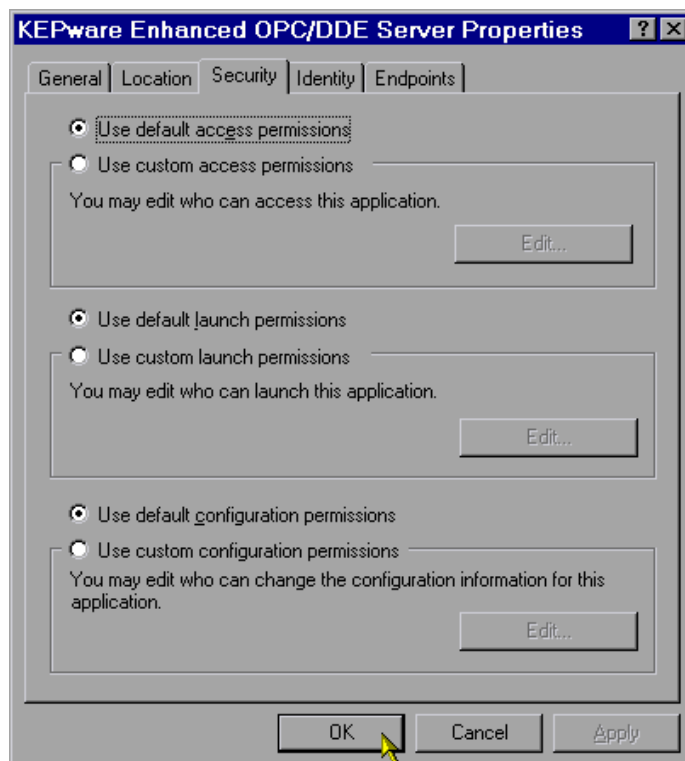
10. Most clients will allow you to connect directly to the remote PC by entering the Name of the PC in the server connection dialog box. For those applications that do not allow that Select "Run application on the following computer". Then browse for the remote machine that contains the KepserverEx application and select Apply. In this example the machine name is REMOTE\_NT. For local connections you will leave "Run application on the computer where the data is located" checked.

*Note: See Kepware's Client Connectivity guide for information on how specific clients connect remotely to KepserverEx.*

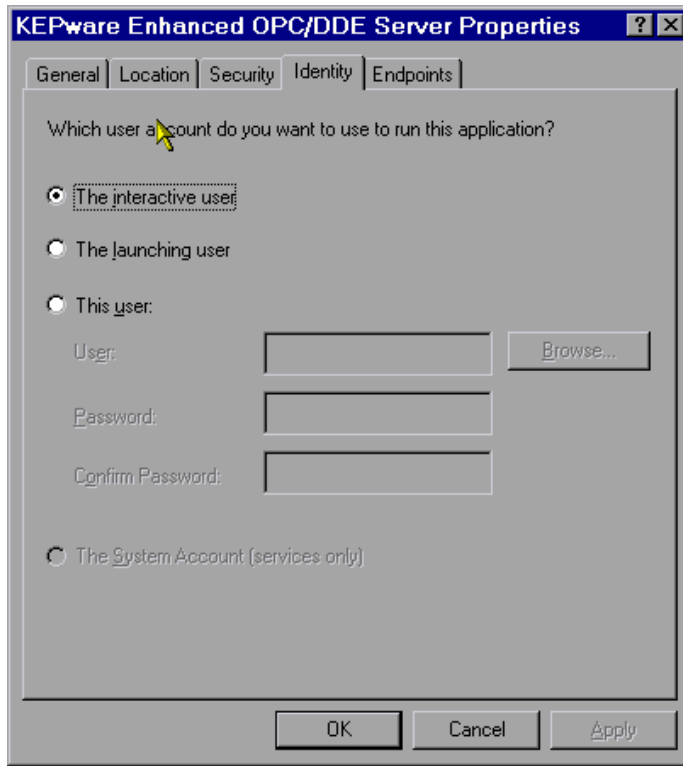
Warning: This dialog box will allow you to check more than one check box. When this happens it produces an error state. You must make sure that one and only one box is checked.



11. Choose the Security tab and ensure that the radio buttons for the Access permissions are set to default. Apply these changes.



12. The final step is to select the Identity tab from the application specific DCOM pages, and ensure that the “Interactive user” radio button is selected. Then select the Apply button if necessary. Select OK to exit the application specific DCOM window, and then choose OK again to exit the general DCOM window



At this point you should be able to connect to the server from the remote PC. If you installed the OPC Quick Client use it as a test and then try the client you are planning to use.



# Configuring DCOM for Win XP Domains

\*\*\*\* If you are using Windows XP Service Pack 2 then you need to read Kepwares Appnote on XP SP2\*\*\*\*

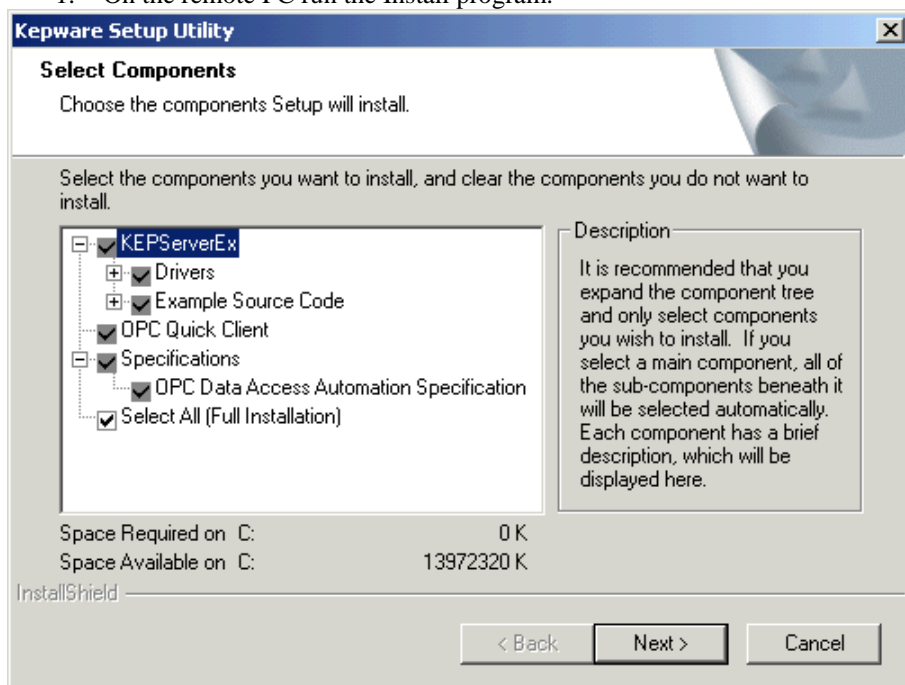
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The first part of this document will explain the steps required to prepare for DCOM configuration on the remote PC.

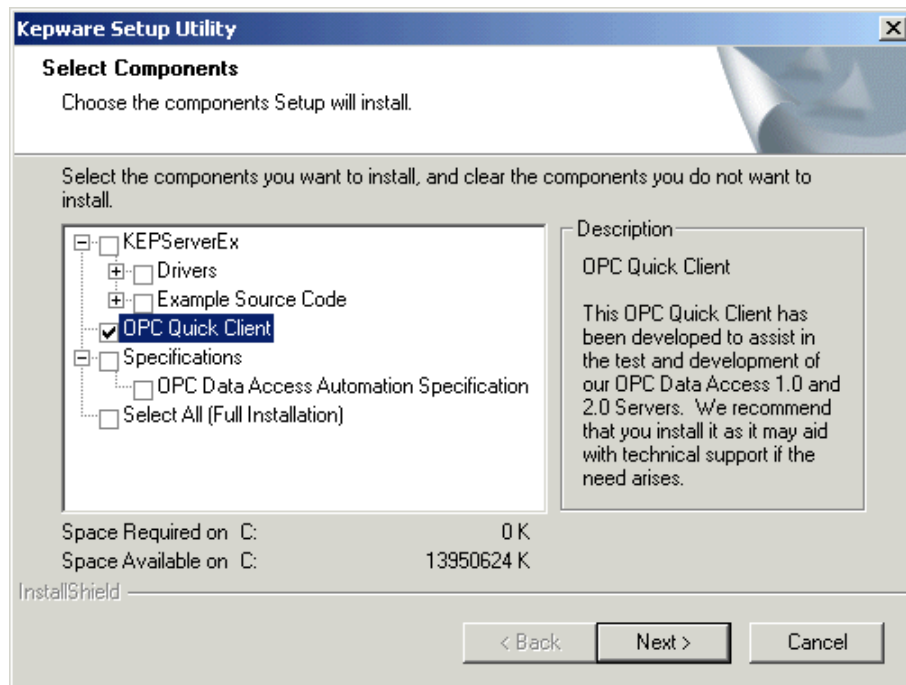
## Using the Install Program to Register the Server

You may also use the Server installation program to make the appropriate registry entries and to ensure that all of the files needed to make a remote connection are present.

1. On the remote PC run the Install program.



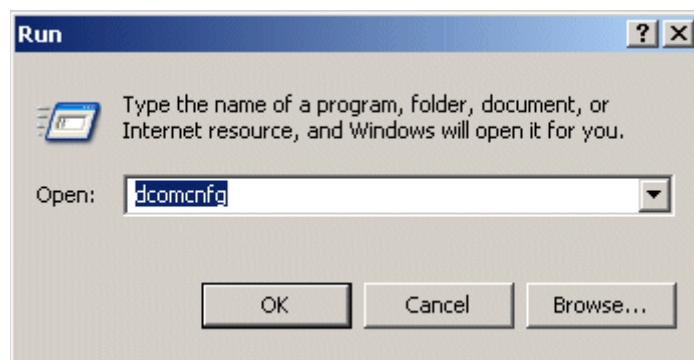
2. When asked to select the components that you would like to see installed you will uncheck all the components and click Next to continue with the install. We recommend installing the OPC Quick client at a minimum so that you may verify that you can connect to the server.



## Running the DCOM Configuration Utility

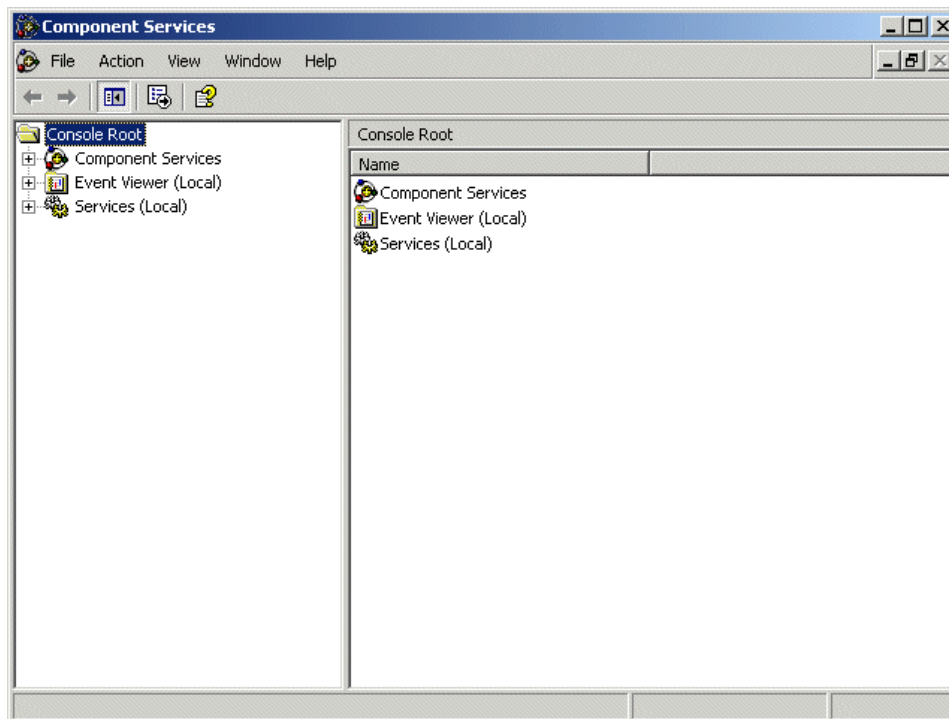
Starting Windows Components like DCOM Configuration are slightly different on Windows XP compared to Windows NT or Windows 2000.

1. Type DCOMCNFG in the Start Menu Run Dialog to launch DCOM Properties (XP launches Component Services, DCOM Properties are located here).

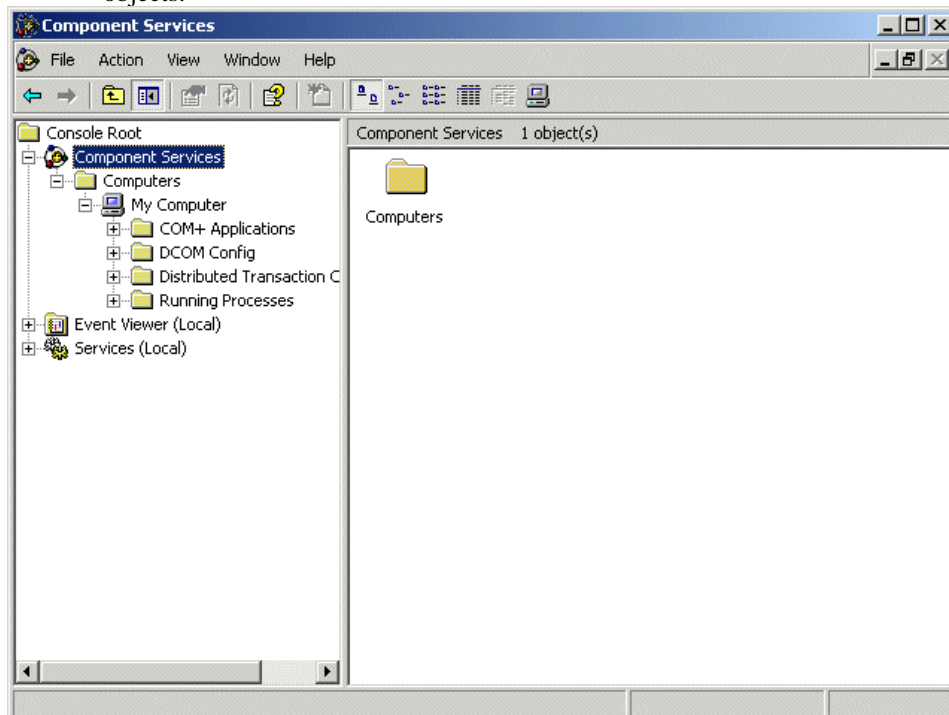


2. Component Services is the home page of the DCOMCNFG run command.

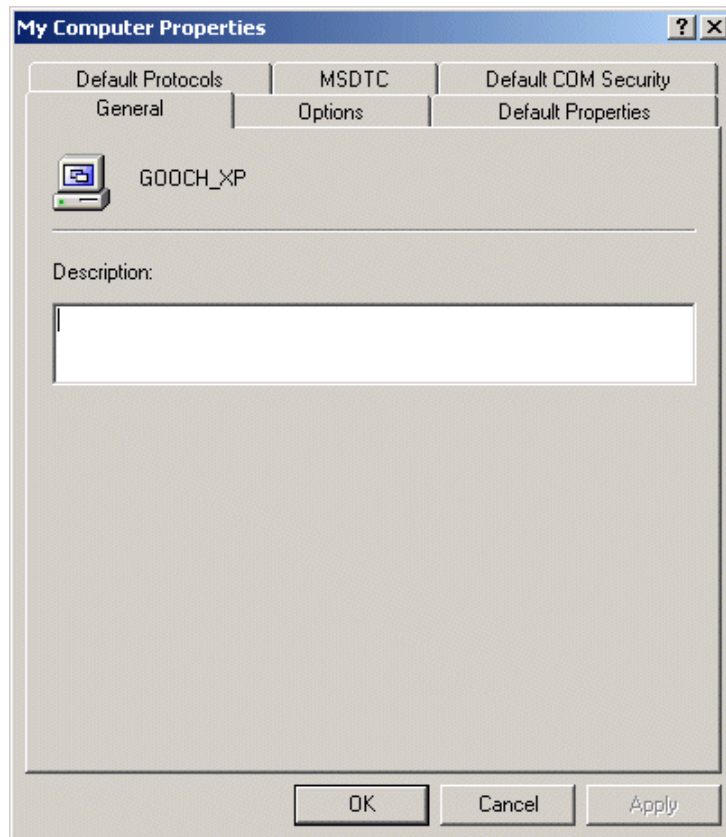




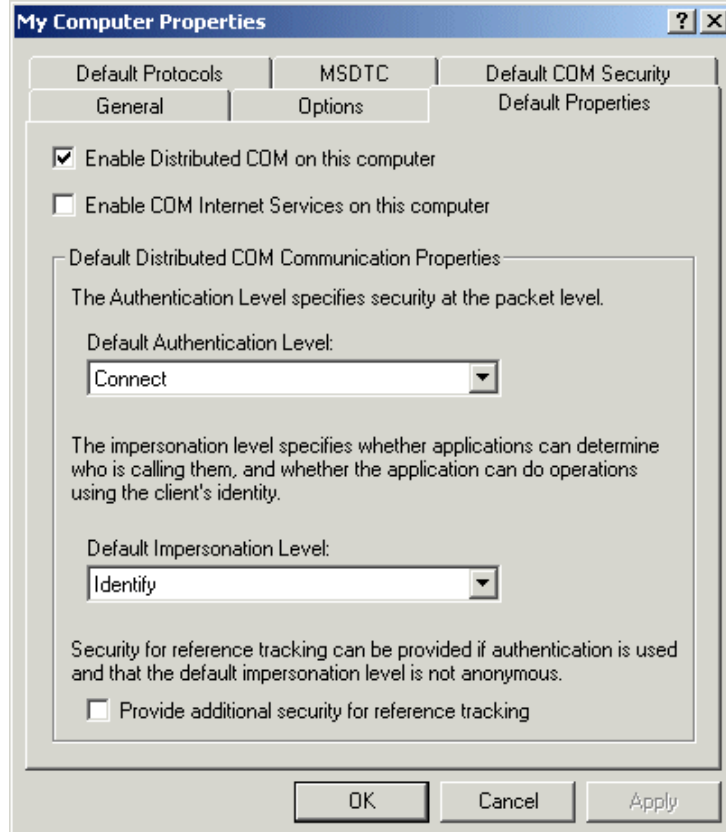
3. Click on the Plus signs next to Component Services, Computers, and My Computer to expand the branches of the directory tree. This page shows My Computer (Used for accessing Default DCOM Properties), and the folder which contains all the DCOM objects.



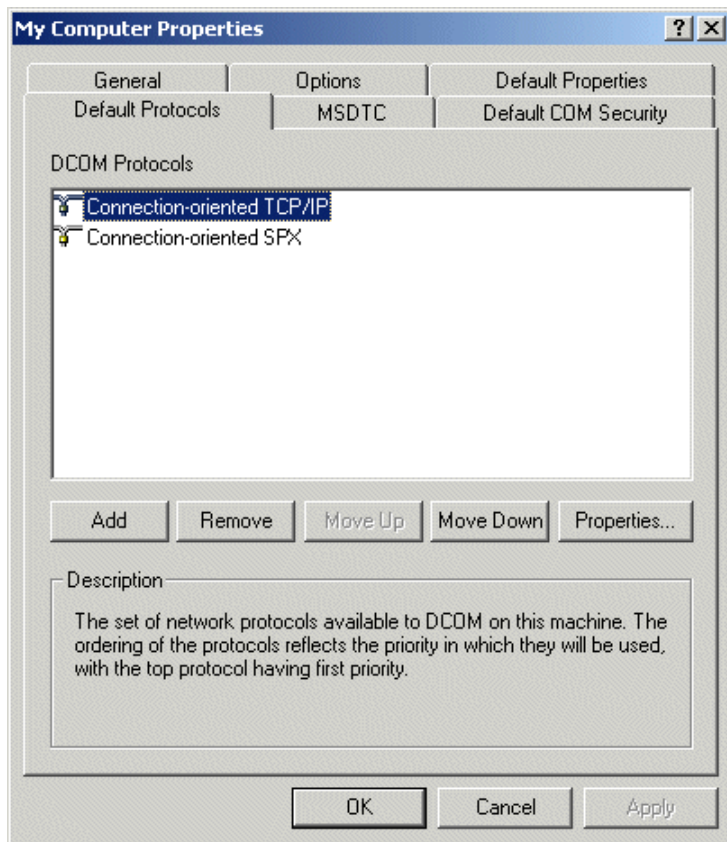
4. Right click on My Computer on the Component Services page and select Properties. It will bring you to the General tab of the DCOM properties for this PC.



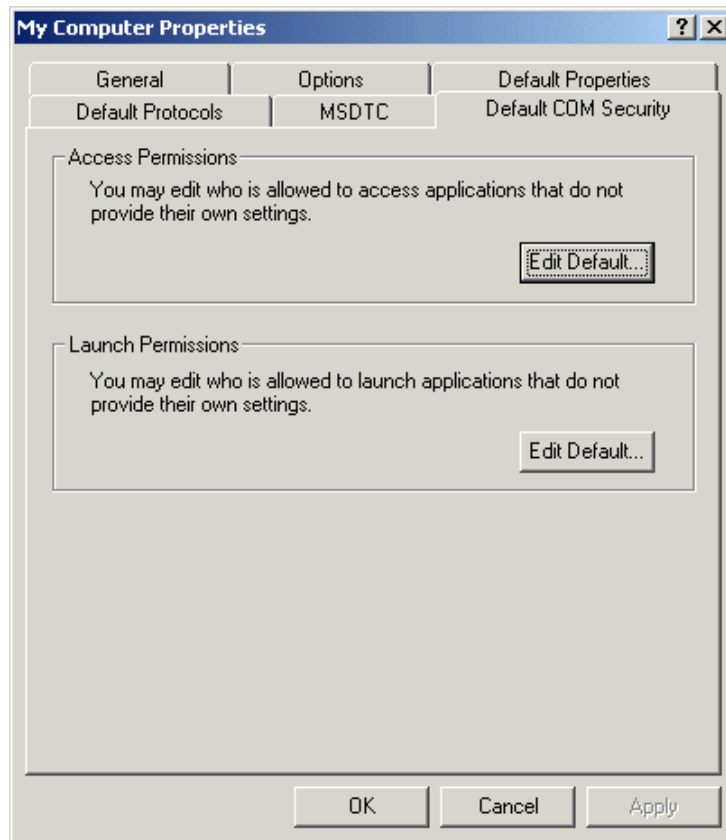
5. Select the Default Properties. Verify that “Enable Distributed COM on this computer” is checked. The “Default Authentication Level” should be set to Connect and the “Default Impersonation Level” should be set to Identify.



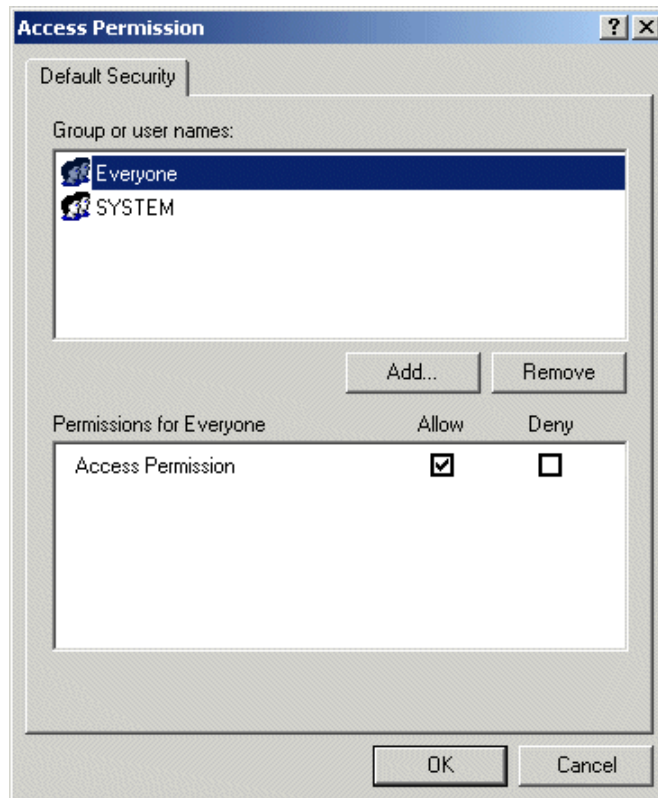
6. Next, Select the Default Protocols tab. On this tab you should see the data transfer protocols that are currently selected for this PC. You can add more from here if needed.



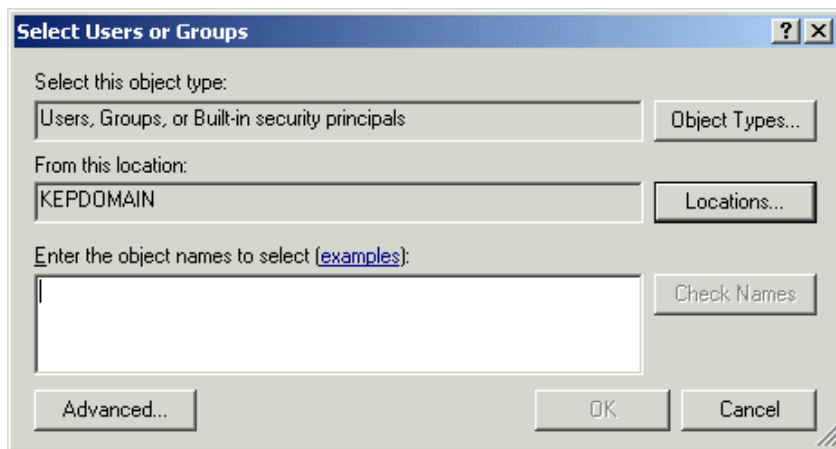
7. Select the Default COM Security tab and click the Edit Default... button for "Access Permissions".



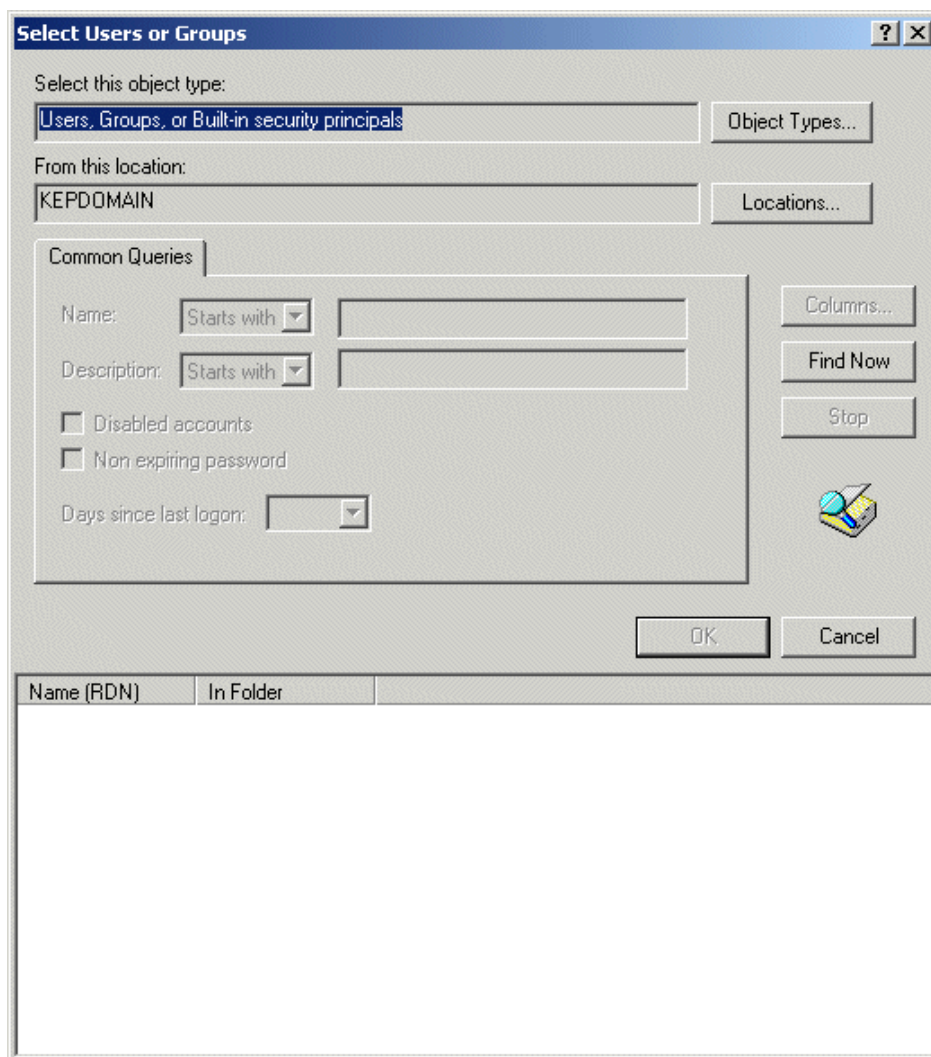
8. You may or may not see Groups and Users listed for the Default Access Permissions. You will need to add them by clicking on the Add... button.



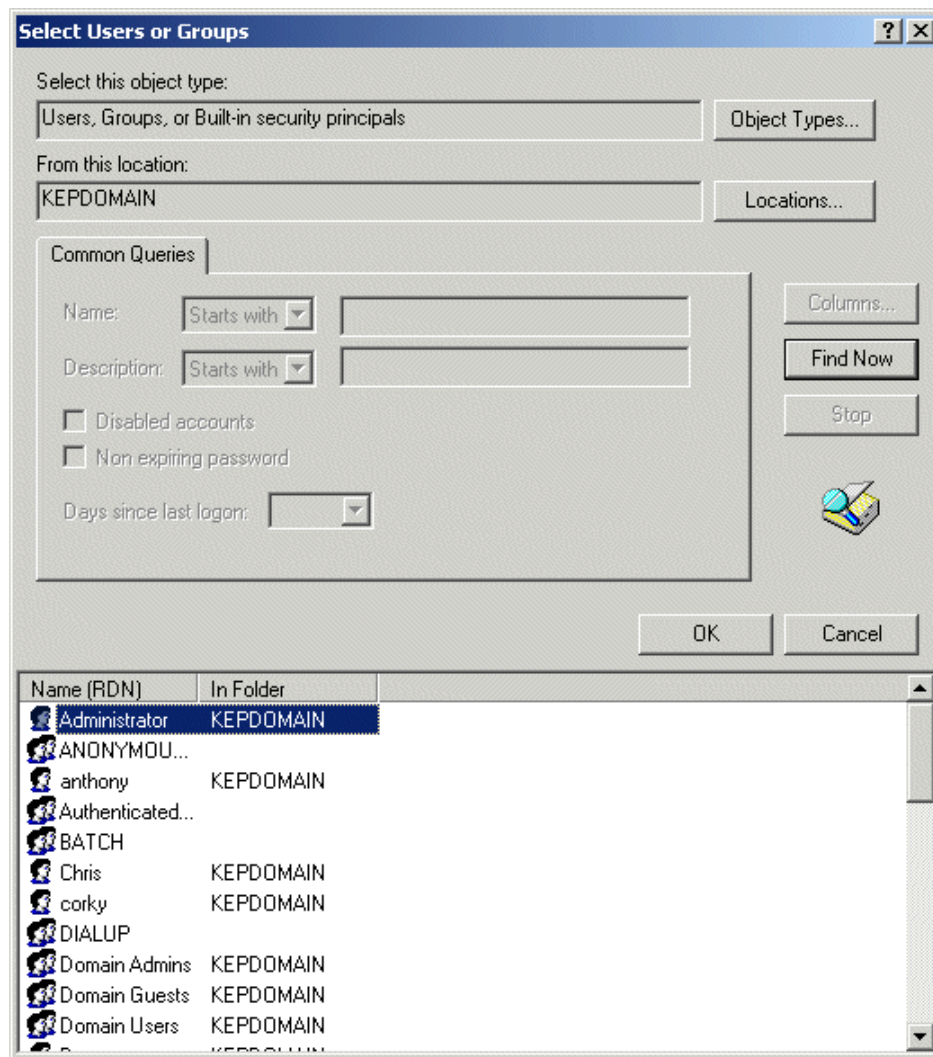
9. Once the Select Users or Groups window is open, click the Advanced... button.



10. Set your search criteria and then click Find Now to list all of the Users and Groups that meet your selection criteria.

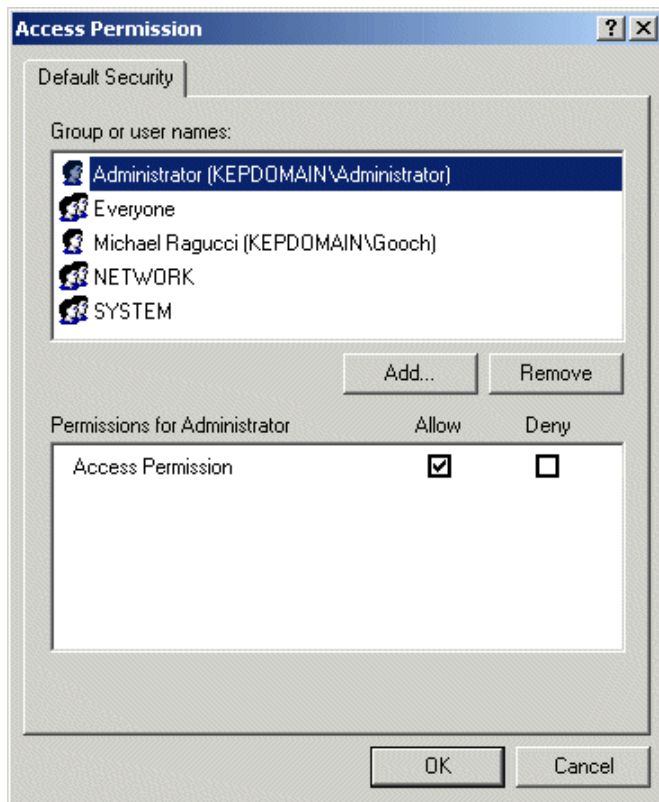


11. From the list, select all of the users or groups that you wish to add and click OK.

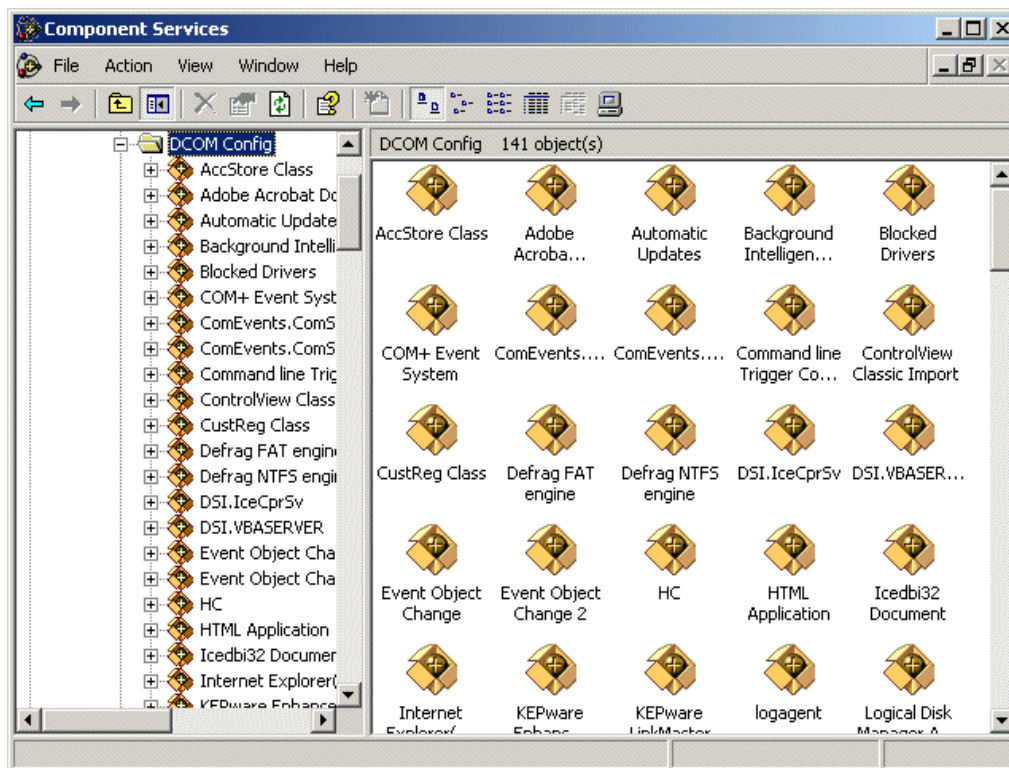


12. You will have to add Everyone and System, like you did with the other Operating Systems. In addition, you have to add Network in Windows XP Operating Systems.

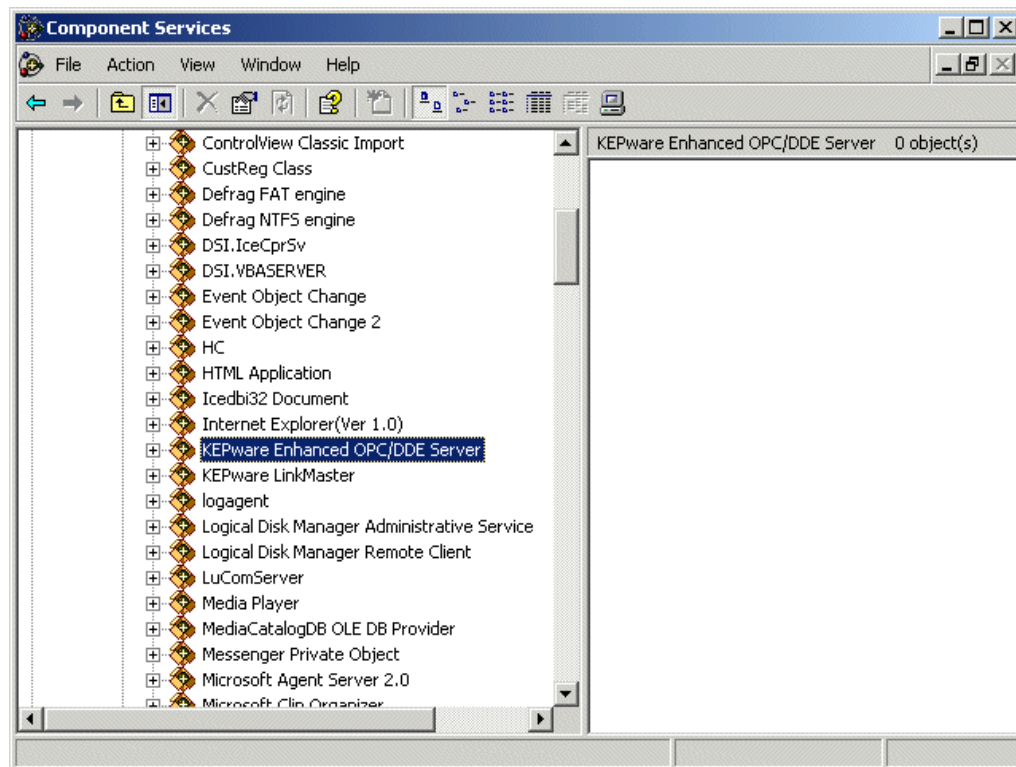




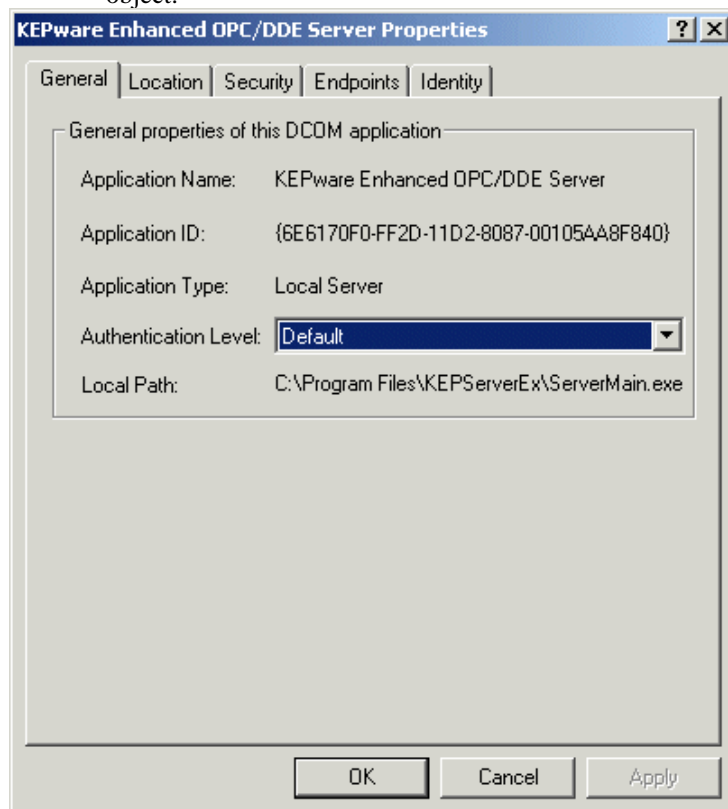
13. Click OK when you are done with Access Permissions and then repeat the same process with Launch Permissions.
14. Next select and expand the DCOM Config folder in the directory tree.



15. Scroll down the list of applications that support DCOM until you see the “Kepware Enhanced OPC/DDE Server”.
16. Right click on the server object and select Properties.

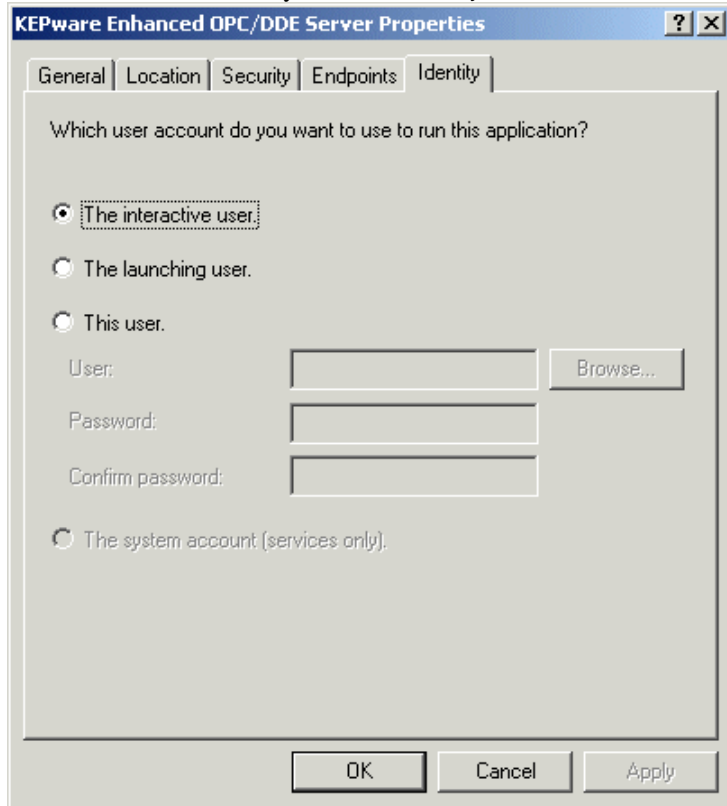


17. Right clicking on a DCOM object opens the General tab of the Property window for that object.



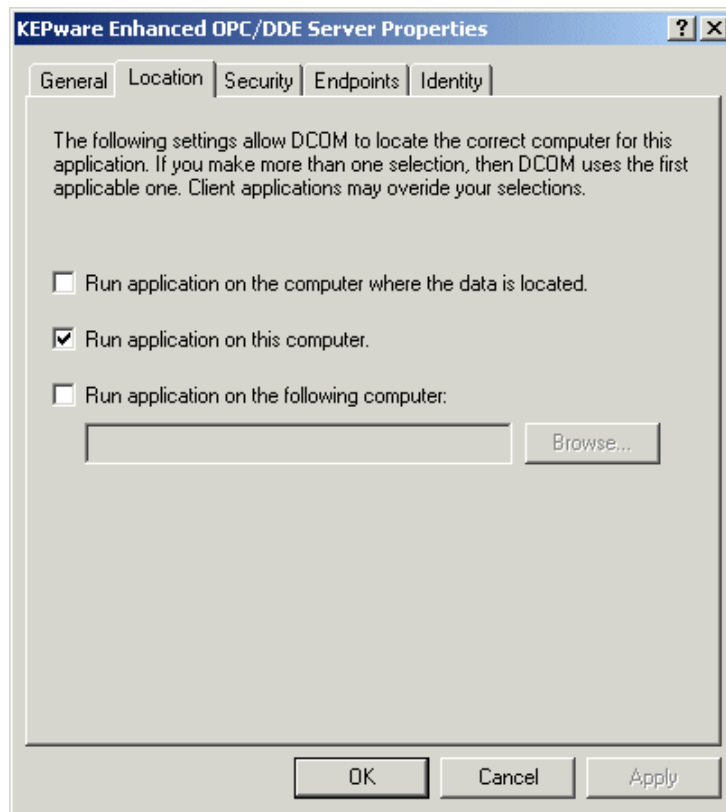


18. Select the Identity tab. The Identity should be set to “The interactive user”

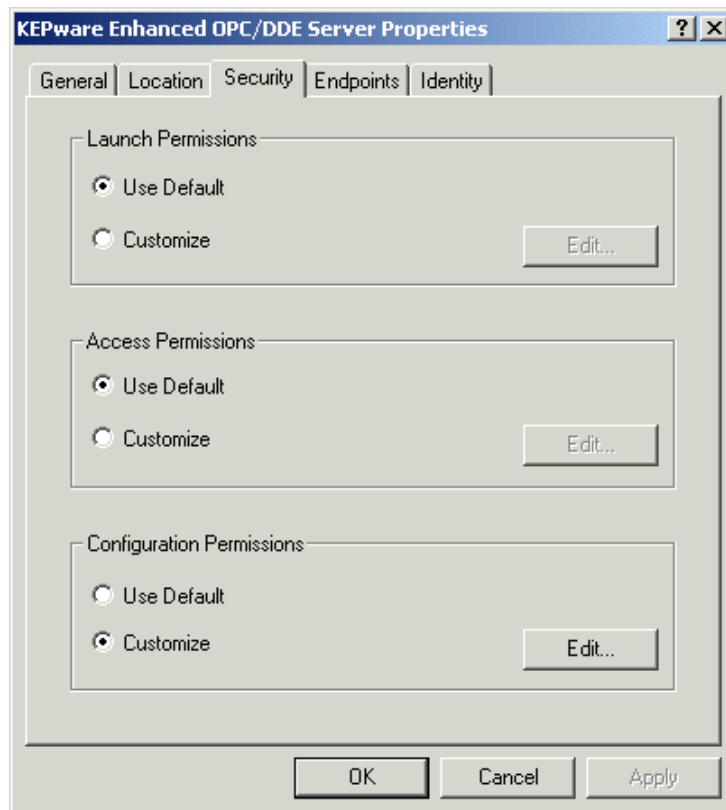


19. Select the Location tab. For local software client connections you will select “Run application on this computer”. You will make the same selection if you are connecting the client software to a mix of multiple remote or multiple remote and local servers. If you want to limit the software client connections to only one remote server location then select “Run this application on the following computer” and then enter or browse and select the name of the PC that the remote server is running on.

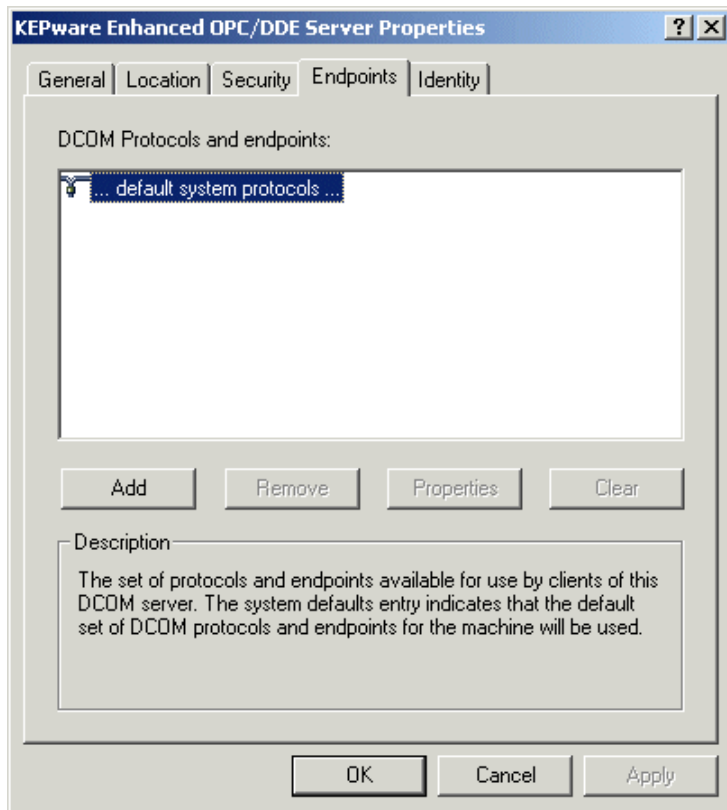
Warning: This dialog box will allow you to check more than one check box. When this happens it produces an error state. You must make sure that one and only one box is checked.



20. Select the Security tab. Launch and Access Permissions should be set to “Use Default” and Configuration Permissions will be set to “Customize”.



21. Select the Endpoints tab. This should be set to use the “default system protocols”.



22. Click OK to save the DCOM settings.

At this point you should be able to connect to the server from the remote PC. If you installed the OPC Quick Client use it as a test and then try the client you are planning to use.



# Configuring DCOM for Win 95/98 Domains

There can be minor variations between configuring DCOM for local or remote Connections to the KepserverEx. Some client applications may not browse to remote PC's to find the installed servers. For these clients you will probably need to make server registry entries on the client PC to be able to obtain the proper CLSID for the server. The preferred method is to run the Server installation program and only select the OPC Quick Client to install as defined below. If this cannot be done then you can use the OPC\_Remote.Reg file that is provided with the server install, See [Appendix A](#) for details on how to do this. If you are using another Operating Systems then see that section for instructions.

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## Preparing Win95/98 for DCOM

Windows 95 / 98 is, by default, set for share-level access control. It must be set for user level.

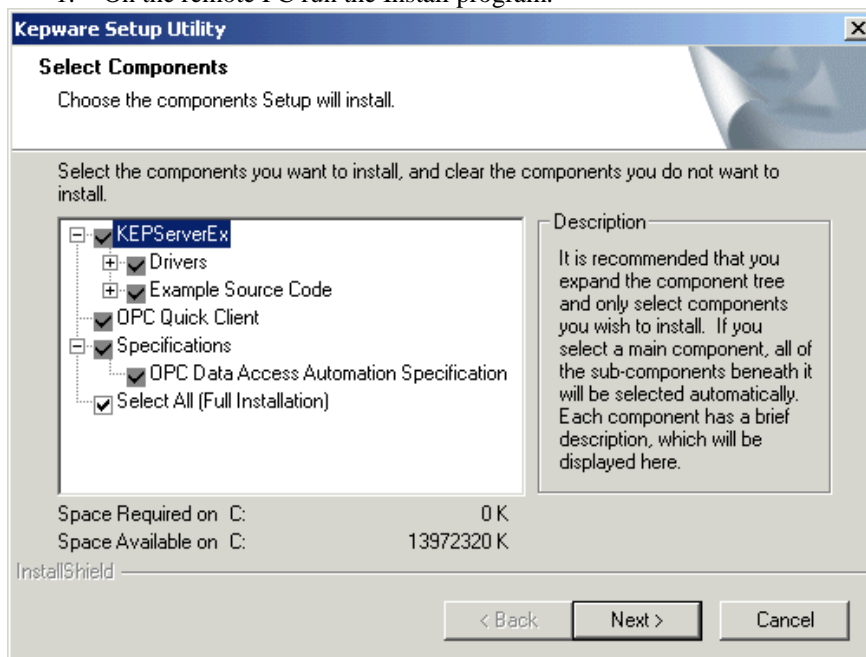
1. Choose Start/Settings/Control Panel.
2. Open the Network applet in the Control Panel, and select the Access Control tab.
3. Select User- Level Access Control and click OK.

Before you can use Windows 95 / 98 DCOM, the machine must be configured to run DCOM applications. This requires a few more steps than you would normally take with Windows NT or Windows 2000 DCOM setup. Also, unlike Windows NT and Windows 2000, which allow a client to launch a server remotely, it is absolutely necessary for the server component (KepserverEx) to be running before a client can connect to it in Windows 95/98.

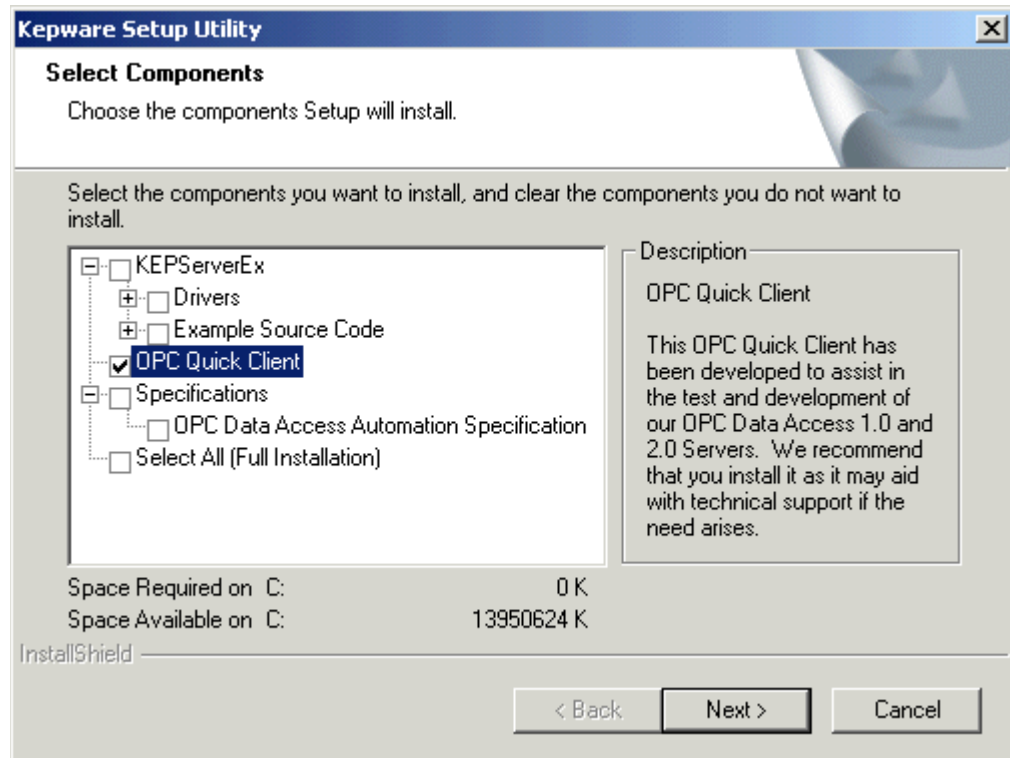
## Using the Install Program to Register the Server

You may also use the Server installation program to make the appropriate registry entries and to ensure that all of the files needed to make a remote connection are present.

1. On the remote PC run the Install program.



- When asked to select the components that you would like to see installed you will uncheck all the components and click **Next** to continue with the install. We recommend installing the OPC Quick client at a minimum so that you may verify that you can connect to the server.



## Adding DCOM Support to Win 95

- For Windows 95 users, you must obtain both **DCOM95.EXE** and **DCM95CFG.EXE** (if you don't have them already) in order to configure DCOM since it is not inherent to Windows 95. You can acquire these files from the following location:

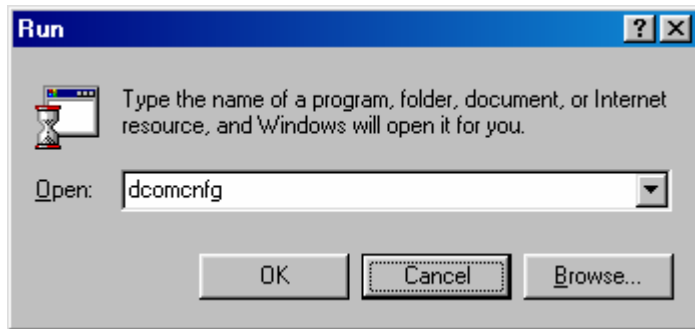
<http://www.microsoft.com/com/dcom/dcom95/download.asp> (Microsoft's web site)

DCOM95.EXE is also available on the Microsoft Visual Basic CD-ROM 5.0 (Enterprise, Professional or Standard editions) in the \Pro\Tools\DCOM95 directory

- To install DCOM95, double-click DCOM95.EXE. You must then reboot your system after the install to secure the changes. (NOTE: If you plan to install DCM95CFG.EXE then it would be best to reboot after both installations have been completed)
- Double-click to install DCM95CFG.EXE (this will allow you to run the DCOMCNFG.EXE, which you will use later.) You then must reboot the machine after the installation is complete.

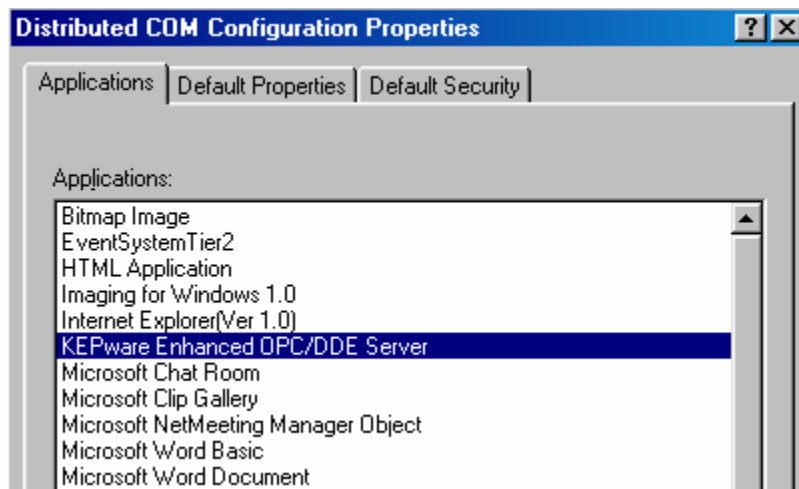
## Editing the DCOM Configuration

- Select the start button from the Desktop task bar and click Run... on the pop-up menu.
- Run DCOMCNFG.EXE.



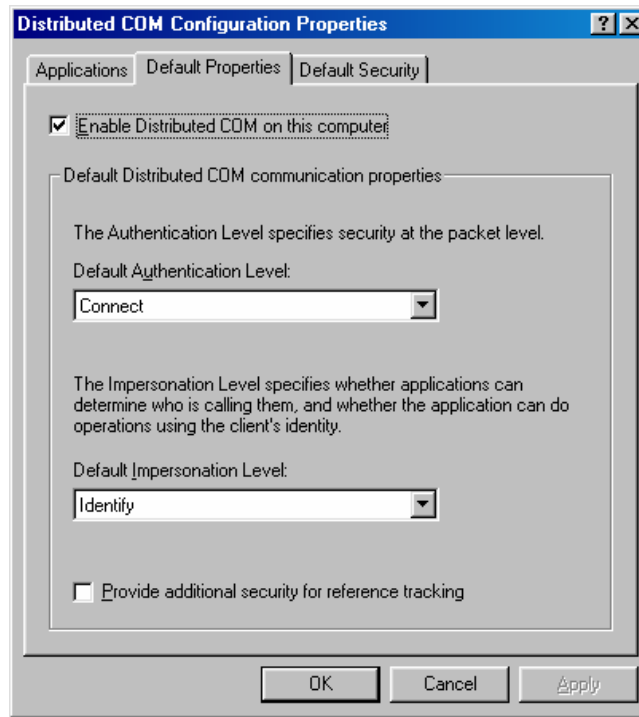
*DCOM Config (known as **DCOMCNFG.EXE**) is a utility that can be used to secure Distributed COM (DCOM) objects that have been created.*

3. A general DCOM configuration window will appear with three available pages. The foremost page is Applications, and it lists all applications that can enable DCOM. The next two pages are default configurations used for all the listed applications. Changes made to these pages affect DCOM applications globally. Pertaining to security, the approach of the following instructions is to allow all network users access to all DCOM applications. After a connection has been proven; the user may then choose individual applications from the list and customize their DCOM security properties for more control.

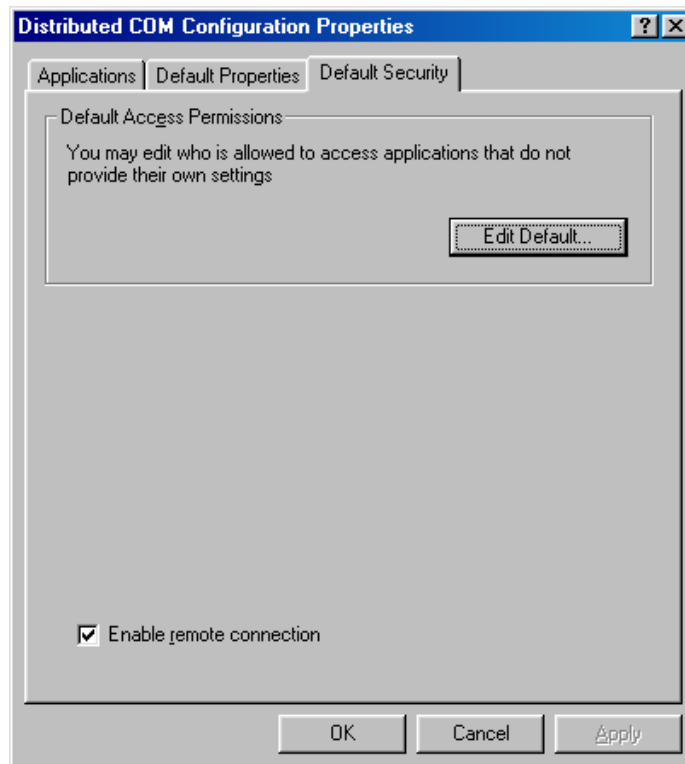


*Note: It is very important to make sure that the Apply button is selected after each change made in a DCOM settings page.*

4. Under the Default Properties tab, “Enable Distributed COM on this computer” should be checked. Also, ensure that the “Default Authentication level:” is set to “Connect” and the “Default Impersonation Level:” is set to “Identify”. Click the Apply button if possible to administer the changes.

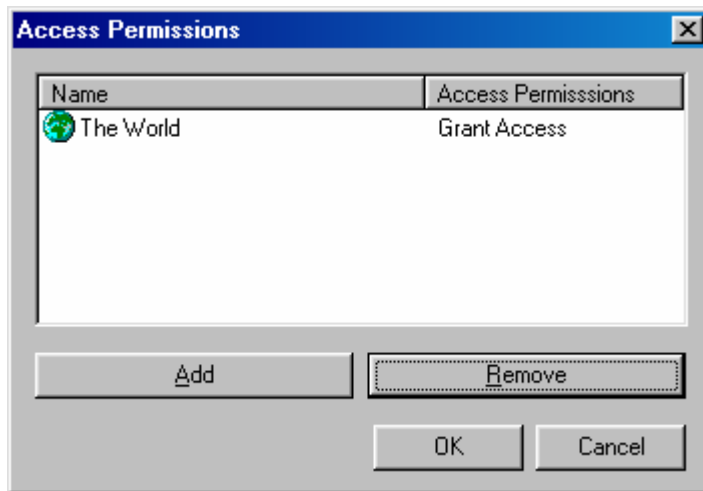


5. Select the Default Security tab and click the “Enable remote connection” box to allow for remote connections then, click the Edit Default... button to view “Default Access Permissions”.

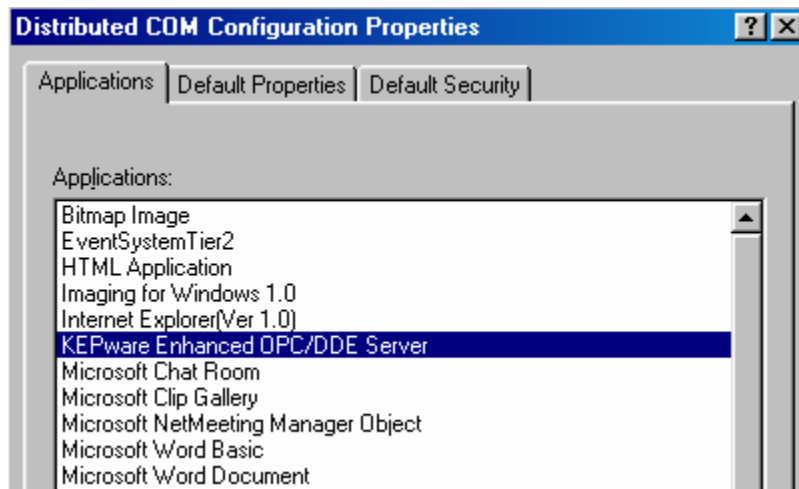


6. Add user group “The World” with “Grant Access” to the permission list. Then select OK. If you are going to connect to a server running on a Win NT/2000 PC as a service you will also need to add “System” with “Grant Access” to the permissions list.

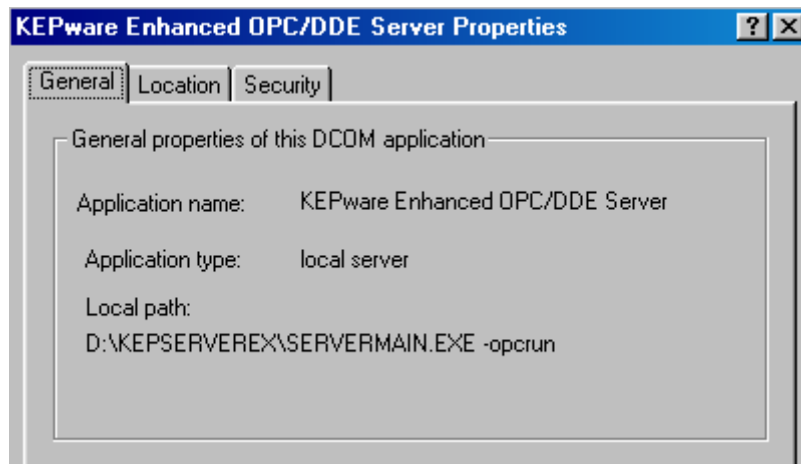




7. Choose the Apply button and select the Applications tab. Double click on “KEPware Enhanced OPC/DDE Server”. This will access the applications specific DCOM properties



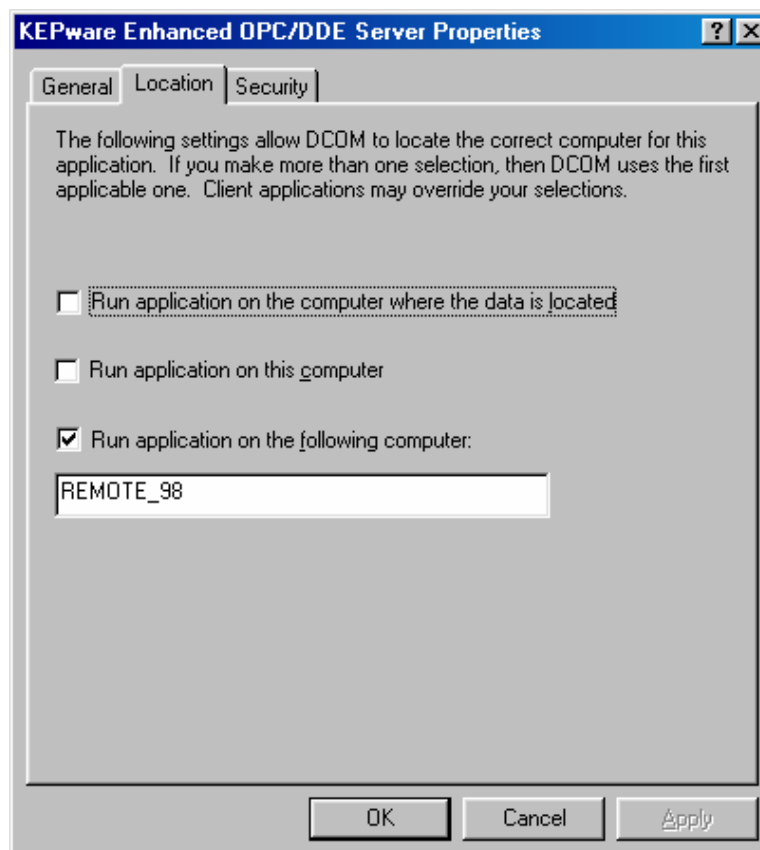
8. In the KepserverEx’s application specific DCOM window, choose the Location tab.



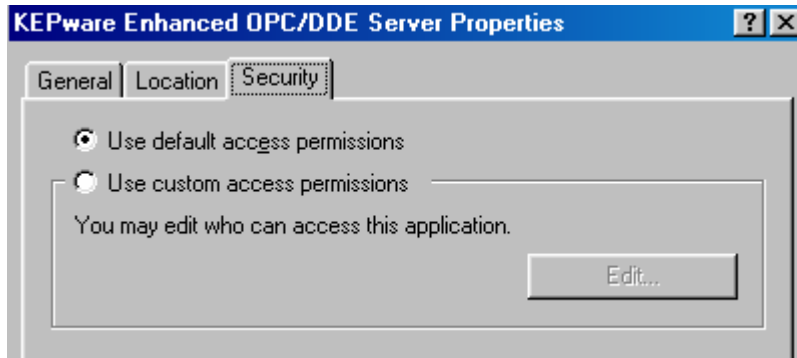
9. Most clients will allow you to connect directly to the remote PC by entering the Name of the PC in the server connection dialog box. For those applications that do not allow that, Select “Run application on the following computer”. Then browse for the remote machine that contains the KepserverEx application and select Apply. In this example the machine name is REMOTE\_NT. For local connections you will leave “Run application on the computer where the data is located” checked.

*Note: See Kepware’s Client Connectivity guide for information on how specific clients connect remotely to KepserverEx.*

Warning: This dialog box will allow you to check more than one check box. When this happens it produces an error state. You must make sure that one and only one box is checked.



10. Choose the Security tab and ensure that the radio buttons for the Access permissions are set to default. Click Apply to accept these changes.



11. Choose OK from the bottom of the application specific DCOM display window.
12. Choose OK from the bottom of the general DCOM display window.
13. Reboot the computer to secure the new DCOM configuration.

At this point you should be able to connect to the server from the remote PC. If you installed the OPC Quick Client use it as a test and then try the client you are planning to use.



# Configuring DCOM on Workgroups Vs. Domains

Although most projects will be done on Network Domains there are still many places that are still using Workgroups for there networks or may even have mixed configurations. Unfortunately DCOM is really designed for Domains. To do remote connectivity on, to, or from a Workgroup you will have to do some extra configuration of the Security settings. DCOM security will let a client or server application know whether or not the User running the server or client application is a secure DCOM user. If one or the other is not a user then you will probably not get a connection to the server. This generally manifests itself with failed connection errors.

The primary difference between a Network Domain and a Network Workgroup is the way that security is handled. Domains have a central Access Control List(ACL). The act of logging on to the Domain provides you access to allow areas that you user level is allowed to access. In Workgroups the ACL is maintained by each PC. Yes you guessed it that means that you have to add every user to every PC.

The following are known the known configurations for work groups and what you will need to do to get remote connectivity working on them.

## Connecting Workgroup to Workgroup

When connecting to of a server from one workgroup PC to another you will have to add the User names of the user on the other machine so that they will have access to this PC and you will have to do the same for the User logged onto this PC.

Remember that to launch the server you have to be an administrator. Many people using NT or higher operating systems choose to run the server as a service to avoid this.

## Connecting Workgroup to Domain

When connecting from a workgroup to a domain you will need to ensure that the client application is set to accept the responses sent from the other PC. This means that you will have to add to your local security access any logged on user that could be running the server on the Domain PC. Generally it is wise to run the server as a service on the Domain to reduce the number of entries you may need. You will also need to make sure that the local administrator/login is added to the default security.

Remember that to launch the server you have to be an administrator. Many people using NT or higher operating systems choose to run the server as a service to avoid this.

## Connecting Domain to Workgroup

When connecting from a Domain to a Workgroup PC you need to add the Domain user that is connecting to the Workgroup PC's user list. You will also need to add the Workgroup user that is running the PC to the Domain PC's local user list. On the Workgroup PC you will set it up like you were connecting from it to the domain.

Remember that to launch the server you have to be an administrator. Many people using NT or higher operating systems choose to run the server as a service to avoid this.

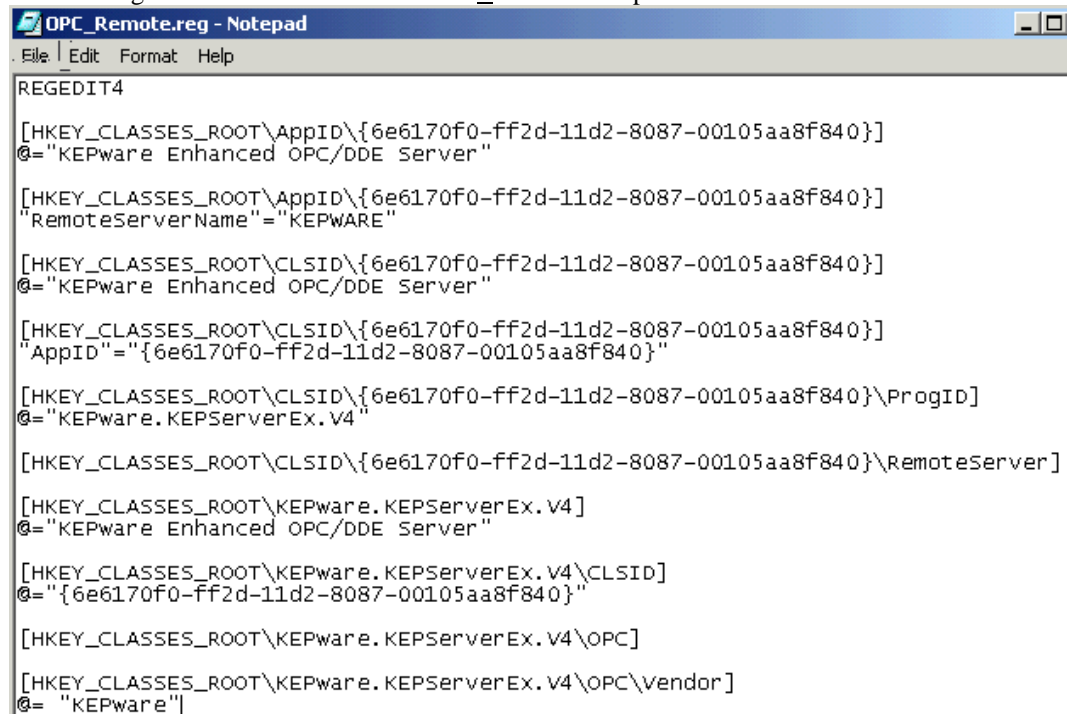
In order to set DCOM Security in a WorkGroup you have to have the PC set for UserLevel Security not Share Level Security. If you are on Win95 or Win 98 OE you will have to set the security before you install the DCOM patch. If you do not then you will not be able to run the DCOMConfig.exe program or will get errors when trying to add the security settings. Additionally, and will have to have the ability to connect to a User Access List on the Workgroup server. You will have to select valid names from the security list.

# Appendix A: Using the OPC\_Remote.Reg File

## Preparing the Remote PC

If the intended *client* machine does not have a registered version of the KepserverEx on it, then you must take the initial step of registering the server on that machine. The following steps explain this procedure.

1. On the KepserverEx pc, open the server's root directory \KepserverEx, and find the file called "opc\_remote.reg." Make a copy of this file and take it to the remote PC.
2. On the intended remote client machine, paste this file on to your C: drive (or any available hard drive on that machine).
3. Right click on this file and choose Edit on the drop down menu.



```
REGEDIT4

[HKEY_CLASSES_ROOT\AppID\{6e6170f0-ff2d-11d2-8087-00105aa8f840}]
@="KEPware Enhanced OPC/DDE Server"

[HKEY_CLASSES_ROOT\AppID\{6e6170f0-ff2d-11d2-8087-00105aa8f840}]
"RemoteServerName"="KEPWARE"

[HKEY_CLASSES_ROOT\CLSID\{6e6170f0-ff2d-11d2-8087-00105aa8f840}]
@="KEPware Enhanced OPC/DDE Server"

[HKEY_CLASSES_ROOT\CLSID\{6e6170f0-ff2d-11d2-8087-00105aa8f840}]
"AppID"="{6e6170f0-ff2d-11d2-8087-00105aa8f840}"

[HKEY_CLASSES_ROOT\CLSID\{6e6170f0-ff2d-11d2-8087-00105aa8f840}\ProgID]
@="KEPware.KEPserverEx.v4"

[HKEY_CLASSES_ROOT\CLSID\{6e6170f0-ff2d-11d2-8087-00105aa8f840}\RemoteServer]

[HKEY_CLASSES_ROOT\KEPware.KEPserverEx.v4]
@="KEPware Enhanced OPC/DDE Server"

[HKEY_CLASSES_ROOT\KEPware.KEPserverEx.v4\CLSID]
@="{6e6170f0-ff2d-11d2-8087-00105aa8f840}"

[HKEY_CLASSES_ROOT\KEPware.KEPserverEx.v4\OPC]

[HKEY_CLASSES_ROOT\KEPware.KEPserverEx.v4\OPC\Vendor]
@="KEPware"
```

4. In the first few lines of this file you should see "RemoteServerName"="KEPWARE". Replace "KEPware" with the name of the PC/Machine that is running KepserverEx.
5. Save the changes to the file and exit.
6. Double click on the file name to register KepserverEx server. A message box will then be displayed on the screen to verify that the information was installed correctly in the registry. The client machine may now be configured to connect via DCOM to the remote server machine.

*Note: You may need to place two up-to-date OPC files (from our disc or the OPC foundation) into "System 32" file. These files include **opccomn\_ps.dll** and **opcproxy.dll**. You may have to register them (ex. C:\WINNT\SYSTEM32\regsvr32 opccomn\_ps.dll) at the dos command prompt. Another way to get these files is to install the server on the remote machine.*

- **opccomn\_ps.dll**
- **opcproxy.dll**