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Administrating DriveWindow 2

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1. Preface

This document contains administration instructions of the 32-bit **DriveWindow** (version 2.10 or newer) for Windows XP.

1.1. Purpose

DriveWindow is needed to make commissioning, maintenance, and debugging of drives and drive systems fast and easy.

1.2. Product

DriveWindow is a 32-bit Windows program running under Windows XP, Windows 2000, or Windows NT 4.0 SP3 (or newer) operating system in a x86 PC.

1.3. Definitions, Terminology and Abbreviations

Access	Access is simply being able to get to what you need.
Account	See User Account; Group Account.
ActiveX	A set of technologies that enables software components to interact with one another in a networked environment, regardless of the language in which they were created. ActiveX™ is built on the Component Object Model (COM).
Administrative Account	An account that is a member of the Administrators local group of a computer or domain.
Administrator	A person responsible for setting up and managing domain controllers or local computers and their user and group accounts, assigning passwords and permissions, and helping users with networking issues. Administrators are members of the Administrators group and have full control over the domain or computer.
AMC	Application and Motor Controller.
Architecture	In information technology, especially computers and more recently networks, architecture is a term applied to both the process and the outcome of thinking out and specifying the overall structure, logical components, and the logical interrelationships of a computer, its operating system, a network, or other conception.
Authentication	Authentication is the process of determining whether someone or something is, in fact, who or what it is declared to be.
Client	An object that requests services from another object.

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COM	An open architecture for cross-platform development of client/server applications based on object-oriented technology as agreed upon by Digital Equipment Corporation and Microsoft Corporation. The Component Object Model defines an interface (similar to an abstract base class), Unknown, from which all COM-compatible classes are derived.
Component	In object-oriented programming and distributed object technology, a component is a reusable program building block that can be combined with other components in the same or other computers in a distributed network to form an application.
Computer Name	A unique name of up to 15 uppercase characters that identifies a computer to the network. The name cannot be the same as any other computer or domain name in the network
Datagram	A self-contained, independent entity of data carrying sufficient information to be routed from the source to the destination computer without reliance on earlier exchanges between this source and destination computer and the transporting network.
DCOM	Distributed Component Object Model. An object protocol that enables ActiveX™ components to communicate directly with each other across a network. DCOM is language neutral, so any language that produces ActiveX components can also produce DCOM applications.
DDCS	Distributed Drives Communication Circuit. A fieldbus used by ABB.
DDCS protocol	Communication protocol, which is used for example in ACS600 products.
Disabled User Account	A user account that does not permit logons. The account appears in the user account list of the Users Accounts window and can be re-enabled at any time
Domain	A group of computers that are part of a network and share a common directory database. A domain is organized in levels and is administered as a unit with common rules and procedures. Each domain has a unique name. On the Internet, domains are defined by an IP address. All devices sharing part of the IP address are in the same domain. In an Internet address, the domain is generally the word or number that indicates the type of entity that owns the address, for example, .com or .org.
Drive	Equipment that converts electric to mechanical power.
Drive Controller	A board or a device that is used to control a drive.
Dynamic-Link Library (DLL)	An operating system feature which allows executable routines (generally serving a specific function or set of functions) to be stored separately as files with DLL extensions and to be loaded only when needed by the program that calls them.

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Firewall	Or proxy server. A system or combination of systems that enforces a one-way barrier between two or more networks, usually used for security purposes. Firewalls accomplish all communication between the network and outside.
Group	A collection of users, computers, contacts, and other groups. Groups can be used as security or as e-mail distribution collections. Distribution groups are used only for e-mail. Security groups are used both to grant access to resources and as e-mail distribution lists.
Group Account	A collection of user accounts. Giving a user account membership in a group gives that user all the rights and permissions granted to the group
Group Membership	The groups to which a user account belongs. Permissions and rights granted to a group are also provided to its members. In most cases, the actions a user can perform in Windows 2000 or Windows XP are determined by the group memberships of the user account the user is logged on to
Group Name	A unique name identifying a local group or a global group to Windows XP or Windows 2000. A group's name cannot be identical to any other group name or user name of its own domain or computer.
Guest Account	A built-in account used to log on to a computer running Windows 2000 or Windows XP when a user does not have an account on the computer or domain, or in any of the domains trusted by the computer's domain.
In-process server	An object server implemented as a DLL that runs in the process space of the object's client.
Instance	An object for which memory is allocated or which is persistent.
Interactive Logon	A network logon from a computer keyboard, when the user types information in the Logon Information dialog box displayed by the computer's operating system
IP	Internet Protocol. The messenger protocol of TCP/IP, responsible for addressing and sending IP packets over the network. IP provides a best-effort, connectionless delivery system that does not guarantee that packets arrive at their destination or that they are received in the sequence in which they were sent.
ISA	Industry Standard Architecture. A standard bus (computer interconnection) architecture that is associated with the IBM AT motherboard.
ISP	A company that provides access to end users of the Internet.
LAN	Local Area Network. A group of computers and other devices dispersed over a relatively limited area and connected by a communications link that enables any device to interact with any other on the network.

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Link	<p>1) Using hypertext, a link is a selectable connection from one word, picture, or information object to another.</p> <p>2) In telecommunications, a link is a physical (and, in some usages, a logical) connection between two points.</p>
Local Group	For computers running Windows 2000 or Windows XP Professional and member servers, a group that can be granted permissions and rights from its own computer and (if the computer participates in a domain) user accounts and global groups both from its own domain and from trusted domains.
Modbus protocol	A local area network system for industrial control applications. The Modbus protocol was developed by Modicon (part of Schneider Automation).
Module	In computers, in general, a separate unit of software or hardware.
Monitoring	The act of detecting the presence of signals and the measurement thereof with appropriate measuring instruments.
Object	<p>An entity such as a file, folder, shared folder, printer, or Active Directory object described by a distinct, named set of attributes. For example, the attributes of a File object include its name, location, and size; the attributes of an Active Directory User object might include the user's first name, last name, and e-mail address.</p> <p>For OLE and ActiveX, an object can also be any piece of information that can be linked to, or embedded into, another object.</p>
OLE	Pronounced o-LAY. A way to transfer and share information between applications.
OPC	OLE for Process Control. An emerging software technology standard (http://www.opcfoundation.org/) that connects Windows-based process control systems to hardware devices on the plant floor. This technology provides a common interface to different hardware devices, allowing process control applications to communicate with broad set of devices.
Pass-through Authentication	When the user account must be authenticated, but the computer being used for the logon is not a domain controller in the domain where the user account is defined, nor is it the computer where the user account is defined, the computer passes the logon information through to a domain controller (directly or indirectly) where the user account is defined.
PCMCIA	Personal Computer Memory Card International Association. An industry group organized in 1989 to promote standards for a credit card-size memory or I/O device that would fit into a personal computer, usually a notebook or laptop computer.
Permissions	A rule associated with an object to regulate which users can gain access to the object and in what manner.

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Persistent	Lasting between program sessions, or renewed when a new program session is begun.
PPTP	Networking technology that supports multiprotocol virtual private networks (VPNs), enabling remote users to access corporate networks securely across the Internet or other networks by dialing into an Internet service provider (ISP) or by connecting directly to the Internet. The Point-to-Point Tunneling Protocol (PPTP) tunnels, or encapsulates, IP, IPX, or NetBEUI traffic inside of IP packets. This means that users can remotely run applications that are dependent upon particular network protocols.
Privilege	A user right which is assigned to a user and that specifies allowable actions on the network. An example of a privilege is the right to shut down a system.
Property	The data associated with an object (same as Attribute).
Protocol	A set of rules and conventions for sending information over a network. These rules govern the content, format, timing, sequencing, and error control of messages exchanged among network devices.
Proxy	An interface-specific object that provides the parameter marshaling and communication required for a client to call an application object that is running in a different execution environment, such as on a different thread or in another process. The proxy is located with the client and communicates with a corresponding stub that is located with the application object that is being called.
Registry	In Windows 2000/XP, a database repository for information about a computer's configuration. The registry contains information that Windows 2000/XP continually references during operation, such as: profiles for each user, programs installed on the computer and the types of documents each can create, property settings for folders and program icons, what hardware exists on the system and which ports are being used. The registry is organized hierarchically as a tree and is made up of keys and their subkeys, hives, and value entries.
Remote Logon	Occurs when a user is already logged on to a user account and makes a network connection to another computer.
Remote Procedure Call (RPC)	A message-passing facility that allows a distributed application to call services available on various machines in a network. Used during remote administration of computers.
Security	On a network, protection of a computer system and its data from harm or loss, implemented especially so that only authorized users can gain access to shared files.
Security Log	An event log containing information on security events that are specified in the audit policy.
Semaphore	In programming, especially in UNIX systems, a semaphore is a technique for coordinating or synchronizing activities in which multiple processes compete for the same operating system resource.

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- Server** An object that responds to a client request or, in a network, any device that can be shared by all users.
- Service** A program, routine, or process that performs a specific system function to support other programs, particularly at a low (close to the hardware) level. When services are provided over a network, they can be published in Active Directory, facilitating service-centric administration and usage. Some examples of Windows 2000 and XP services are Security Accounts Manager service, File Replication Service, and Routing and Remote Access Service.
- Service Pack** An update to the operating system or application software.
- SP** Service Pack.
- Stub** An interface-specific object that provides the parameter marshaling and communication required for an application object to receive calls from a client that is running in a different execution environment, such as on a different thread or in another process. The stub is located with the application object and communicates with a corresponding proxy that is located with the client that calls it.
- Task Manager** Task Manager enables you to start, end, or run applications, end processes (either an application, application component, or system process), and view CPU and memory use data. Task Manager gives you a simple, quick view of how each process (application or service) is using CPU and memory resources
- TCP** Transmission Control Protocol. A connection-based Internet protocol responsible for breaking data into packets, which the IP protocol sends over the network. This protocol provides a reliable, sequenced communication stream for network communication.
- TCP/IP** Transmission Control Protocol/Internet Protocol. A set of networking protocols that provide communications across interconnected networks made up of computers with diverse hardware architectures and various operating systems. TCP/IP includes standards for how computers communicate and conventions for connecting networks and routing traffic.
- Thread** Threads are objects within processes that run program instructions. They allow concurrent operations within a process and enable one process to run different parts of its program on different processors simultaneously.
- Trust Relationship** A logical relationship established between domains to allow pass-through authentication, in which a trusting domain honors the logon authentications of a trusted domain.
- User accounts and global groups defined in a trusted domain can be given rights and permissions in a trusting domain, even though the user accounts or groups don't exist in the trusting domain's directory.

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Trust Relationships Policy	A security policy that determines which domains are trusted and which domains are trusting domains. See also Trust Relationship.
Trusted Domains	See Trust Relationship.
UDP	User Datagram Protocol. A communications method (protocol) that offers a limited amount of service when messages are exchanged between computers in a network that uses the Internet Protocol (IP).
User Account	A record that consists of all the information that defines a user to Windows 2000/XP. This includes the user name and password required for the user to log on, the groups in which the user account has membership, and the rights and permissions the user has for using the computer and network and accessing their resources. For Windows 2000/XP Professional and member servers, user accounts are managed with Local Users and Groups. For Windows 2000 Server domain controllers, user accounts are managed with Microsoft Active Directory Users and Computers.
User Rights	Tasks a user is permitted to perform on a computer system or domain, such as backing up files and folders, adding or deleting users in a workstation or domain, and shutting down a computer system. Rights can be granted to groups or to user accounts, but are best reserved for use by groups.
VPN	The extension of a private network that encompasses encapsulated, encrypted, and authenticated links across shared or public networks. VPN connections can provide remote access and routed connections to private networks over the Internet. Virtual private network is also called VPN.
Workstation	Any networked computer using server resources
x86	A generic name for the series of Intel microprocessor families that began with the 80286 microprocessor.

1.4. References and Related Documents

DRIVEWINDOW 2.0 USER MANUAL (PDM VaultID=00026315.DOC)/99-04-22 by Aki Kolehmainen)

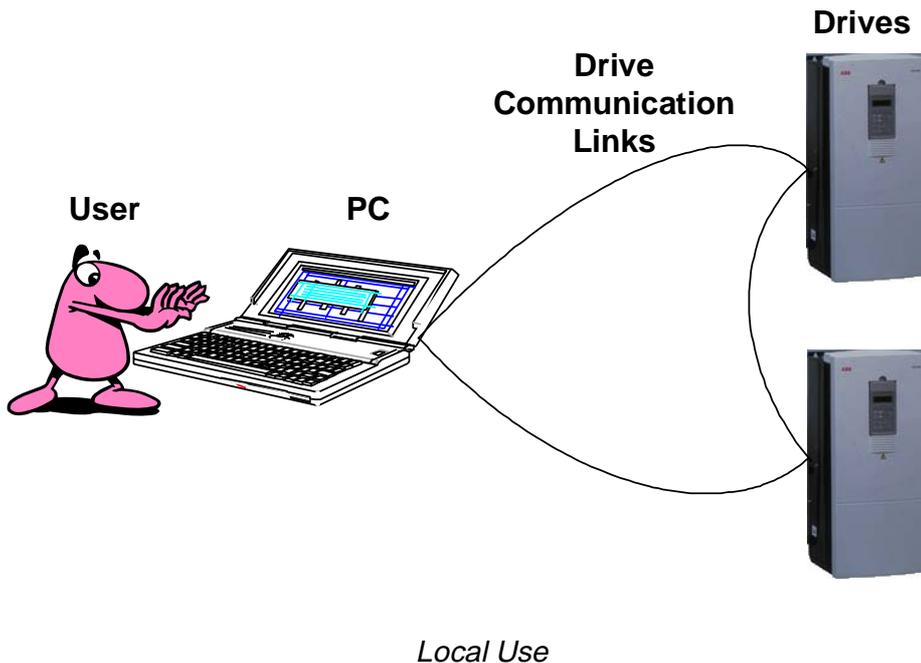
DRIVEWINDOW 2.X FUNCTIONAL SPECIFICATION (PDM VaultID=00027533.DOC)/99-07-06 by Jyrki Erjanti)

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2. General Description

2.1. Environment

DriveWindow environment consists of User, PC or two PCs connected through a network, Drive Communication Links, and Drive Controllers (Drives).



2.1.1. Users

Users of DriveWindow are ABB personnel and ABB customers commissioning and maintaining ABB made drives.

2.1.2. Local and Remote Use

Because Microsoft COM (DCOM) technology is used in implementing DriveWindow, it is possible to use DriveWindow locally as well as remotely through all kind of networks that Microsoft DCOM technology can handle.

2.1.3. Drive Communication

DriveWindow supports optical links through ISA or PCMCIA cards using DDCS protocol.

2.1.4. Drive

Drive or Drive Controller is a device that is the target for commissioning or maintenance.

2.1.5. Other Software

DriveWindow provides COM and OPC based Application Interfaces for use by other programs.

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2.2. General Restrictions

Only English version of the program is available and there is no provision for translations into other languages.

2.3. Assumptions and Dependencies

DriveWindow implementation is modular. Implementation and interfaces are based on existing standards (ActiveX, OPC, COM, DCOM).

3. Networks

Because Microsoft COM (DCOM) technology has been used in implementing DriveWindow, it is possible to use DriveWindow remotely through all kind of networks that Microsoft DCOM technology can handle.

Using DriveWindow over a network requires that system administrators do proper settings (user accounts, security settings, firewalls) possibly at both ends, but specially at the remote end.

Firewall settings are out of the scope of this paper and are not explained here, but it is not a trivial matter.

More information about DCOM is in DCOM Technical Overview, for example. It can be found at:

http://msdn.microsoft.com/library/en-us/dndcom/html/msdn_dcomtec.asp

Information about configuring firewalls for DCOM is in Using Distributed COM with Firewalls, for example. It can be found at:

http://msdn.microsoft.com/library/default.asp?url=/library/en-us/dndcom/html/msdn_dcomfirewall.asp

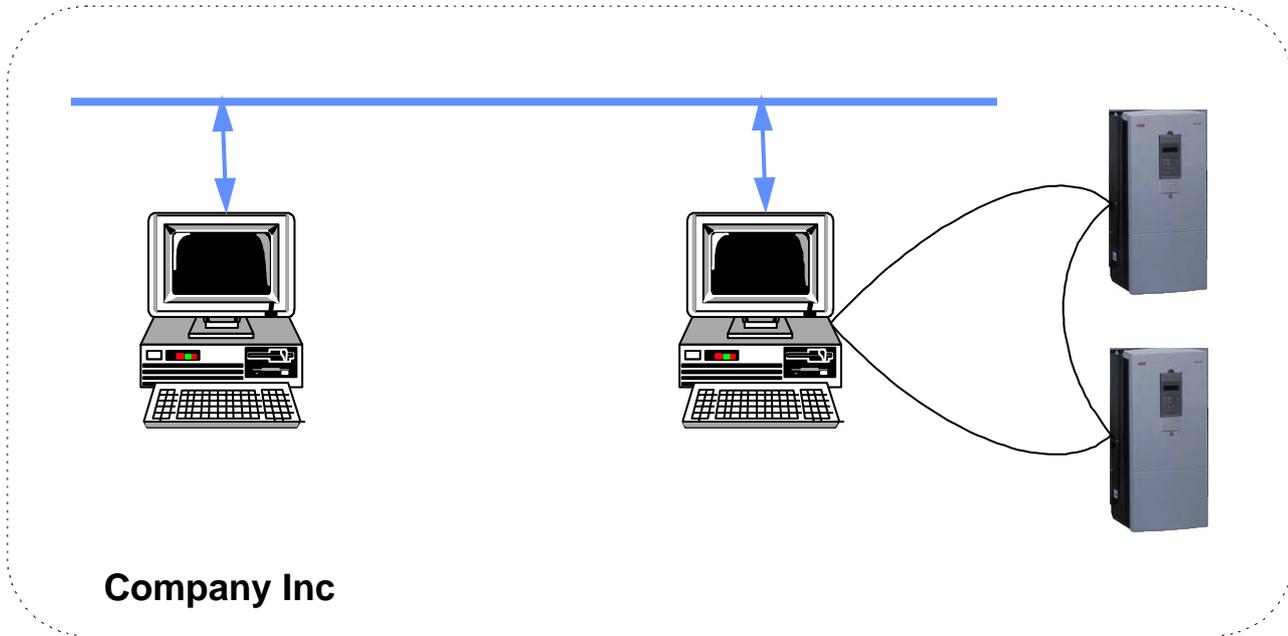
See also "Using OPC via DCOM with Microsoft Windows XP Service Pack 2" at:

<http://www.opcfoundation.org/DownloadFile.aspx?CM=3&RI=326&CN=KEY&CI=282&CU=4>

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3.1. Intranet

Setting up DCOM over intranet is perhaps the easiest way to use DriveWindow remotely.



3.2. Virtual Private Network

Virtual private networks such as the Windows Point-to-Point Tunneling Protocol (PPTP) are one way of using the network to securely tunnel private information over the Internet. DCOM-based applications such as DriveWindow can transparently leverage such a virtual private network.

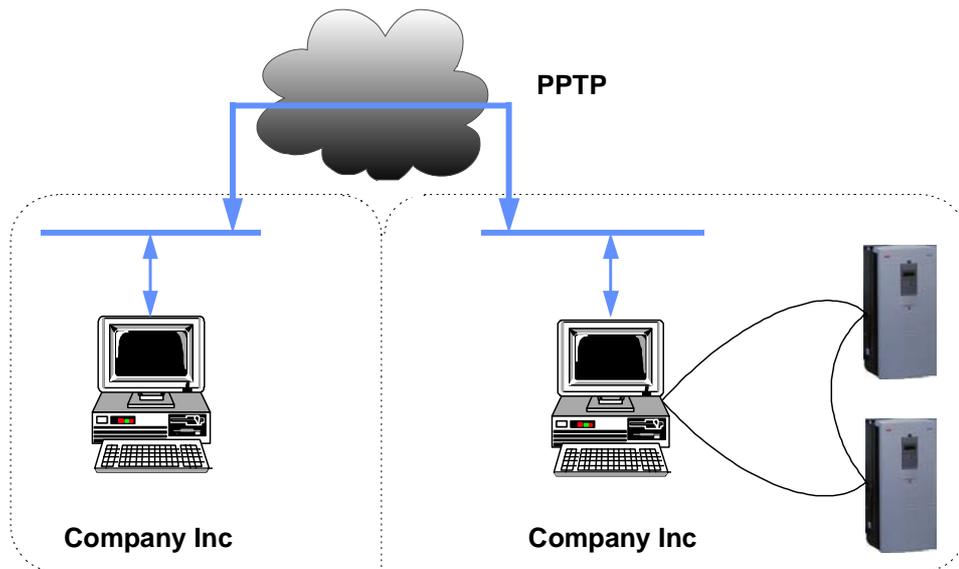
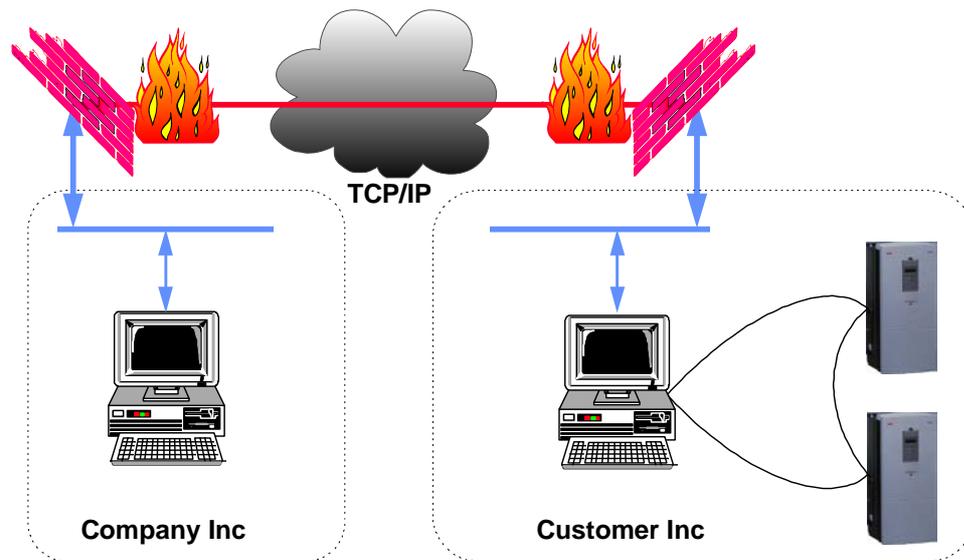


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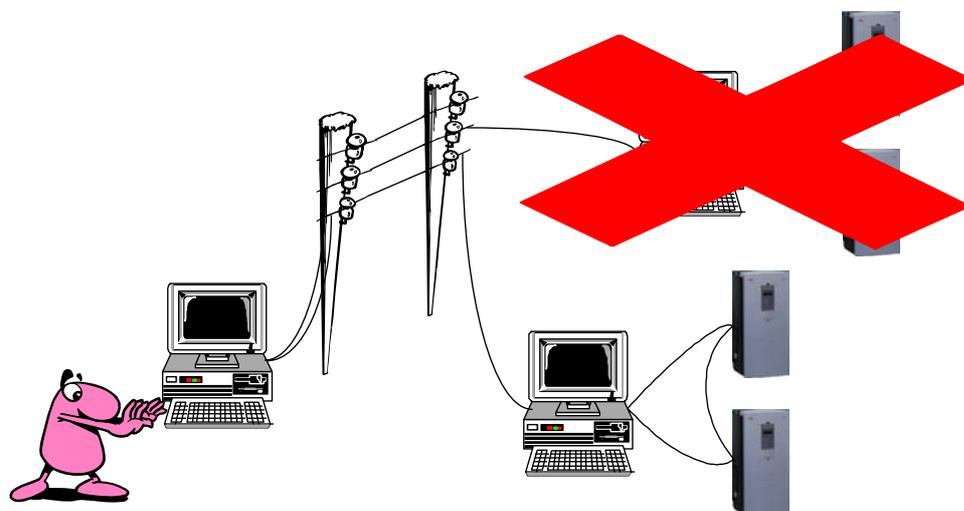
3.3. Internet

Using DCOM over internet usually involves firewalls at both ends. It means that firewalls have to be configured for DCOM as well (see http://msdn.microsoft.com/library/default.asp?url=/library/en-us/dndcom/html/msdn_dcomfirewall.asp and also "Using OPC via DCOM with Microsoft Windows XP Service Pack 2" at <http://www.opcfoundation.org/DownloadFile.aspx?CM=3&RI=326&CN=KEY&CI=282&CU=4>). Security may also be degraded.



3.4. Connections

DriveWindow supports only one connection at a time, whether local or remote. It means that it is not possible to collect data simultaneously through two different remotely connected PCs, for example.



The connection to be done is asked when DriveWindow starts. There is also a menu command to do the connection. The user has the choice to select the local computer or enter the name or address of a remote computer.

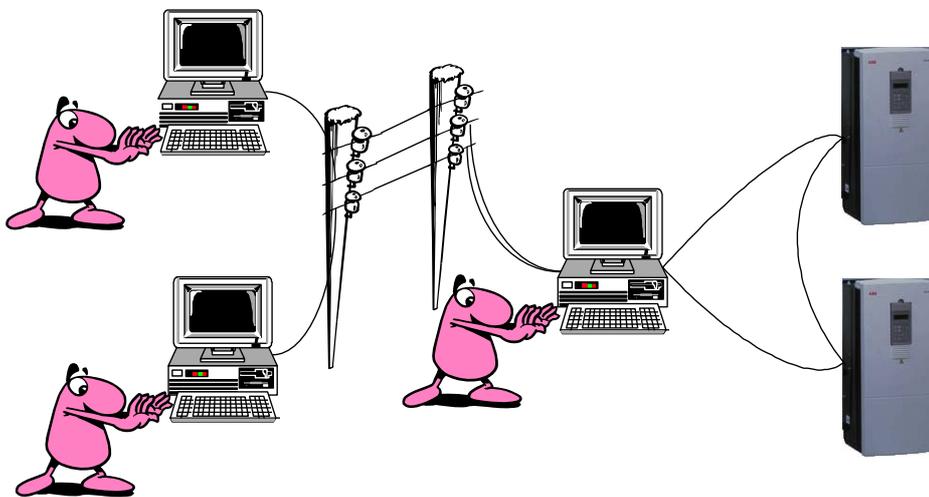
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A connected DriveWindow can be disconnected by a menu command. Disconnection must be made before a new connection can be made. Disconnection is automatically done when DriveWindow exits.

Disconnection closes or clears all windows that contain drive data.

4. Synchronization of Multiple Access

There may be several different applications, or more than one DriveWindow (perhaps running remotely) that try to use the communication links simultaneously. Access to the drives is internally synchronized so that the applications do not crash when accessing a drive.



In the Communication Library there is a global semaphore, which is used to deny access to the drive communication links from all but one application running simultaneously. DriveWindow 2 does not show any error messages to the user if there is a denial, but it shows no drives in this case. Since version 2.01, a message box is shown, which tells that another process is using the hardware. However, because the communication library displays it, it is not shown in case of remote access.

If the remote end computer is configured properly, all users share the same DriveOPC, which allows simultaneous access to the drives. If all users use DriveWindow 2 as the client, only one user can use the server. All other user get an error message when trying to connect. If other programs than DriveWindow 2 are used as the client, users must be aware that at the same time she is working, some other user may compete in changing parameter values.

4.1. System Software

System Software can be backed up, restored, and downloaded locally as well as remotely.

When done remotely, or even locally on a computer being used as remote end as well, extra care has to be taken, if simultaneous access by several users is possible.

While system software is uploading or downloading, no other user should access that drive. Other drives on the drive communication links can be accessed, although the limited bandwidth of the communication links severely degrades the performance.

There is no internal synchronization of accessing a drive while system software is uploading or downloading. It means that if the configuration allows simultaneous access, the users must agree upon some synchronization policy by themselves.

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4.2. Drive Resources

While using drive resources, such as data loggers, control point, and parameter values, remotely, or even locally on a computer being used as remote end as well, extra care has to be taken, if simultaneous access by several users is possible.

While one user is using a resource, no other user should access to the same resource. Other drives on the drive communication links or other resources on the same drive can be accessed.

There is no internal synchronization of accessing a drive resource. It means that if the configuration allows simultaneous access, the users must agree upon some synchronization policy by themselves.

5. DriveWindow Architecture

5.1. Local

Architecture of DriveWindow 2 (since version 2.10) when used locally is approximately as follows:

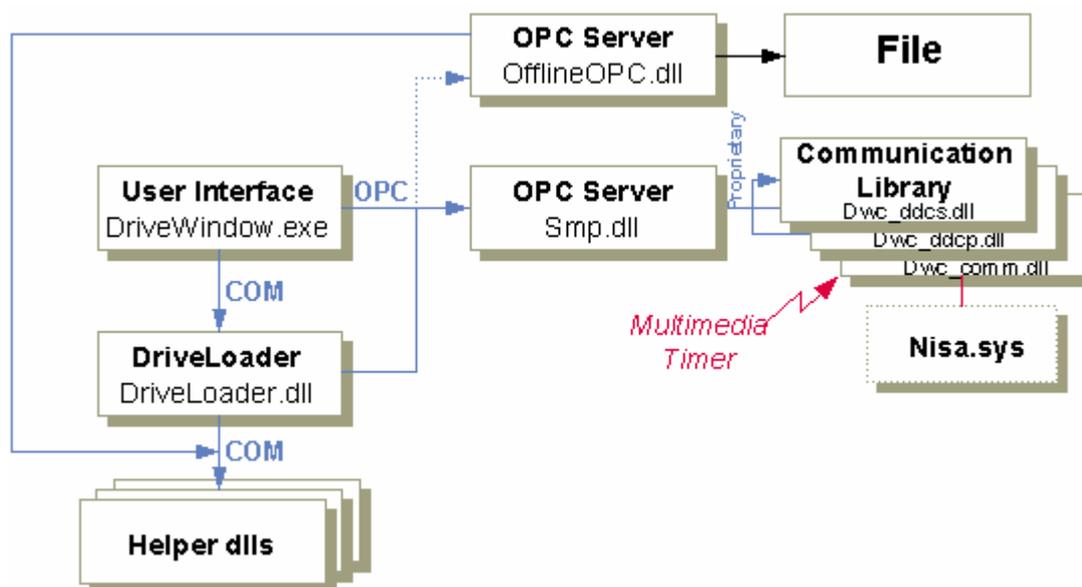
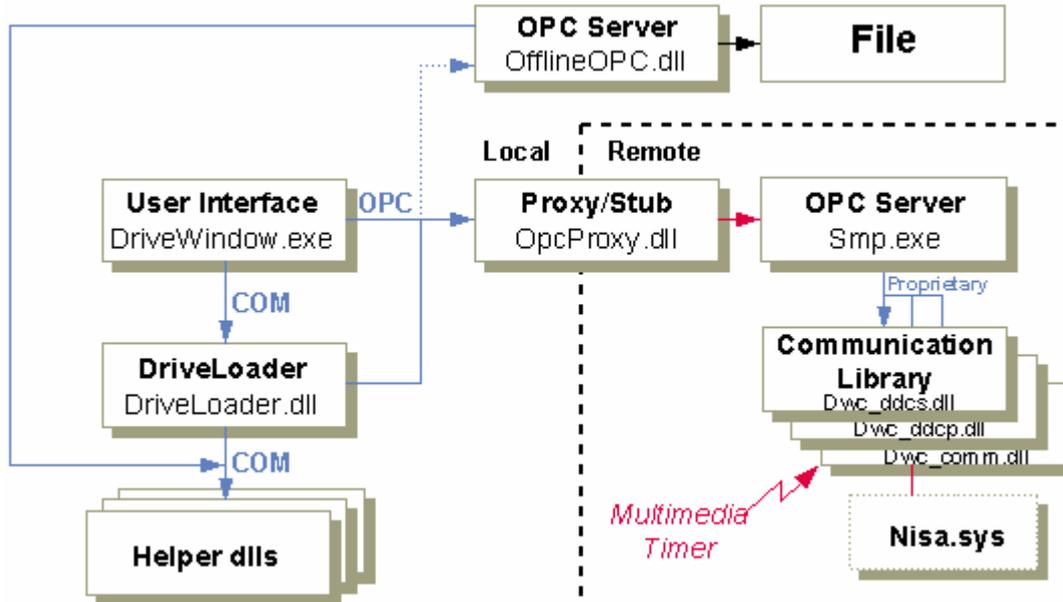


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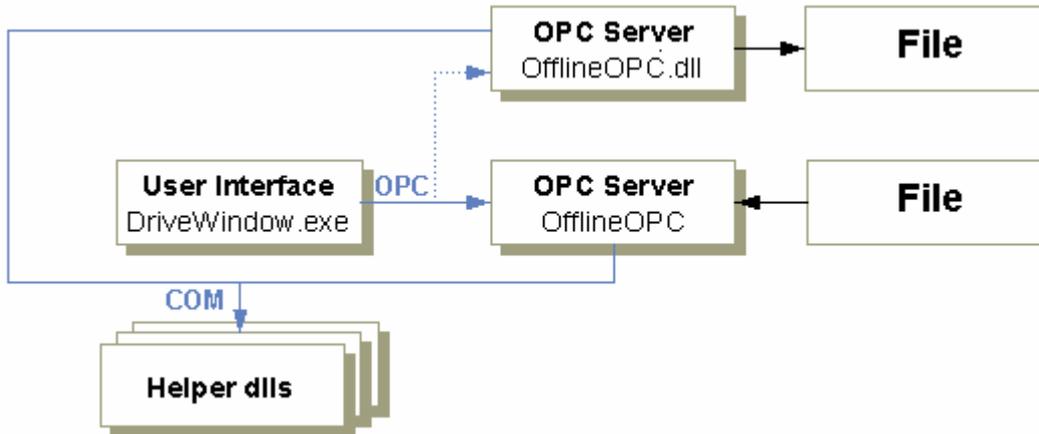
5.2. Remote

Architecture of DriveWindow 2 when used remotely is approximately as follows:



5.3. Off-line

Architecture of DriveWindow 2 when used off-line is approximately as follows:



6. Installation

You need to have local administration rights to do the installation.

A previously installed DriveWindow 2 should be uninstalled before starting a new installation.

6.1. Installation Folder

Default installation folder is <ProgramFilesDir>\DriveWare\DriveWindow.

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If you are installing DriveWindow 2 into a computer having an ABB Way configuration, we recommend to use the folder C:\LocApps\DriveWare\DriveWindow instead of the default installation folder.

6.2. File and Folder Access Rights

Read Access Right means here that Read and Execute are allowed.

Change Access Right means here that Read, Write, Execute, and Delete are allowed.

Full Control means that all operations (Read, Write, Execute, Delete, Change Permissions, Take Ownership) are allowed.

All folders in the file paths require Read Access Rights.

The following files (and folders in file paths) are installed (unless a newer file already exists) or needed:

File	Required Access Rights
<WINDIR>\DriveLoaderModule.INI	Read
<WINSYSDIR>\ATL.DLL	Read
<WINSYSDIR>\DWC_COMM.DLL	Read
<WINSYSDIR>\DWC_DDCP.DLL	Read
<WINSYSDIR>\DWC_DDCCS.DLL	Read
<WINSYSDIR>\MFC42.DLL	Read
<WINSYSDIR>\MFC42LOC.DLL ¹⁾	Read
<WINSYSDIR>\MSVCRT.DLL	Read
<WINSYSDIR>\OPCPROXY.DLL	Read
<WINSYSDIR>*.DLL	Read
<WINSYSDIR>\DRIVERS\NDPA.SYS	Read
<WINSYSDIR>\DRIVERS\NISA.SYS	Read
<WINDIR>\INF\NDPA.INF	Read
<WINDIR>\INF\NISA.INF	Read
<INSTALLDIR>*.*	Read
<INSTALLDIR>\WIN2000*.*	Read
<INSTALLDIR>\WINNT*.*	Read
<INSTALLDIR>\WINXP*.*	Read
<INSTALLDIR>\. \DRIVEOPC\NISADUMP.EXE	Change
<INSTALLDIR>\. \DRIVEOPC *.*	Read

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File	Required Access Rights
<COMMONFILES_DIR>\DRIVEWARE\DRIVEOPC*.*	Read
<COMMONFILES_DIR>\DRIVEWARE\OFFLINEOPC*.*	Read
<COMMONFILES_DIR>\DRIVEWARE\DWPRINTHTML*.*	Read
<COMMONFILES_DIR>\DRIVEWARE\DRIVELOADER*.*	Read

¹⁾ Non-English versions only

NDPA.SYS and NISA.SYS are device drivers and their complete installation requires restarting of the computer. In addition (since version 2.02), NISA-03 DDCS/ISA boards have to be introduced to the Windows plug and play system (Add Hardware).

The following files and folders may be needed or are created during run time:

File or Folder	Required Access Rights
<WINDIR>\	Change
<WINDIR>\DWC_DEF.INI	Change
<WINDIR>\CDW.INI	Change
<WINDIR>\DW21.INI	Change
C:\ ¹⁾	Change
<TEMP>\	Change
C:\DWC_*.LOG ¹⁾	Change

¹⁾ Only for debugging purposes

6.3. Registry Changes

Installing of DriveWindow removes (since version 2.02) the Windows NT version of NISA-03 driver and the registry entries set by its installation. Thus the following keys with subkeys from the registry are removed:

- HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Nisa
- HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\EventLog\System\Nisa
- HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Pcmcia\DataBase\ABB Industry Oy\Ddcc+
- HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Ddcc+1

Since version 2.10, installing of DriveWindow also adds the following keys (with subkeys):

- HKEY_CLASSES_ROOT\.bpg
- HKEY_CLASSES_ROOT\.dwp
- HKEY_CLASSES_ROOT\.dwt
- HKEY_CLASSES_ROOT\.dww
- HKEY_CLASSES_ROOT\.lpg
- HKEY_CLASSES_ROOT\DW2File

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Since version 2.10, installing of DriveWindow also adds the following categorisation key, which is not removed by uninstalling:

- HKEY_CLASSES_ROOT\Component Categories\{63D5F430-CFE4-11d1-B2C8-0060083BA1FB}

Note! Content of HKEY_CLASSES_ROOT is automatically repeated under the key HKEY_LOCAL_MACHINE\SOFTWARE\Classes.

In addition, the following (COM) components register themselves (if installed):

- <WINSYSDIR>\ATL.DLL
- <WINSYSDIR>\MFC42.DLL
- < WINSYSDIR>\OPCPROXY.DLL
- <COMMONFILES_DIR>\DRIVEWARE\DRIVELOADER\CONVERSION.DLL
- <COMMONFILES_DIR>\DRIVEWARE\DRIVELOADER\CRUSHER.DLL
- <COMMONFILES_DIR>\DRIVEWARE\DRIVELOADER\DRIVELOADER.DLL
- <COMMONFILES_DIR>\DRIVEWARE\OFFLINEOPC\OFFLINEOPC.DLL
- <COMMONFILES_DIR>\DRIVEWARE\DRIVEOPC\SMP.DLL
- <COMMONFILES_DIR>\DRIVEWARE\DRIVEOPC\SMP.EXE
- <COMMONFILES_DIR>\DRIVEWARE\DWPRINTHTML\DWPRINTHTML.DLL

Note that SMP.DLL and SMP.EXE register (and unregister) mostly the same keys and values. It means that if either of them is unregistered, the other one must also be either unregistered or re-registered to keep the registry consistent. Note also that in DriveWindow versions prior 2.01 (DriveOPC versions prior 2.02), the installation program did registering of SMP.EXE and SMP.DLL, because registering of either of the components removed the other one from the registry.

7. Local Use

After installation and restarting the computer DriveWindow is ready for local use. However, if you have NISA-03 DDCS/ISA boards, they have still to be introduced to the operating system (Add Hardware).

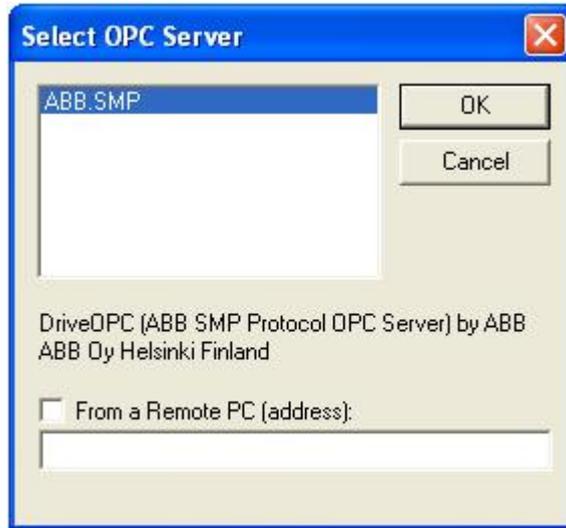
When used locally, DriveWindow requires a NISA-03 DDCS/ISA board or NDPA-02 DDCS/PCMCIA board to be present.

When used locally, DriveWindow uses the In-process OPC Server (<COMMONFILES_DIR>\DRIVEWARE\DRIVEOPC\SMP.DLL). If more than one instance of DriveWindow (or some other application using the In-process OPC Server) is started, they all have their own copy of it. The Communication Library uses a global semaphore, however, which prevents all but one application to communicate with the Drives. All others get an error. DriveWindow does not display the error, but it displays no drives instead.

Instructions for installing NISA-03 DDCS/ISA and NDPA-02 DDCS/PCMCIA boards are not given here, because they are documented elsewhere.

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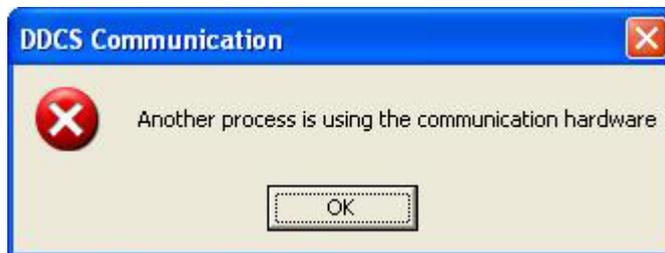
If installation is done properly, DriveWindow lists ABB.SMP in the Select OPC Server dialog box shown when it starts. Clicking OK starts DriveWindow locally.



If NISA-03 DDCCS/ISA or NDPA-02 DDCCS/PCMCIA is not installed properly, Communication Library displays a message box telling that it did not find any communication hardware.



If another application program is currently using the Communication library, Communication Library displays a message box telling that another process is using the communication hardware (since DriveWindow 2.01).

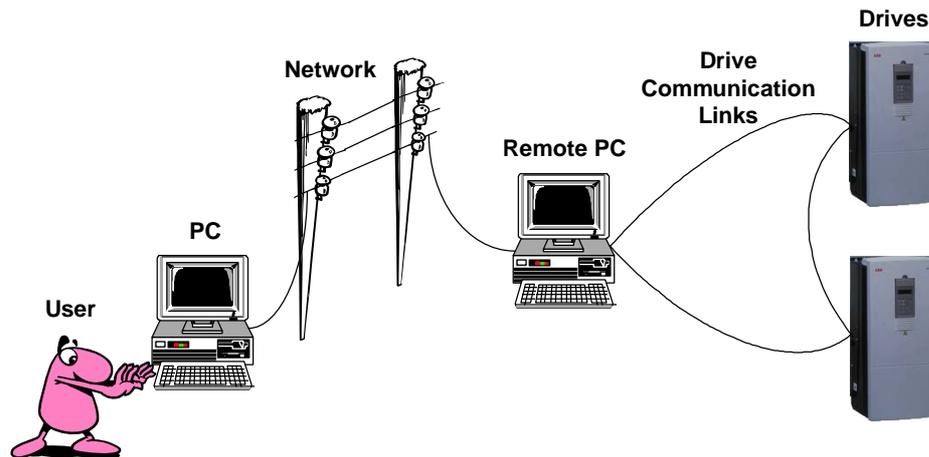


Note! All messages from the Communication Library are inhibited, if <WINDIR>\DWC_DEF.INI contains Remote=1 in the [OPC] section. The INI-file is not included in the installation but made by the Communication Library during run time.

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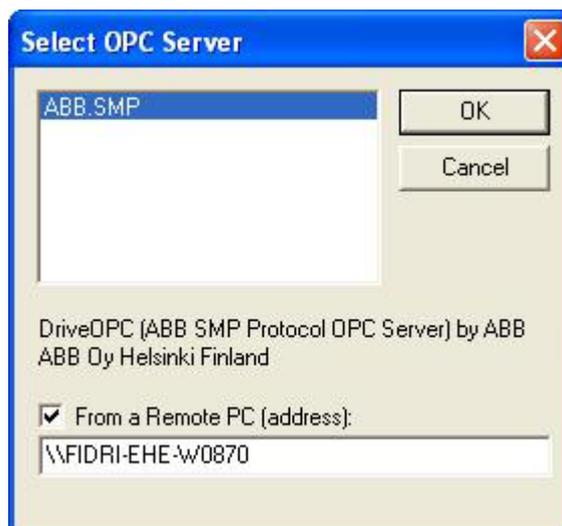
8. Remote Use

In addition of using DriveWindow locally (i.e., the drive communication links are connected to the PC operated by the user), it can also be used remotely (i.e., the PC operated by the user is connected by a network to the PC containing the drive communication links).



Remote Use

If installation and configuring are done properly at both ends, the remote end can be contacted by checking From a Remote PC (address) in the Select OPC Server dialog box shown when DriveWindow starts. The name or IP address of the remote end computer has to be entered into the field below it. Clicking OK connects DriveWindow to the OPC Server at the remote end.



When used remotely, DriveWindow uses the Local OPC Server (<COMMONFILES_DIR>DRIVEWARE\DRIVEOPC\SMP.EXE) at the remote end. It is possible to configure the remote end to use the In-process OPC Server running under Microsoft DLLHOST.EXE, too.

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If the remote end is configured as it should be, a single Server is shared among simultaneous users. If configuration allows more than one instance of the server, the Communication Library handles the situation. It has a global semaphore, which prevents all but one application to communicate with the Drives. All others get an error. DriveWindow does not display the error, but it displays no drives instead.

DriveWindow 2 uses fixed names when creating groups in the OPC Server and gets an error in case any of the groups already exist. DriveWindow 2 considers this error to mean that another instance of DriveWindow 2 is already using the OPC Server and tells about it to the user. The fixed groups are created during connecting to the server and connection is refused in case of error.

Configuring a computer to serve as remote end does not prevent DriveWindow to be used locally as well. It runs in a different window station, however. It requires special settings (not explained in this document) at the remote end, if the remote end is to be used locally sharing the same Local OPC Server. In any case, the Communication Library at the remote end does not show any message boxes when DriveWindow is used locally at the remote end.

8.1. Installing for Remote Use

DriveWindow 2 has to be installed at client end. At remote end you can either install DriveWindow 2 or DriveOPC.

At the client end there is no need for communication boards if the client end uses DriveWindow only remotely.

At the remote end DriveWindow or some other OPC client program has to be started locally after the installation to check the proper installation of the drive communication boards.

The minimum requirement of using DriveWindow remotely is to edit at the remote end the file <WINDIR>\DWC_DEF.INI (created by the Communication Library at time DriveWindow was started locally). You have to add section [OPC] with setting Remote=1 into it. It inhibits all messages from the Communication Library.

Note! Message boxes, which the Communication Library may show in some error conditions, hang up the Remote OPC Server, because the messages go to a non-interactive client session, where nobody can see them and it is not possible to click the OK button. Only if the OPC Server is launched as interactive user, the message boxes are shown on the interactive client session (if there is an interactive user logged on), but this is usually configuration used only during debugging.

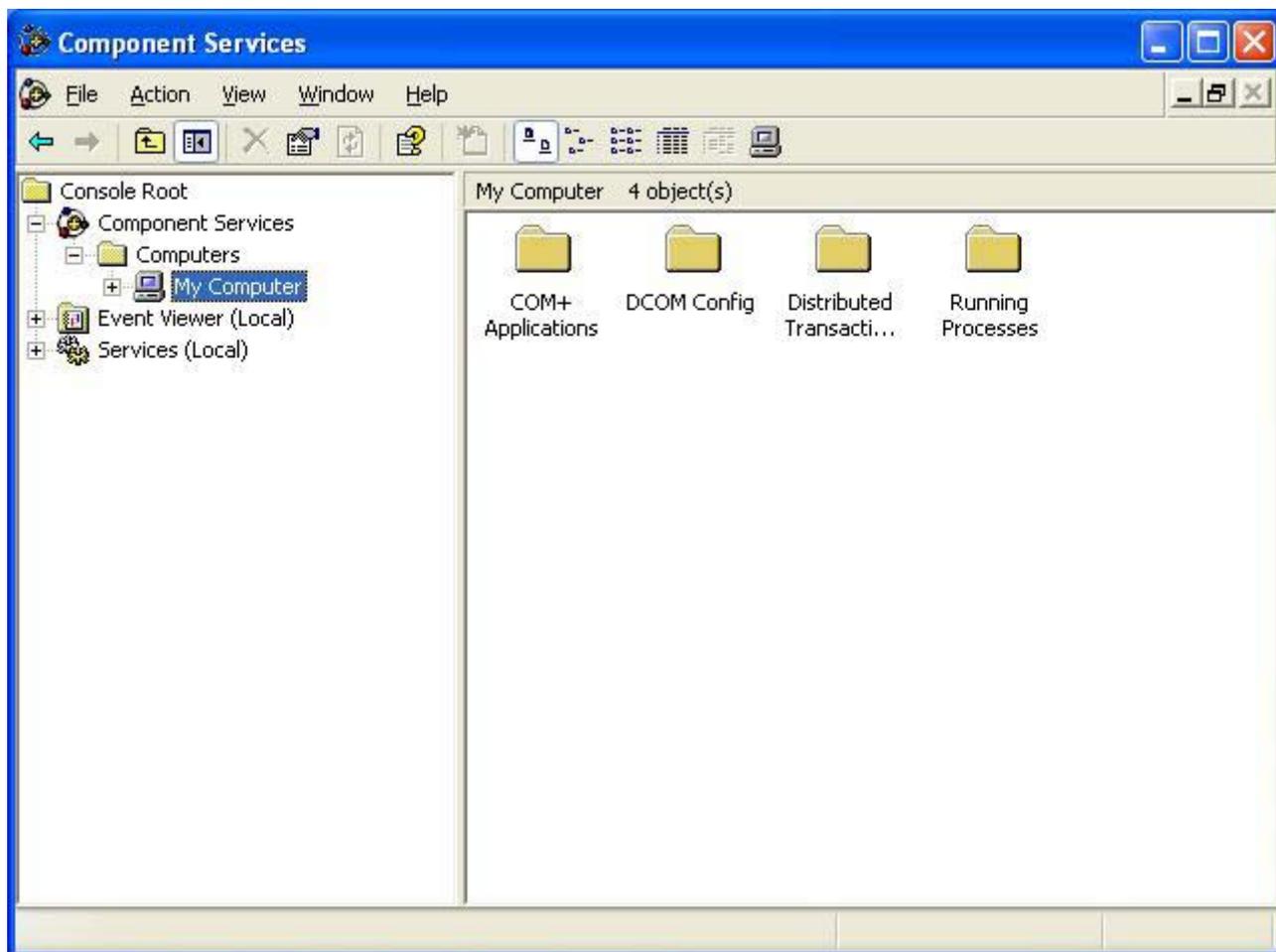
Unless no other configuring is made, the remote end can usually be used remotely by administrators.

8.2. Configuring the Remote End

Configuring the remote end requires local administration privileges and is done by using the Control Panel and DCOMCNFG.EXE Windows utility. DCOMCNFG is usually not found in the Start menu, but must be started by selecting Run from the Start menu.

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When Component Services are shown, expand Component Services and Computers. Right click My Computer and select Properties.



It is possible to do the configuring in several ways and there can be lot of different security requirements in different cases. We present here just an example as a guideline, which we hope to cover the most typical cases.

In the example we will configure the remote end so that all users, who have access to the remote end computer through the intranet, can use the OPC Server at the remote end. It means that in addition to the users (everyone) of the trusted domains, also guests from other domains are allowed to access the remote end computer.

Although not absolutely necessary, we recommend that you restart the computer after you have done the configuring.

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8.2.1. Some Assumptions

In the DCOMCNFG, we assume that the list of Default Access Permissions (in the Default COM Security tab) contains SYSTEM. We also assume that Default Launch Permissions list consists of the local administrators, the interactive user, and the system all having Allow Launch permission, and the Default Properties settings are the following (or you at least know the Default Authentication Level setting):

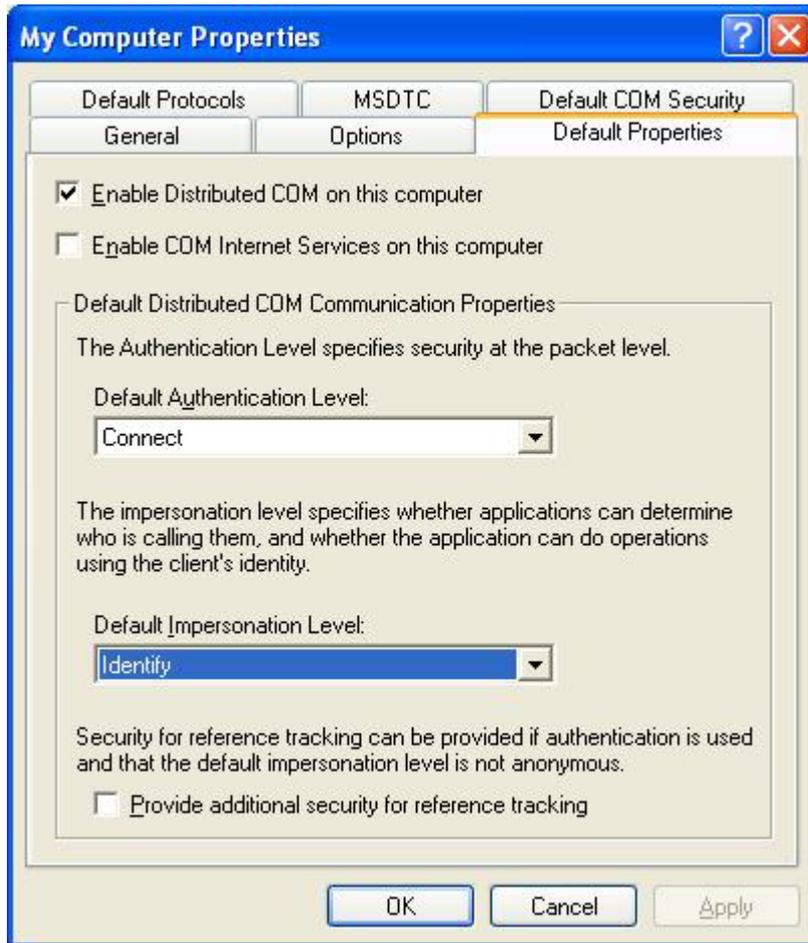
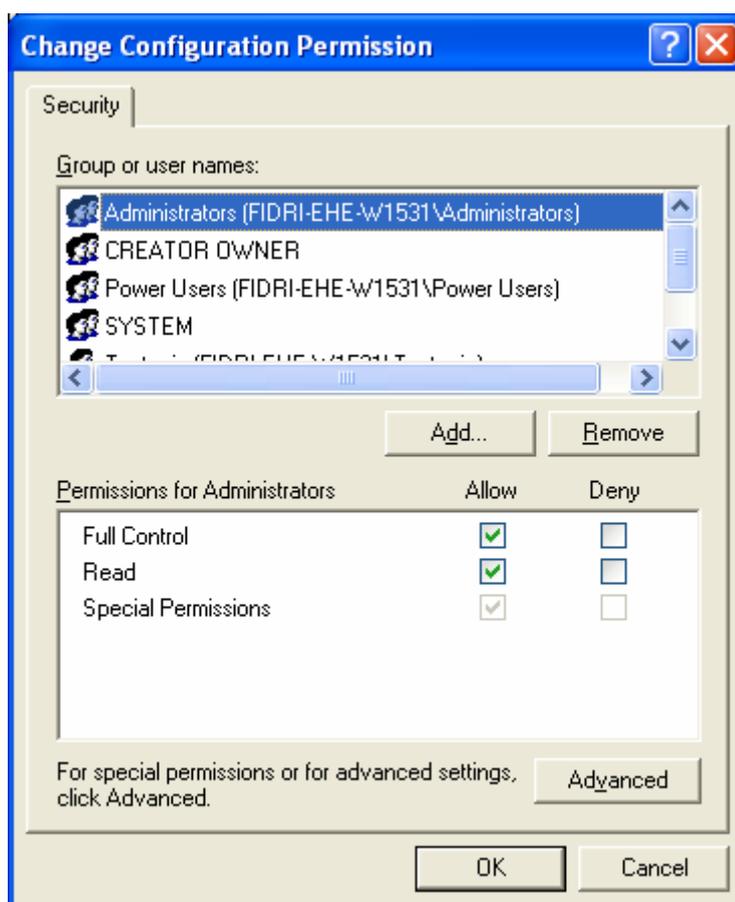


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Although the following settings are not much concern in configuring the remote end as long as you are able to change registry settings, we assume that the registry Change Configuration Permissions consist of Administrators, Creator Owner, Power Users, System, and Users.

You can see the registry Change Configuration Permissions by expanding Component Services, Computers, My Computer, and DCOM Config. Right click DriveOPC (ABB SMP Protocol OPC Server) by ABB Oy and select Properties. Select Security tab and the Custom radio button in Configuration Permissions. Click the Edit button.



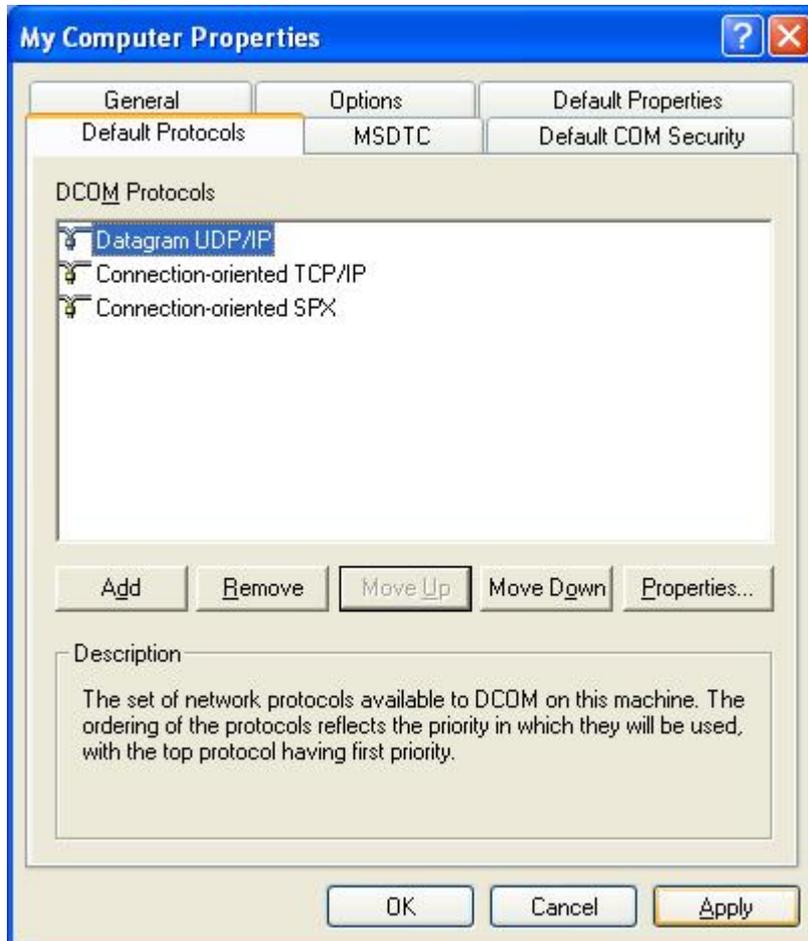
Read Access means that Query Value, Enumerate Subkeys, Notify, and Read Control are allowed.

Special Access means that Query Value, Set Value, Create Subkey, Enumerate Subkeys, Notify, Delete, and Read Control are allowed.

Full Control means that all operations (Query Value, Set Value, Create Subkey, Enumerate Subkeys, Notify, Create Link, Delete, Write DAC, Write Owner, Read Control) are allowed.

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We assume that Datagram UDP/IP is at the highest priority of the Default Configuration Protocols:



We also assume the following account policy. Especially blank passwords must not be allowed in Windows XP because users without passwords cannot act as a Launching User. Changes can be made from Control Panel by selecting *Performance and Maintenance – Administrative tools – Local Security Policy – Account Policies*.

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In Password Policy do the following configuring:

Maximum Password age:



Minimum Password age:



Minimum Password length must not be zero.

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Enforce Password history:



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8.2.2. Users

You have to decide, who are the users that are allowed to launch (start SMP.EXE or DLLHOST.EXE) and access the OPC Server at the remote end. Although in general it is possible to have different launching and accessing users, remote use of DriveWindow requires that they are the same.

If you are going to allow guests to access to the remote end, you must enable the Guest account. Select *Control Panel – Performance and Maintenance – Administrative Tools – Computer Management – Local Users and Groups – Users – Guest*.

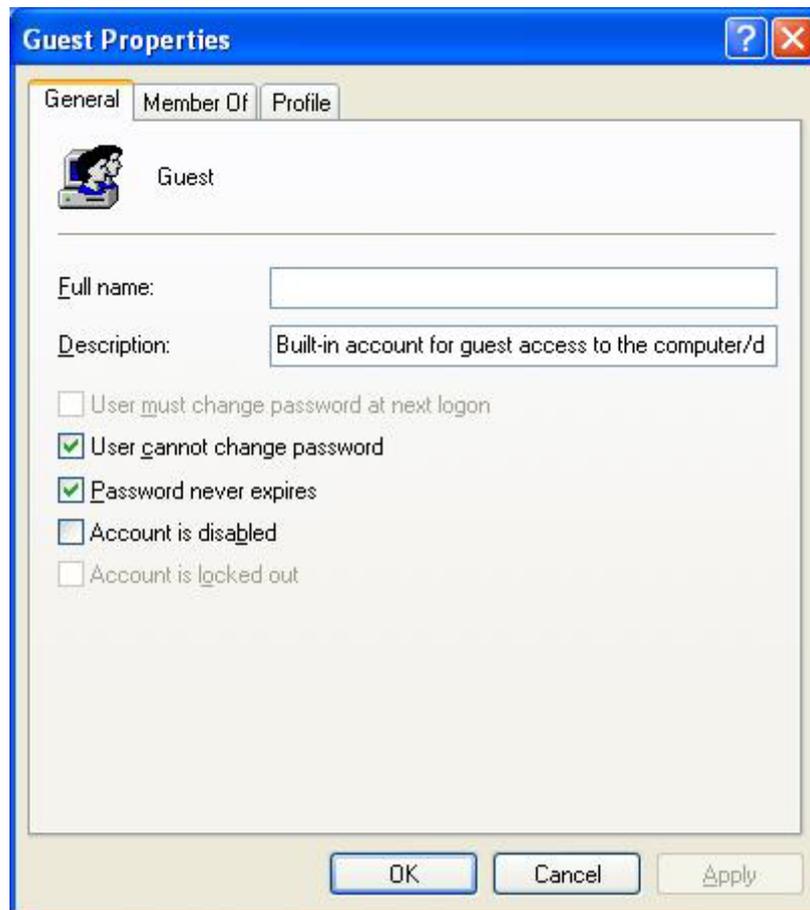


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8.2.3. Right to Access the Remote Computer from Network

Any user, who should be allowed to use the remote end computer from a client computer, must have proper access right to do that. Select *Control Panel – Performance and Maintenance – Administrative Tools – Local Security Policy – Local Policies – User Rights Assignment – Access this Computer from the network* and add appropriate users to the list.



To grant access to guests and everyone, for example, the groups Everyone and Guests have to be added.

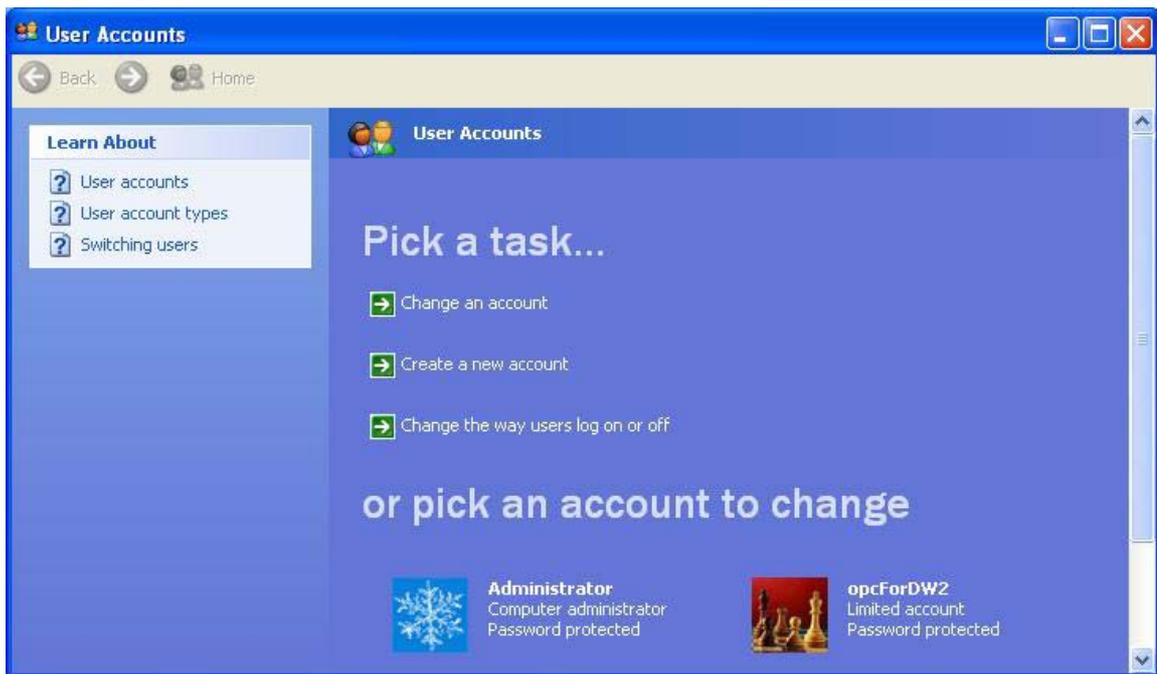
Guest account need also be removed from Deny access to this computer from the network, as it is often included as default.

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8.2.4. Adding a Special Account for the Remote OPC Server

We recommend that a single client session is shared with all simultaneous clients. Therefore, you need to specify a user account to be used in launching. This user account can be an already existing one with enough privileges (your account, for example). However, it is more clear to add a special account solely for launching the OPC Server at the remote end computer.

Select *Control Panel – Users Accounts* and click the *Create a new account*.

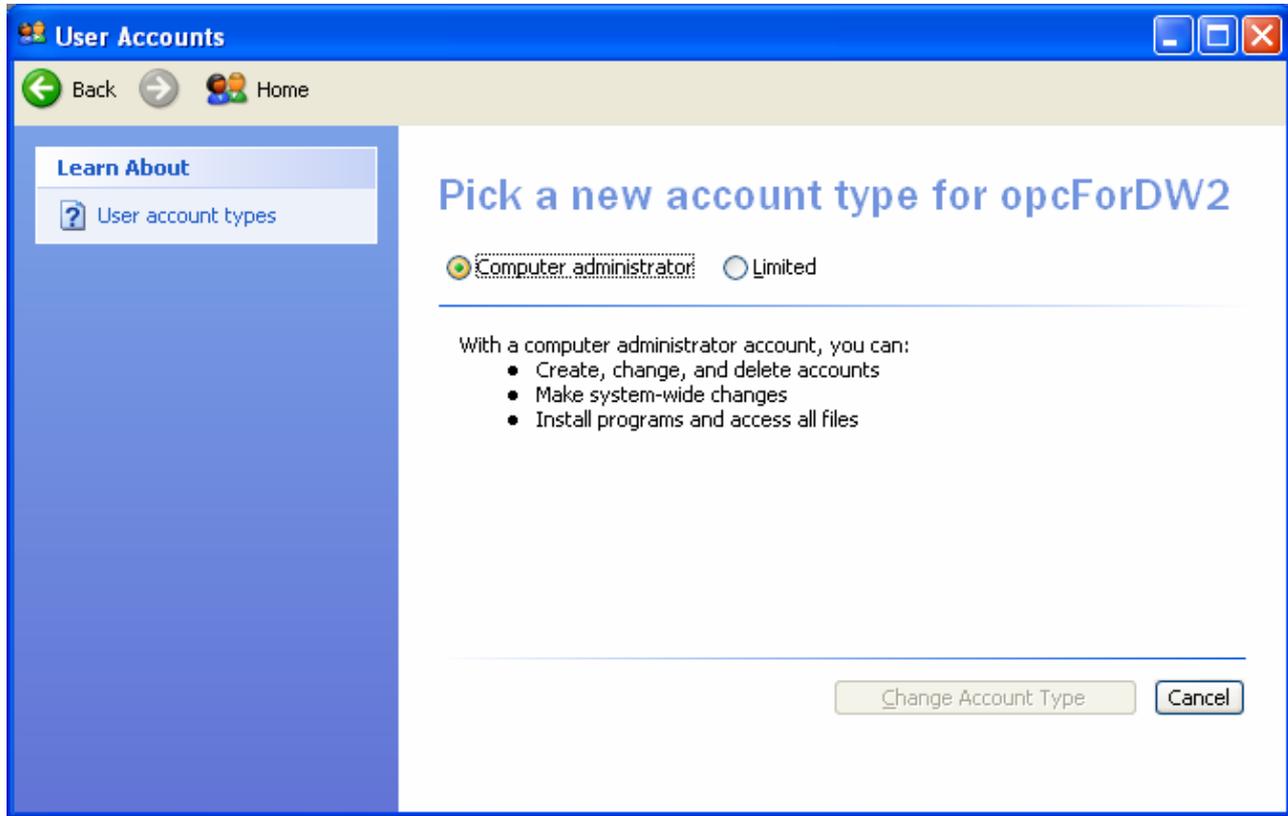


From *Change an account* you can change password or accounts type.



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The easiest way to get the opcForDW2 running is to give the opcForDW2 privileges of the Administrators group. But it also works with limited privileges. You can change privileges from Change the account type.



OPCSever account must be able to run DriveWindow. Unless opcForDW2 belongs to a group that has proper file and folder access rights (administrators, for example), you may need to edit permissions of all files and folders required by DriveWindow. Editing can be done by selecting Properties in the Windows Explorer for the file(s) and/or folder(s) selected, and from the Security tab, selecting Permissions.

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The account must also have the right to log on as a batch job. Although it is not necessary to grant it separately, because it is done automatically by DCOMCONF when needed, you can do it yourself from the Control Panel. Select *Performance and Maintenance – Administrative Tools – Local Security Policy – Local Policies – User Rights Assignment – Log on as a Batch Job* and add opcForDW2 to the list.



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8.2.5. Configuring the Remote End OPC Server

To configure the OPC Server, start DCOMCNFG.EXE on the remote end computer. Expand Component Services, Computer, and My Computer. Select DCOM Config. In the right pane, look for DriveOPC (ABB SMP Protocol OPC Server) by ABB Oy, right click it, and select Properties.

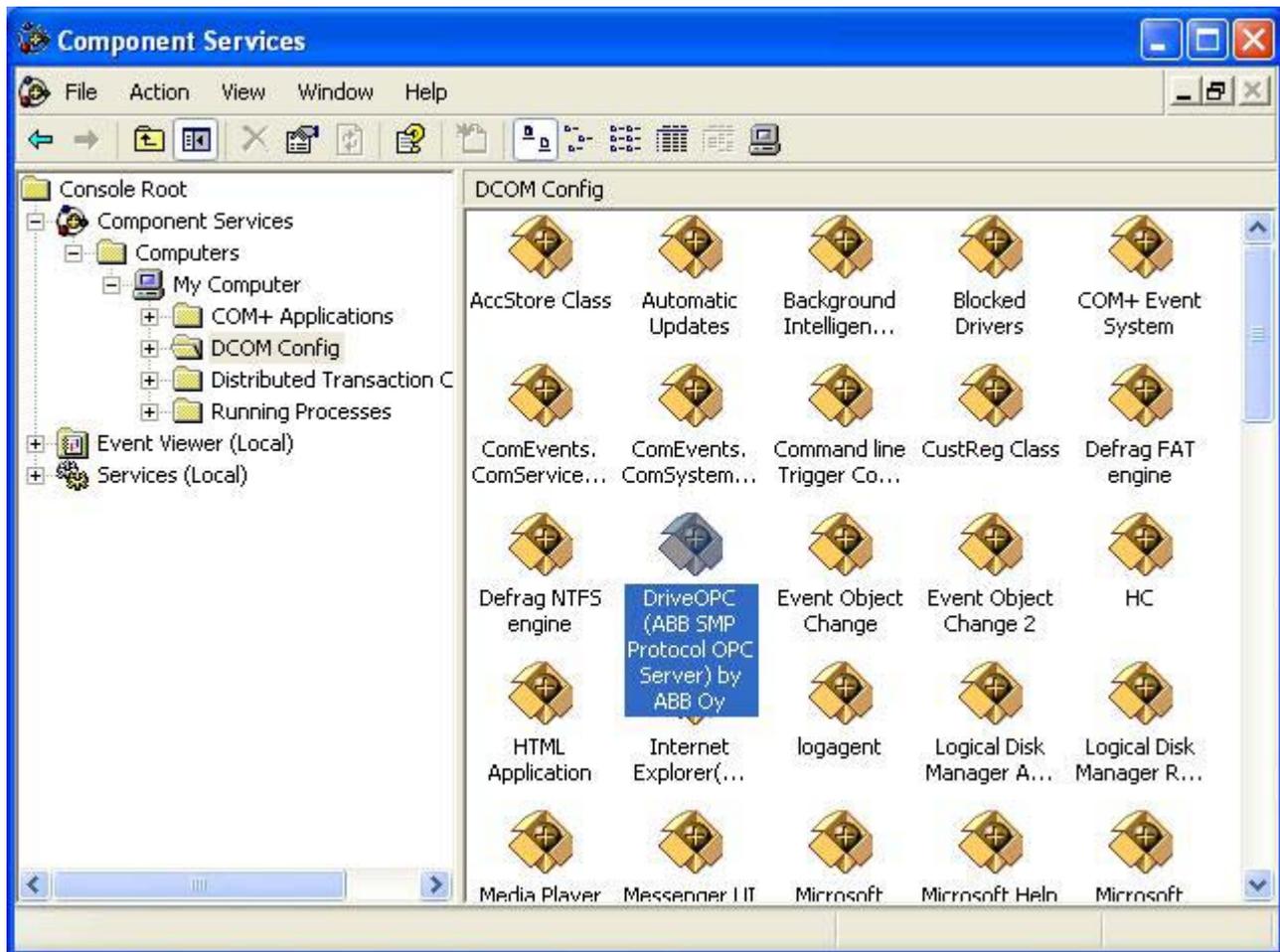
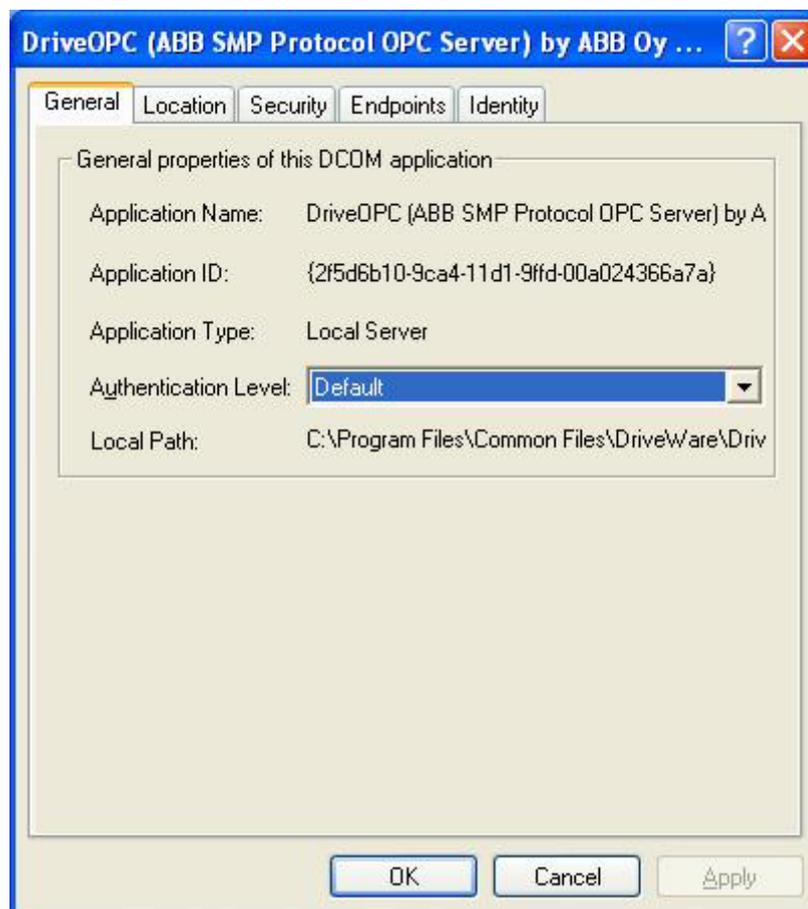


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8.2.5.1. Authentication Level

Usually there is no need to use other than the Default authentication level for the OPC Server at the remote end computer.



Note! Datagram transports such as UDP default to packet-level authentication if a lower level authentication level is requested, because datagram transports do not maintain a virtual connection between the client end and the remote end. Therefore, each transmitted packet has to be authenticated individually.

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8.2.5.2. Location

Run application on this computer must be checked for the OPC Server at the remote end computer.

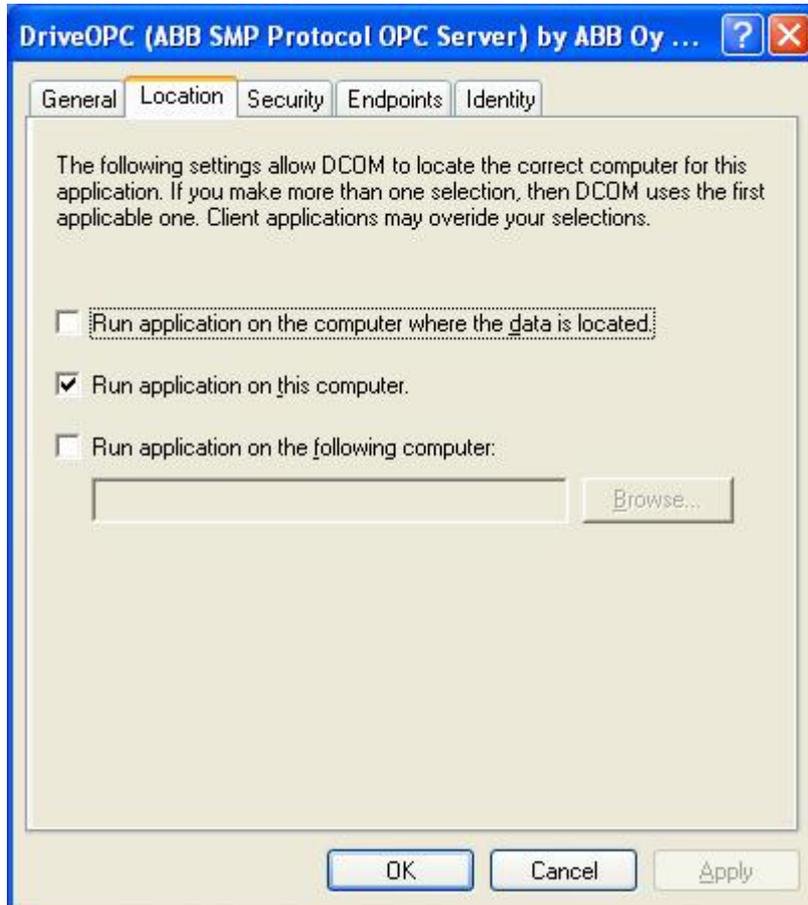


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8.2.5.3. Endpoints

Default system protocols are usually enough for the OPC Server at the remote end computer.



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8.2.5.4. Access Permissions

By editing the access permissions of OPC Server at the remote end computer, you control, who can access OPC Server. For example, if guests and everyone should be able to access the computer, you must allow everyone and guests to launch OPC Server.

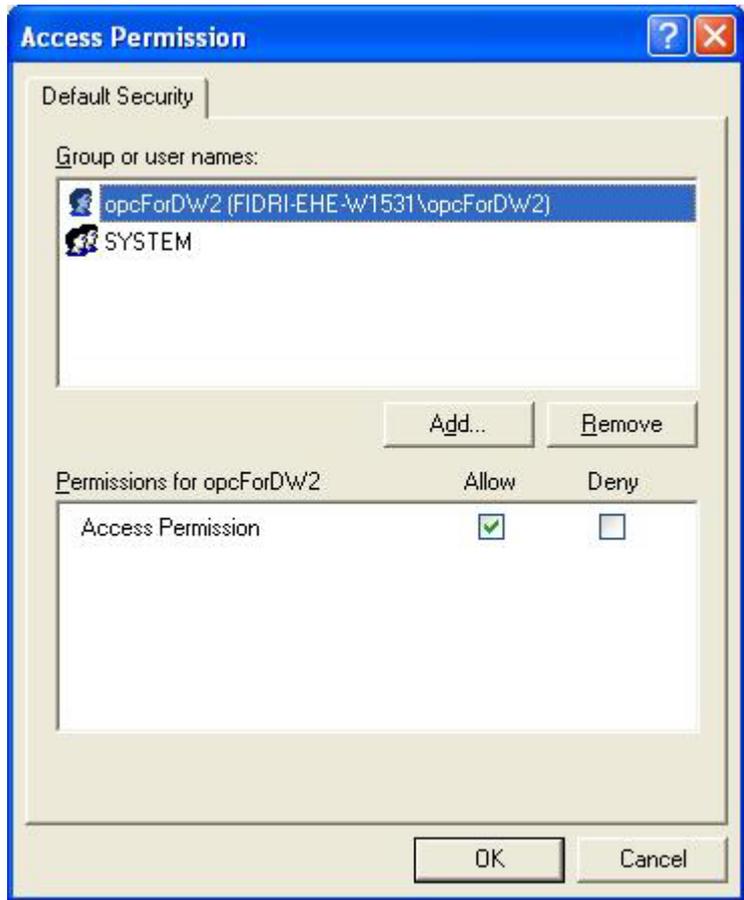


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8.2.5.5. Configuration Permissions

Our experiments show that you should select default configuration permissions for OPC Server at the remote end computer.

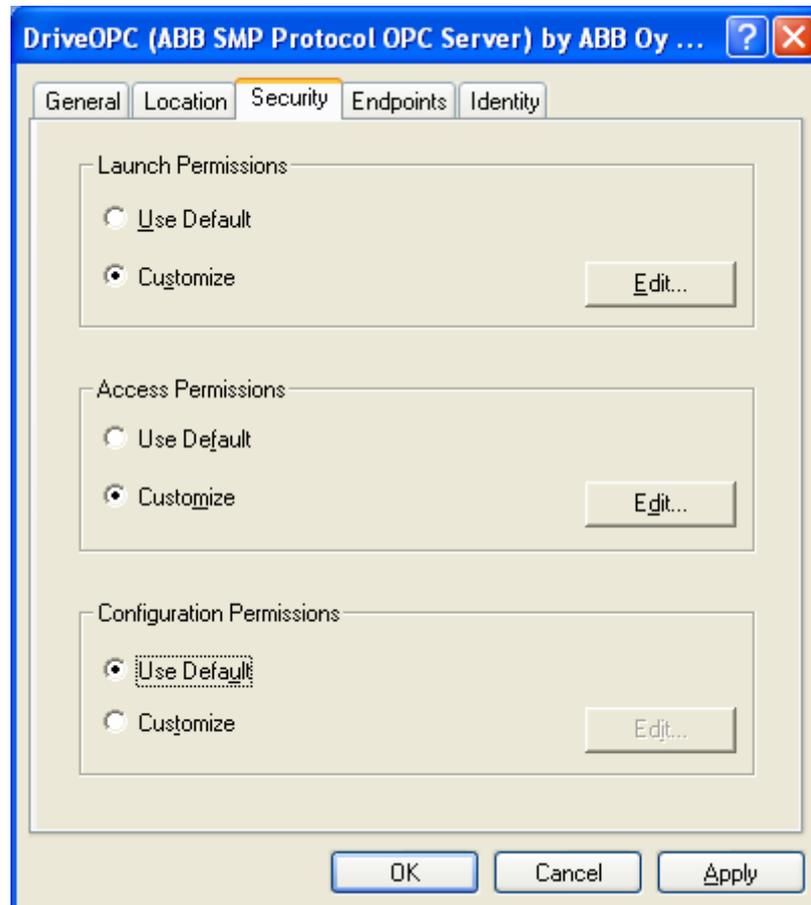


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8.2.5.6. Launch Permissions

By editing the launch permissions of the OPC Server at the remote end computer, you control, who can launch the OPC Server. For example, if guests and everyone should be able to access the computer, you must allow everyone to launch the OPC Server (guests seem to be included in everyone here).

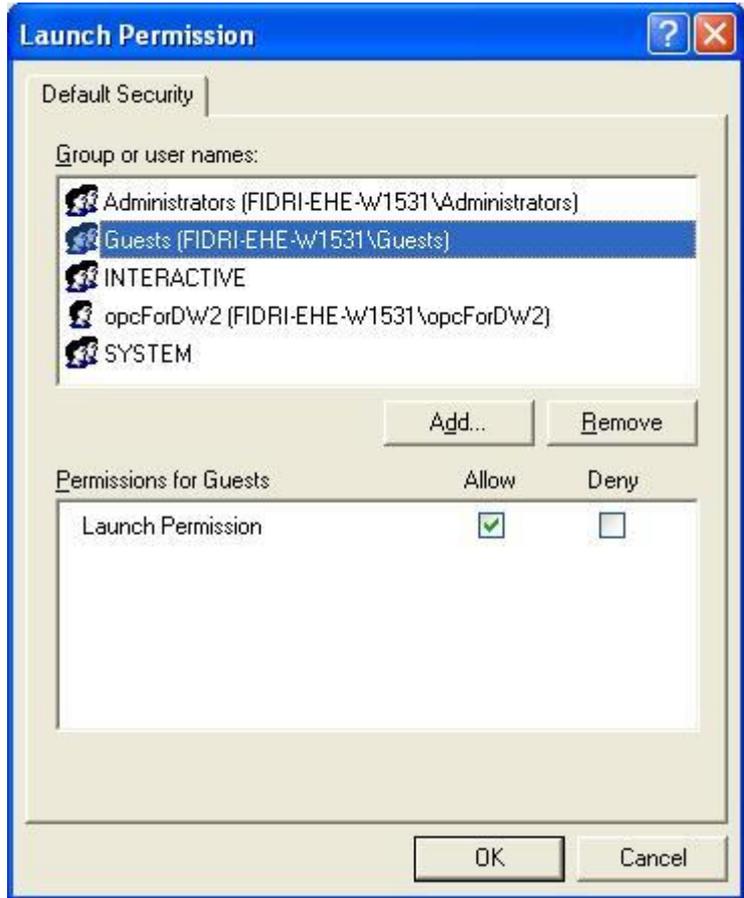


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8.2.5.7. *Launching Identity*

The remote end OPC Server is configured to use the account of the opcForDW2 (or some other user, if you decided otherwise). You must know the password of the user in order to be able to set the launching identity to be a specific user.



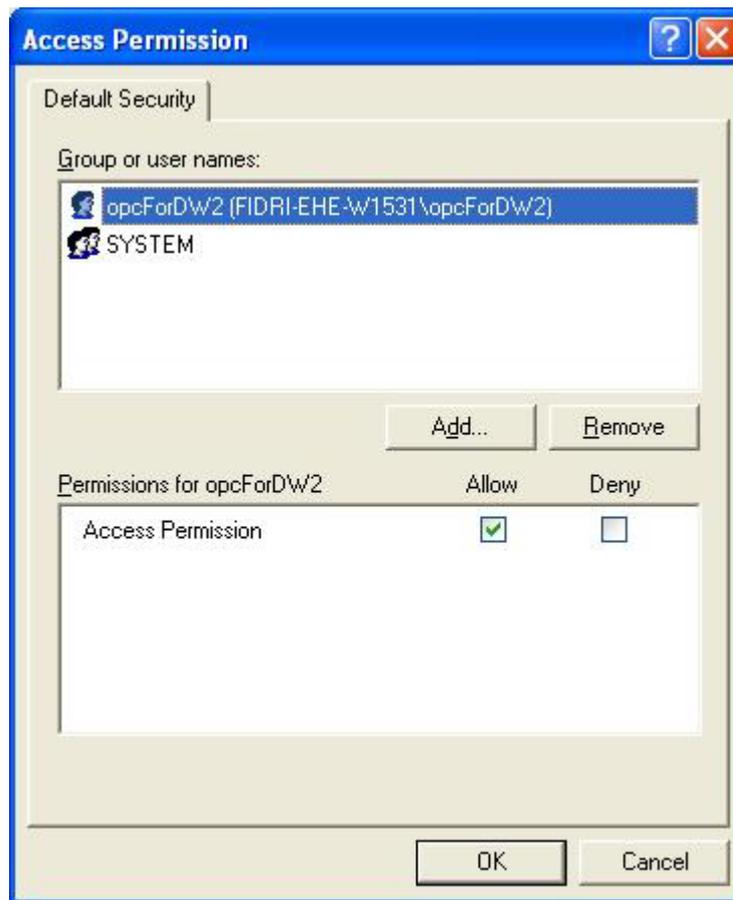
Note! When you set the OPC Server to use a specific user account, DCOMCNFG also grants the account the privilege to log on as a batch job.

Interactive user can be used for debugging purposes only. The launching user should be avoided, because it enables multiple instances of the OPC Server to be launched (see chapters 4, 7 and 8).

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8.2.5.8. Changing the Default Access Permissions

Our experiments show that sometimes access permissions of the OPC Server must be set into the defaults, because the custom access permissions seem not to have any effect. In addition to the users (guests and everyone, for example), you have to allow the system and the interactive user to access components at the remote end (In the Application tab, browse ABB SMP Protocol OPC Server, select it, and click properties button. Select security tab, click launch permissions edit button).



8.3. Configuring the Client End

Current version of DriveWindow needs no configuring to be done in order to be able to connect and use a remote OPC Server.

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8.4. Auditing the Remote End

8.4.1. Configuring for Audit

If you want to log use of the remote end computer, you should enable auditing from the Control Panel by selecting *Performance and Maintenance – Administrative Tools – Local Security Policy – Local Policies – Audit Policy*. All logons and logoffs, interactive or from network, can be audited, whether successful or not, for example, by selecting:



Note! Security logs are limited in size, so select auditing events wisely. The maximum size of the security log is defined in Event Viewer.

You have also the possibility to audit use of selected files and other objects.



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To audit the use of SMP.EXE, for example, browse and select it in the Windows Explorer, click it with the right mouse button and select Properties. On the Security tab click the Advanced button and select the Auditing tab. Now you can add users or group of users to audit (everyone, for example), and type of access you want to audit (execution, for example).

Note! To be able to display the Security tab you must not use simple file sharing.

To clear use of simple file sharing, open Folder Options in Control Panel and, from the View tab under Advanced settings, clear Use simple file sharing [Recommended].

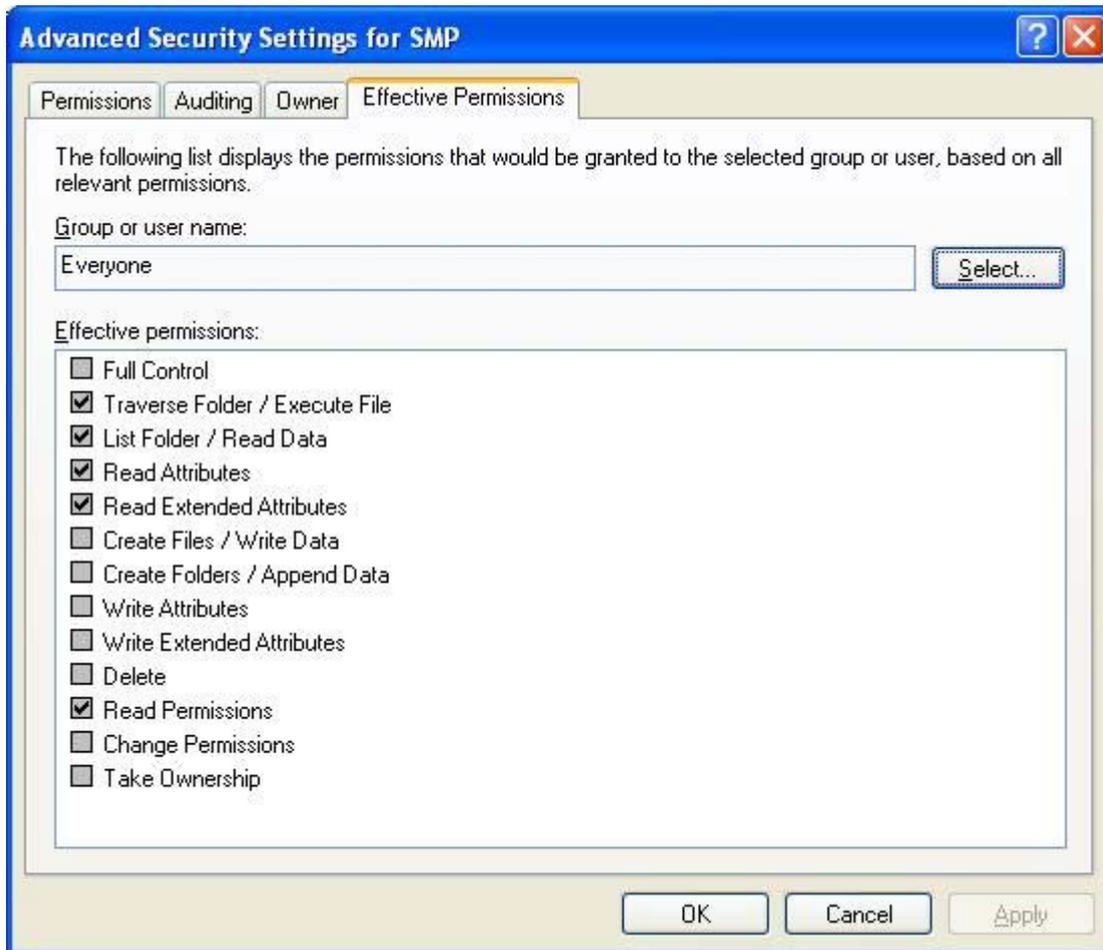


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8.4.1.1. Viewing Audit Logs

The log can be viewed by selecting Security Log in the Event Viewer program.

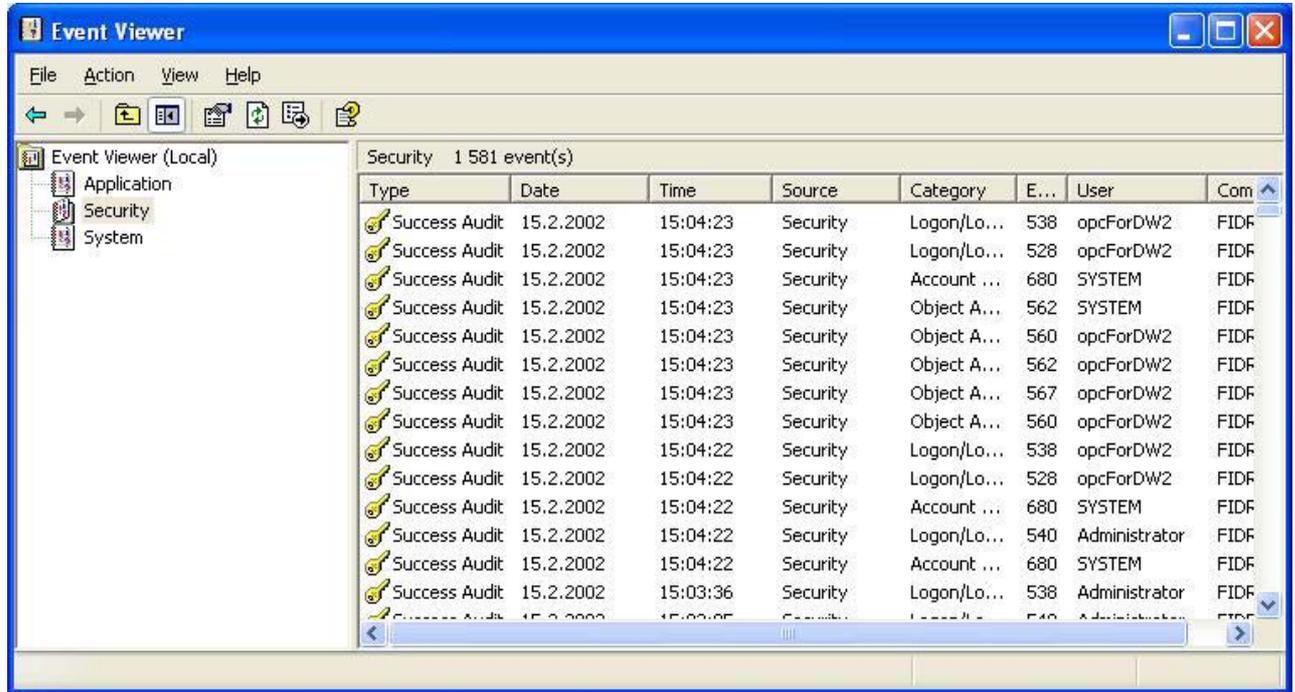
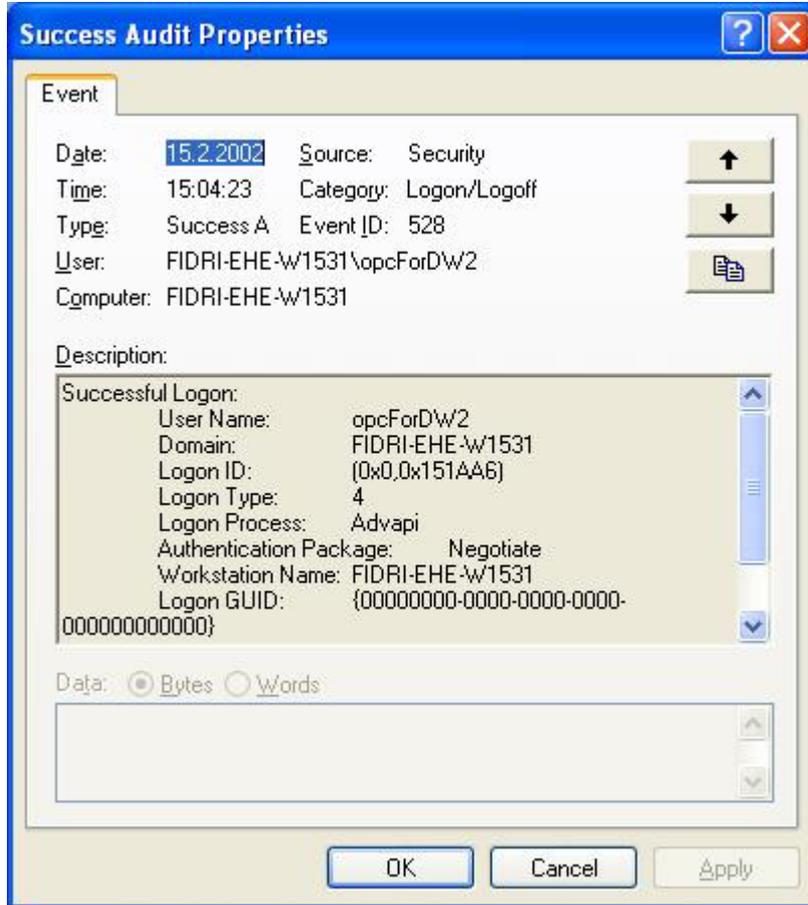


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Details of a single event can be viewed as well.

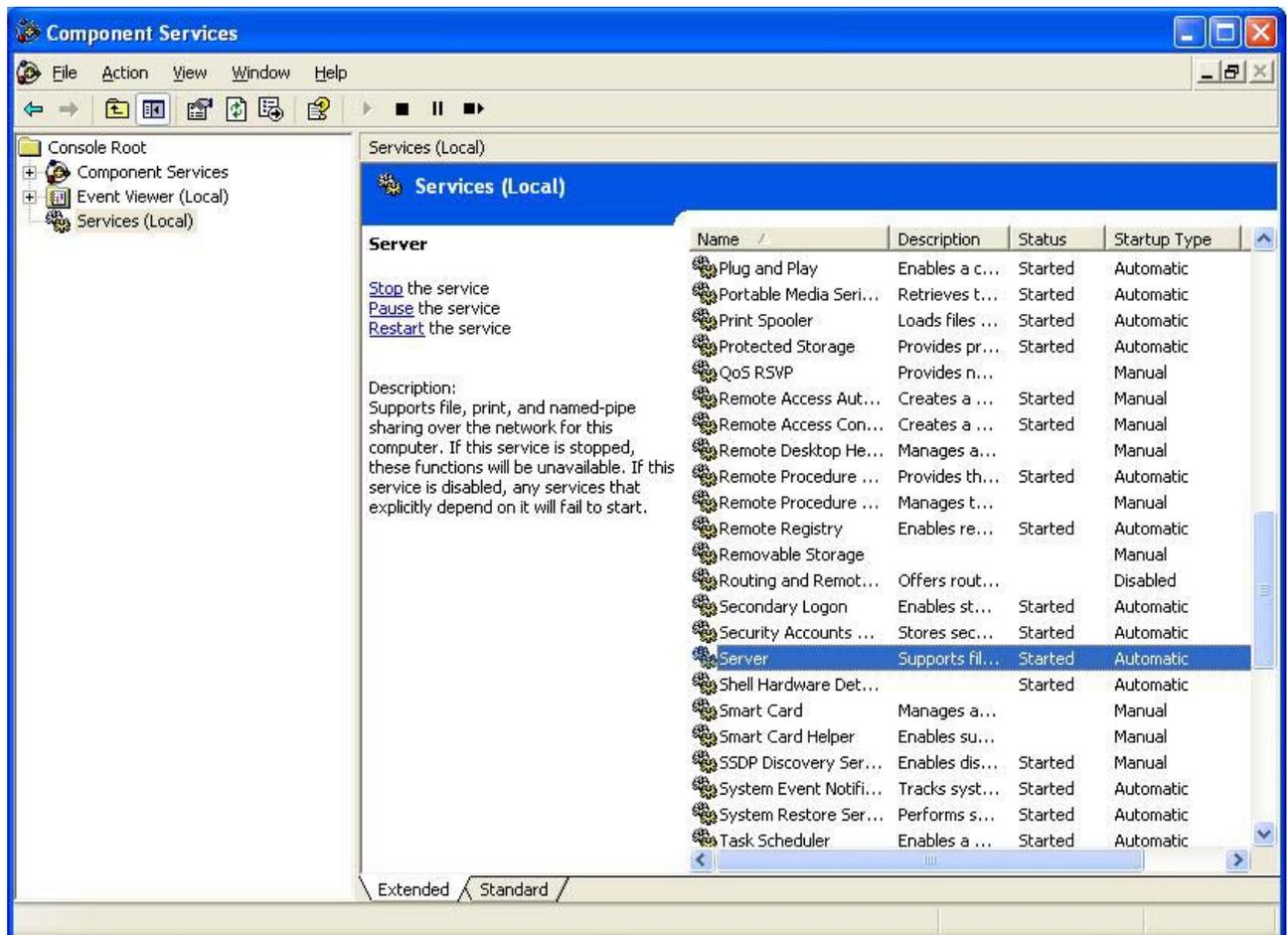


8.4.1.2. Viewing Audit Logs Remotely

If you are administrator at both ends, you can view the remote end event log from the client end as well. The prerequisite is, however, that Server service has been started (manually or automatically) at the remote end.

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You can start the Server service and control how it is to be started by selecting *Performance and Maintenance – Administrative Tools – Component Services* from the Control Panel at the remote end.



At the client end, select *Connect to Another Computer* from the Action menu of the Event Viewer and enter the name or the address of the remote end computer.

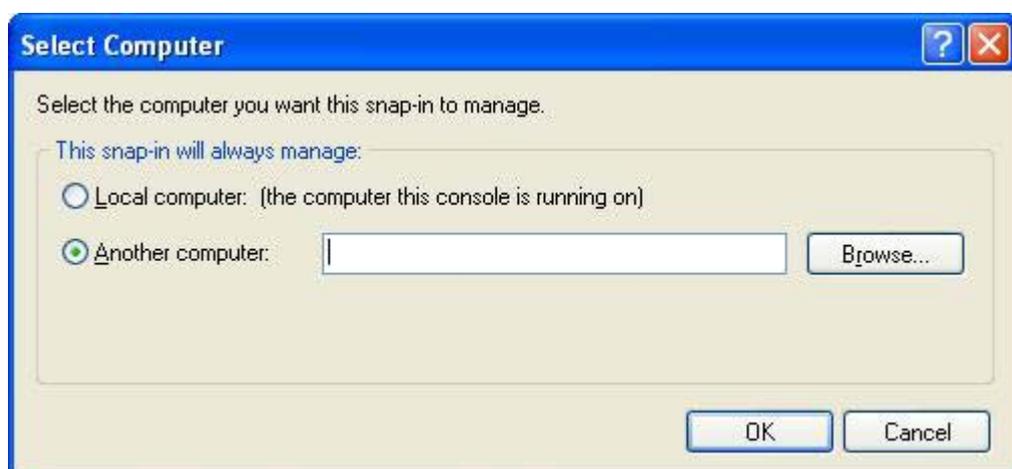
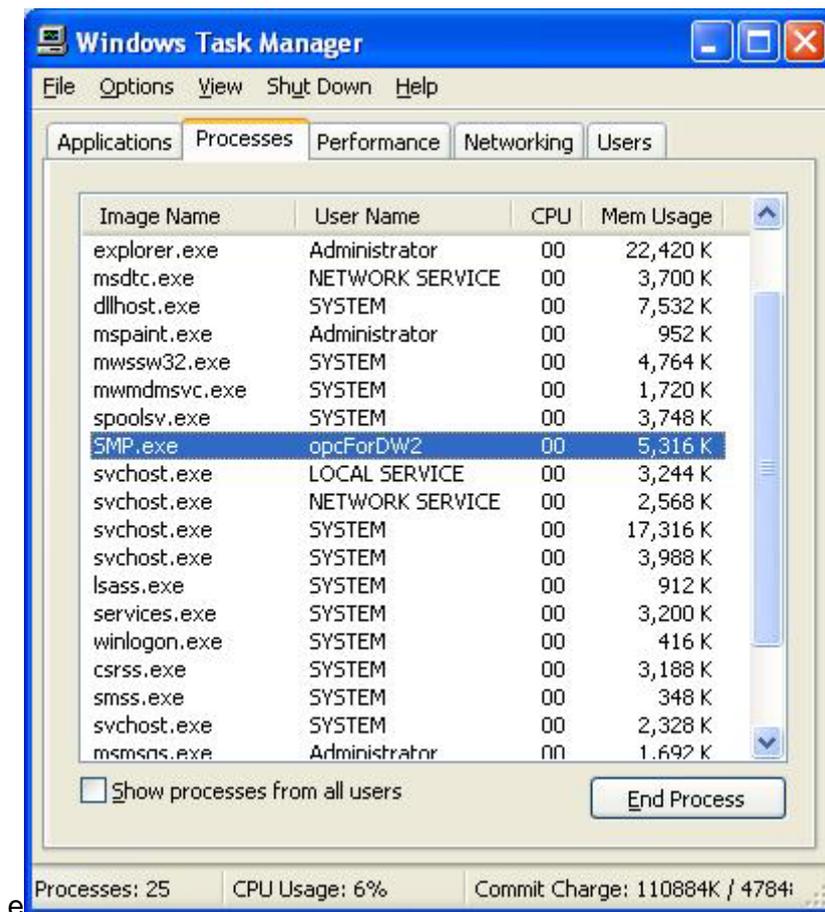


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8.4.1.3. Instances of SMP.EXE at the Remote End

If you want to know, how many instances of SMP.EXE are currently running on the remote end computer, start the Task Manager (click right mouse button on the taskbar and select Task Manager).

In the Task Manager, select the Processes tab and click the title Image Name twice to get the listed images into alphabetical order. Scroll for SMP.EXE and count the instances. If the remote end is configured properly, there should be at most one instance shown.



Note! If there is more than one instance of SMP.EXE, only one of them is actually connected to the Drives because of internal synchronisation within the Communication Libraries (which does not work properly yet across window stations).

Terminating SMP.EXE (because it hanged up, for example) by using the Task Manager is possible if you have administrative rights. Otherwise you have to restart the remote end computer to terminate it.

8.5. Simultaneous Local and Remote Use

If local user at the remote end connects to the drives locally, either she or all the remote users see no drives.

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8.5.1. Denying Local Use at Remote End

It is not possible to prevent using OPC Server locally at the remote end, unless you also deny remote use for those, who are using the remote end locally. However, you can deny access to applications running at the remote end, which use OPC Server.

8.5.2. Forcing Remote Use instead of Local Use at the Remote End

Although it is possible to configure a computer always to use a pre-defined remote computer instead of local use, such a computer cannot be used remotely. The reason is that also remote calls to such a computer are then directed to the another, pre-defined remote computer.

Thus it is not possible to force remote use instead of local use at the remote end.

8.6. Pre-defined Remote Use instead of Local Use

It is possible to configure the client end computer to connect to a pre-defined remote end computer when the user tries to connect locally. Such a computer can never be the remote end and it does not need to have drive communication hardware installed.

To do so, you use DCOMCNFG.EXE at the client end and, instead of running the OPC Server on this computer, you specify the remote end computer (name or address), on which the OPC Server is to be run. In addition you have to ...(will be added later).

8.7. Using In-Process Server at the Remote End

It is possible to configure the remote end computer to use the in-process OPC server (SMP.DLL) instead of the local server (SMP.EXE). In this case, the in-process server is configured to run under DLLHOST.EXE, which is a Microsoft made program.

There is no advantage of using the in-process server remotely. However, for maintenance reason, we may in the future stop supporting the local server (SMP.EXE) and use the in-process server only - both locally and remotely.

To use the in-process OPC Server instead of the local server at the remote end, you have to do the following ...(will be added later).

9. External References

In addition to a normal operating system installation the DriveWindow program does not require any other programs or modules to be present. All modules required are included in the DriveWindow installation.

10. Other Features

10.1. Performance

Drive communication link speed limits performance the drive handling functions.

PC hardware configuration and the internal processing done within DriveWindow limit performance of functions that need excessive processing power or huge amount of data.

When remotely connected, the network limits DriveWindow response to user actions.

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10.2. Usability, Recovery, Safety and Protection

DriveWindow does not include specific recovery, safety, or protection. Recovery, safety, and protection are handled by the operating system and depend on its settings.

10.3. Maintenance

As being an application based on COM modules, upgrading to a newer revision can even be done module by module.

10.4. Portability and Compatibility

DriveWindow runs only under Windows XP, Windows 2000 or Windows NT 4.0 SP3 (or newer) operating system in a x86 PC.