

**Wonderware®**

**Profibus FMS I/O Server User's Guide**

**Revision C**

**Last Revision: November 2004**

**Invensys Systems, Inc.**

All rights reserved. No part of this documentation shall be reproduced, stored in a retrieval system, or transmitted by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of Invensys Systems, Inc. No copyright or patent liability is assumed with respect to the use of the information contained herein. Although every precaution has been taken in the preparation of this documentation, the publisher and the author assume no responsibility for errors or omissions. Neither is any liability assumed for damages resulting from the use of the information contained herein.

The information in this documentation is subject to change without notice and does not represent a commitment on the part of Invensys Systems, Inc. The software described in this documentation is furnished under a license or nondisclosure agreement. This software may be used or copied only in accordance with the terms of these agreements.

**© 1998, 2004 Invensys Systems, Inc. All Rights Reserved.**

Invensys Systems, Inc.  
26561 Rancho Parkway South  
Lake Forest, CA 92630 U.S.A.  
(949) 727-3200  
<http://www.wonderware.com>

### **Trademarks**

All terms mentioned in this documentation that are known to be trademarks or service marks have been appropriately capitalized. Invensys Systems, Inc. cannot attest to the accuracy of this information. Use of a term in this documentation should not be regarded as affecting the validity of any trademark or service mark.

Alarm Logger, ActiveFactory, ArcestrA, Avantis, DBDump, DBLoad, DT Analyst, FactoryFocus, FactoryOffice, FactorySuite, FactorySuite A<sup>2</sup>, InBatch, InControl, IndustrialRAD, IndustrialSQL Server, InTouch, InTrack, MaintenanceSuite, MuniSuite, QI Analyst, SCADAAlarm, SCADASuite, SuiteLink, SuiteVoyager, WindowMaker, WindowViewer, Wonderware, and Wonderware Logger are trademarks of Invensys plc, its subsidiaries and affiliates. All other brands may be trademarks of their respective owners.

# Contents

<b>Wonderware Profibus FMS I/O Server.....</b>	<b>5</b>
Introduction .....	5
Communications Protocols.....	5
Accessing Remote Items via the I/O Server.....	6
Getting Started Quickly with the I/O Server .....	7
Required Hardware and Software.....	7
Profibus Main Window .....	8
View Menu .....	8
I/O Server File Menu.....	9
Configuring the I/O Server.....	10
Configuring a Topic Definition.....	11
Topic Definition.....	11
Profibus Topic Definition .....	12
Common Topic Configuration Settings.....	12
Configuring a Siemens Driver Topic.....	15
Configuring a Softing Driver Topic.....	15
Selecting Communications Reference (CR) for Softing Driver Topic.	18
Configuring Communications References (CR) for Selected	
PROFBoard.....	19
Access Rights .....	23
Advanced Communications Parameter Settings.....	26
Importing Softing Datfiles .....	29
Import Softing Profibus Configuration.....	30
Item Mapping .....	31
Configuring the I/O Server Settings.....	33
Server Settings.....	33
Configuring the Logger.....	35
Setting the Logger Mode .....	35
Configuring Security .....	36
Security .....	36
I/O Server Data Menu .....	37
Data Monitor .....	38
View Item States .....	38
Dumping Active Data to a File .....	41
Dumping Active Data.....	41
DB Dump.....	42
Dumping Topic Database to a File.....	44
Accessing I/O Server Help .....	45
Contents.....	45
How to Use Help .....	45
About Profibus.....	45
Item Names .....	46
Predefined Item/Point Names.....	51

Monitoring the Status of Communications with a PLC .....	54
Using the Status Item in Excel .....	54
Monitoring the Status of Communications with InTouch.....	55
Using DDEStatus and IOStatus in Excel.....	55
Reading Values from the I/O Server into Excel .....	56
Writing Values to the I/O Server from Excel .....	57
Troubleshooting I/O Server Communications Problems .....	58
Debugging Communications Between InTouch and an I/O Server ..	58
Debugging Communications Between SuiteLink and an I/O Server	61
Debugging Communications Between an I/O Server and a PLC.....	62
Configuration File Format .....	69
Opening a Configuration File of Former I/O Servers .....	70
Special Wonderware Logger Messages .....	72

# Wonderware Profibus FMS I/O Server



## Introduction

The Wonderware® Profibus FMS I/O Server (referred to as the server through the remainder of this User's Guide) is a Microsoft® Windows™ application program that acts as a communication protocol server. It allows other Windows application programs access to data within other Profibus FMS devices. The server allows the PC to access other Profibus FMS devices (masters and slaves). The server works with the PROFIBOARD from Softing as well as with Siemens communications processor cards.

While the server is primarily intended for use with Wonderware FactorySuite®, it may be used by any Microsoft Windows program capable of acting as a DDE, FastDDE, or SuiteLink™ client.

## Communications Protocols

Dynamic Data Exchange (DDE) is a communications protocol developed by Microsoft to allow applications in the Windows environment to send/receive data and instructions to/from each other. It implements a client-server relationship between two concurrently running applications. The server application provides the data and accepts requests from any other application interested in its data. Requesting applications are called clients. Some applications such as InTouch and Microsoft Excel can simultaneously be both a client and a server.

FastDDE provides a means of packing many proprietary Wonderware DDE messages into a single Microsoft DDE message. This packing improves efficiency and performance by reducing the total number of DDE transactions required between a client and a server. Although Wonderware's FastDDE has extended the usefulness of DDE for our industry, this extension is being pushed to its performance constraints in distributed environments.

SuiteLink uses a TCP/IP-based protocol and is designed specifically to meet industrial needs such as data integrity, high-throughput, and easier diagnostics. This protocol standard is only supported on Microsoft Windows 2000, Windows XP, and Windows 2003.

SuiteLink is not a replacement for DDE or FastDDE. The protocol used between a client and a server depends on your network connections and configurations. SuiteLink was designed to be the industrial data network distribution standard and provides the following features:

- Value Time Quality (VTQ) places a time stamp and quality indicator on all data values delivered to VTQ-aware clients.


- Extensive diagnostics of the data throughput, server loading, computer resource consumption, and network transport are made accessible through the Microsoft Windows 2000, Windows XP, or Windows 2003 operating system Performance Monitor. This feature is critical for the scheme and maintenance of distributed industrial networks.
- Consistent high data volumes can be maintained between applications regardless if the applications are on a single node or distributed over a large node count.
- The network transport protocol is TCP/IP using Microsoft's standard WinSock interface.

## Accessing Remote Items via the I/O Server

The communications protocol addresses an element of data in a conversation that uses a three-part naming convention that includes the application name, topic name, and item name.

The following briefly describes each portion of this naming convention:

- application name* The name of the Windows program (server) that will be accessing the data element. In the case of data coming from or going to PROFIBUS equipment via this server, the application portion of the address is **PROFIBUS**.
- topic name* Meaningful names are configured in the server to identify specific devices. These names are then used as the topic name in all conversations to that device.  
For example, **CR3**.
- Note** You can define multiple topic names for the same device (PLC) to poll different points at different rates.
- item name* A specific data element within the specified topic.  
For example, when using this server, an item can be a relay, timer, counter, register, and so on., in the PLC.
- Note** The item/point names are predefined by the server. The term "point" is used interchangeably with the term "item" in this User's Guide.

 For more information on item/point names, see the "Item Names" section in this User's Guide.

---

## Getting Started Quickly with the I/O Server

This section briefly describes the components and procedures required to prepare the Wonderware Profibus FMS I/O Server for use. Detailed descriptions can be found in the manuals provided by Siemens, Softing, and sections of this User's Guide.

### Required Hardware and Software

The Wonderware Profibus FMS I/O Server is capable of working with two different manufacturers' communications processor cards (also referred to as boards).

- The Softing board is called PROFiBoard.
- The Siemens board can be CP5613 or CP5614.

These boards can be installed simultaneously on the support platforms, however, it is not recommended.

The Siemens driver software should be loaded and the boards configured using the configuration tools before operating the server. The server can be configured without the driver software loaded or the boards configured, but this is error-prone because the server cannot suggest valid configuration options.

The complexity of describing installation of the adapter cards, configuration of the driver software, and associated configuration tools has forced us to remove any specific start-up configuration instructions. Please refer to the instructions supplied with the driver software and card configuration tools for details. Additional documents are available in Technical Notes, articles on the Comprehensive Support CD, and the Wonderware Web site.

For more information about the supported operating systems, please refer to the Softing or Siemens documentation.

---

**Note** Although Softing supports more than four PROFiBoards per system, the Wonderware Profibus FMS I/O Server is restricted to four boards.

---

---

**Note** For the number of supported Siemens boards per system, please refer to the Siemens documentation.

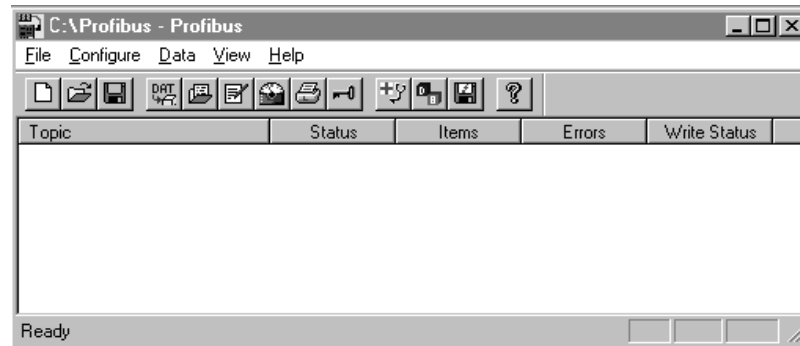
---

## Profibus Main Window

Double-click on the server's icon to start.



- When the server starts, the main window will be displayed:



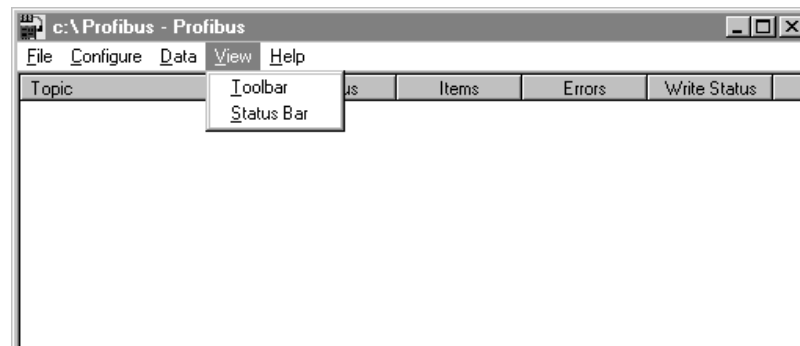
- The current configuration file and its full path are displayed in the main window title bar.
- If any topic is active, it will appear in the client area of this window called the topic monitor list.

## View Menu

The **View** menu has two options that change the appearance of the main window. Both options are enabled or disabled by selecting the menu option. A check next to the option indicates the option is enabled.

- The **Toolbar** option adds (when enabled) or removes the toolbar (small buttons) located below the menu.
- The **Status Bar** option adds (when enabled) or removes the status indication bar located at the bottom of the window.

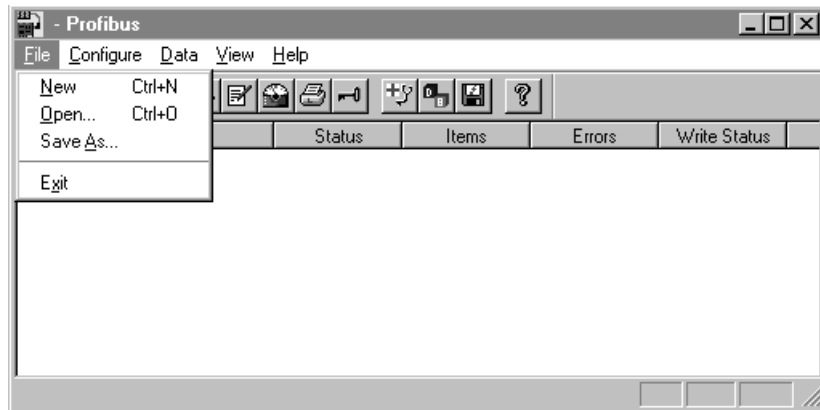
The main window shown above has both options enabled. The main window shown below has both options disabled.





## I/O Server File Menu

The **File** menu options deal with loading and saving the internal topic configuration database.



### New

Clears the internal topic database for a new topic configuration.

- This menu is disabled when the server is active (a client is connected).

### Open

Replaces the internal topic database with the information contained in the user-selected topic configuration file.

- This file is automatically loaded the next time the server is started.
- This menu is disabled when the server is active (a client is connected).

### Save As

Saves the internal topic database under a new name.

- This command is only needed if you want to save the configuration under a different name.
- If you edit the internal topic database, the data is stored automatically in the current configuration file.
- This menu is disabled when the server is active (a client is connected).

### Exit

Terminates the server.

## Configuring the I/O Server

Once the server has been installed, a small amount of configuration is required. Configuring the server automatically creates a configuration file named, **PROFIBUS.CFG**.

- This file stores the configuration information for the boards and all of the topic definitions (described in detail later).
- The configuration file is automatically saved to the directory in which the server is installed unless a different directory is specified.
- The Softing drivers require two additional configuration files for each installed board used by the server. The configuration names are associated with the board as shown in the following:

**Kbl0.dat** and **Buspar0.dat** for PROFIBoard 0\*

**Kbl1.dat** and **Buspar1.dat** for PROFIBoard 1

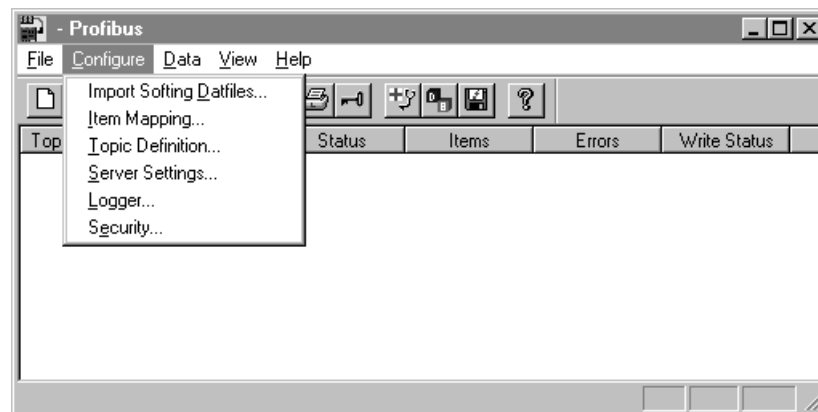
**Kbl2.dat** and **Buspar2.dat** for PROFIBoard 2

**Kbl3.dat** and **Buspar3.dat** for PROFIBoard 3

\* PROFIBoard 0 is the only board supported by the older Softing driver called PAPI50.

- The additional configuration files must exist in the same directory where your configuration file is located.
- The server supports importing files created by Softing Profibus FMS DDE Server.
- If files are not imported, then they are generated automatically when you configure a topic that selects a Softing driver.

To access the options used for the various configurations, open the **Configure** menu:

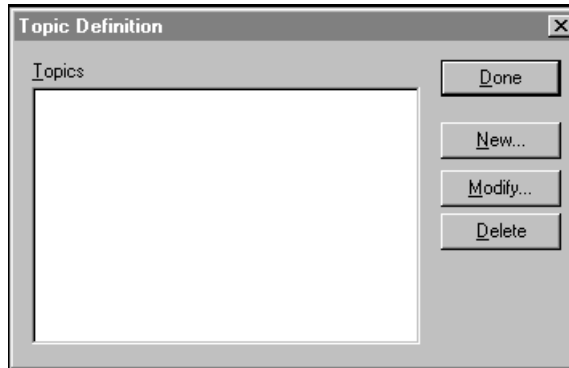


**Note** If any of the options appear dimmed, then these options are not available with this software version.

## Configuring a Topic Definition

Use the **Topic Definition** option from the **Configure** menu to create new, modify, or delete topic definitions.

- One or more topic definitions must exist for each PLC that the server will communicate with.
- Each topic definition must contain a unique name for the PLC associated with it.
- When this option is selected, the **Topic Definition** dialog box will appear:

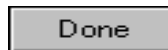


### Topic Definition

---

**Note** Once topics have been defined, their names will be listed in the **Topics** section of this dialog box.

---



1. Click **Done** to close the dialog box and accept any new definitions, modifications, or deletions made.



2. To modify or view an existing topic definition, select its name in the list and click on the **Modify** button.
  - The **Profibus FMS Server Topic Definition** dialog box (described below) will appear displaying the selected topic definition.



3. To delete an existing topic definition, select its name in the list and click on the **Delete** button.
  - A message box will appear prompting confirmation of the deletion.

New...

4. To add a new topic definition, click the **New** button.
  - The **Profibus FMS Server Topic Definition** dialog box will appear.

## Profibus Topic Definition

Due to the fact that this server supports different boards and drivers, the description of creating a topic is divided into three sections.

- The first section called “Common Topic Configuration Settings” describes settings that are valid for all board and driver combinations.
- The remaining two sections called “Configuring a Siemens Topic” and “Configuring a Softing Driver Topic” describe how to configure the board and driver specific settings.

## Common Topic Configuration Settings

1. Enter a unique name (up to 32 characters) for the topic in this text box.

---

**Note** When communicating with a FactorySuite client, this **exact** name is used as the topic name in Access Name definition.

---

2. Enter the frequency (in milliseconds) that the server will acquire data for the items/points associated with this topic.
  - The lowest non-zero value you can enter is 10 ms.
  - If you enter zero, no items in this topic will be updated.

Read initial values

3. Select this option if using Information Report instead of polling.
  - This option is useful if this topic refers to a Communications Reference (CR) which is configured on the remote PLC to send information reports only if a value changes.
  - This server generates a single read of the CR to get initial values.

 Enable access to update interval

4. Select this option to allow clients read/write access to the update interval on this topic using the item name **UPDATEINTERVAL**.
  - If this option is not selected, the client can only read the **UPDATEINTERVAL**.

 Forced read-modify-write cycle

5. This option allows you to improve the writing of Profibus objects which are poked only partially (Profibus objects which contain more than one item).
  - Profibus objects must be written as a complete entity.
  - The server retains a copy of the last value read for each Profibus object containing an item that can be poked.
  - The server uses the retained object for all values in the object except the item poked.
  - If this retained object has not been read recently, some values may differ from what is now in the PLC.
  - This means old values could be written to the device for everything except the poked item.

Select this option to force a read of the Profibus object (gets the latest values) before modification and writing the object to the device.

---

**Note** Poking items in a Profibus object, requires the server to write the whole object. This could affect the other values contained in the object. If you must do partial pokes to large objects, select this option to increase data integrity at the expense of performance.

---

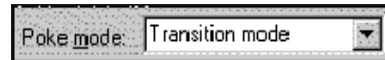
 Disable Polling

6. You can also set the updateinterval to zero if you select the check box **Disable Polling**.
  - Do this if this topic points to a communications reference that supports only information reports.

---

**Note** Different items/points can be polled at different rates by defining multiple topic names for the same communications reference (CR) and setting different update intervals for each topic. The actual update interval for the slowest item on this topic can be read through the item name **MAXINTERVAL** to give you an indication of the performance of your configuration during operation.

---



7. Select the **Poke mode** for this topic from the drop-down menu.
  - Control mode - Preserves poke order and poke values. All client poke values are poked in exactly the same order to the device. Use this mode for control clients such as InBatch, InControl, and so on.
  - Transition mode - Preserves poke order but allows the server to fold poke values to the same item by poking only the first, second, and last value to an item in one timeslice. This mode "thins out" multiple poke values generated by moving a slider to the important transition values (no slider stuttering).
  - Optimization mode - No preservation of poke order and complete folding of pokes to transmit the last value of an item only. Use this mode when performance is critical and poke values of items are independent of each other, such as recipe downloads.



8. Select the driver for this topic.
  - If the letters "inst" are appended to a driver name, the driver is installed.

The driver selected determines most of the remaining steps required to complete topic configuration.

  - When Softing driver is selected, refer to "Configuring a Softing Driver Topic" section in this User's Guide.
  - When Siemens driver is selected, refer to "Configuring a Siemens Driver Topic" section in this User's Guide.

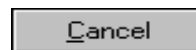
---

**Note** After driver-specific configuration, return to this section and complete the topic definition.

---



9. Select **OK** to accept the changes and exit the dialog box.



10. Select **Cancel** to exit the dialog box without making changes.



11. Select **HELP** to access the on-line Help.

## Configuring a Siemens Driver Topic

Perform these configuration steps for topics using a Siemens driver.

- If the following list boxes are empty, the Siemens driver is either not installed or a Siemens project is not configured (called off-line configuration).
- You can configure the server off-line.
- Enter the exact names that will be used when the Siemens driver is configured.

Board:

1. Select a board from the list of installed CP names.

VFD:

2. Select a virtual field device (VFD) from the list.

Communication Reference

3. Select a CR number from the list.

---

**Note** Topic configuration without a Siemens driver installed, without a configured Siemens project, or with an unreadable project file, is called offline configuration. Offline configuration prevents the server from preparing selection lists of known valid options or doing any selection validation. You must configure the server by entering selections manually. This is error-prone, because the selections must exactly match the Siemens configured names.

---

4. Select **Modify CR** to finish the CR configuration. The **Access Rights** dialog (described below) will appear.

5. Select **OK** to accept the changes and exit the dialog box.

6. Select **Cancel** to exit the dialog box without making changes.

7. Select **HELP** to access the on-line Help.

## Configuring a Softing Driver Topic

Perform the following configuration steps for topics using a Softing driver.

Board: Profiboard 0

1. Select the PROFIboard for this topic.
  - If the Softing driver is installed, the control panel applet Profibus can be used to list all installed PROFIboards.

Communication Parameter Settings...

2. Select **Communication Parameter Settings** to configure Profibus parameters for the board.
  - The **Communication Parameter Settings** dialog box appears:

- This dialog box is used to set the address and other Profibus parameters for a communications board.
- The Profibus parameters must be consistent with the parameters of the other active members on the bus.

## Communications Parameter Settings

Local Station Addr.: 2

(0..126)

1. Enter an address the board will use on the Profibus.
  - If a value less than 126 was defined for the Highest Station Address (HSA) (see HSA), the maximum local station address is limited by HSA.

Baudrate [kBd]: 1500

(9.6, 19.2, ... , 12000)



2. Select the **Baudrate**.

Permissible baud rate values are in Kbaud:

9.6/19.2/93.75/187.5/500/1500/3000/6000/12000

---

**Note** Not all baud rates are supported by all Profibus stations.

---

	Bit Times	
Slot Time (TSL):	3000	(2000 $\mu$ s)

(1..65535 bit times)

3. The **Slot Time** is used to monitor the bus protocol.

- This value must be 2 milliseconds or greater.

Min. St. Delay (min. TSDR):	150	(100 $\mu$ s)
-----------------------------	-----	---------------

(1..65535 bit times)

4. The **Minimal Station Delay Time** specifies the earliest time after which a remote station can send a response message.

Max. St. Delay (max. TSDR):	980	(654 $\mu$ s)
-----------------------------	-----	---------------

(1..65535 bit times)

5. The **Maximal Station Delay Time** specifies the longest time a responder can wait before sending a response frame (message).

Setup Time (TSET):	80	(54 $\mu$ s)
--------------------	----	--------------

(1..65535 bit times)

6. The **Setup Time** specifies the time which expires between an interrupt request and the execution of the necessary response.

Target Rotation Time (TTR):	50000	(33334 $\mu$ s)
-----------------------------	-------	-----------------

(1..65535 bit times)

7. The **Target Rotation Time** is the nominal rotation time of the token.

Highest Station Addr. (HSA):	31
------------------------------	----

(2..126)

8. The **Highest Station Address** specifies the highest address available on the Profibus.

- All addresses configured in topics that use this board must be equal to or lower than this address.

Gap Update Factor (TGUD):	50
---------------------------	----

(1..100)

9. The **Gap Update Factor** specifies a number that when multiplied by the Target Rotation Time equals the Gap Update Time.
- The Gap Update Time is the duration of time required to check all gaps in the station address space for newly activated Profibus devices.

Max. Retry Limit:

(1..8)

10. The **Maximal Retry Limit** specifies how often the driver's lower layer interface repeats a request message getting no response from a known station in between the Slot Time.

Poll List SAP:

(0, 2..60, 128)

11. A Service Access Point (SAP) is the drivers logical interface between a communications channel and the interface (logical channel for layer 2).
- The **Poll List SAP** is the Service Access Point for Master-Slave connections.

---

**Tip** Select **Default** to get appropriate values for the time-based parameters configured in this dialog box. The timing parameters are based on baud rate. Make sure the Baudrate (kBd) setting is correct before selecting **Default**.

---

12. Select **OK** to accept the changes and exit the dialog box.

13. Select **Cancel** to exit without saving.

14. Select **HELP** to access the on-line Help.

## Selecting Communications Reference (CR) for Softing Driver Topic

Communication Reference

1. If CRs are configured for the selected PROFIBoard, you may select one from the list.
2. To configure CRs, refer to the following section, "Configuring Communications References (CR) for Selected PROFIBoard".

- After CRs are configured, return to this section and select one of the CRs as described above.

## Configuring Communications References (CR) for Selected PROFiBoard

**Note** The projected communications reference configured in the server need not be the same as in the remote PLC.

To add, delete, or modify CRs for the selected PROFiBoard, use the following buttons.

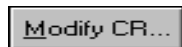


Deletes the communications reference specified in the **Communication Reference** list box.



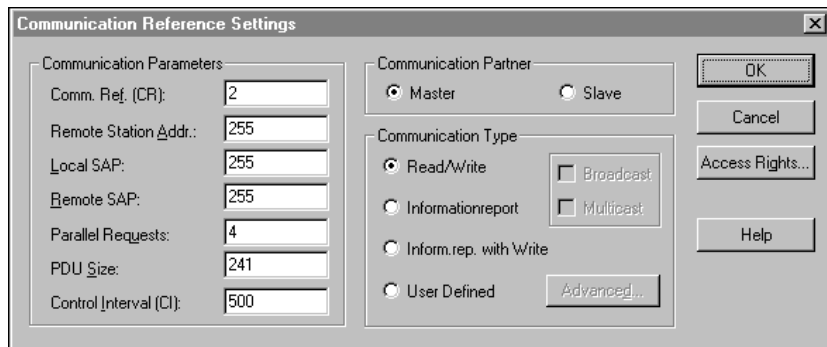
Adds a communications reference for the selected PROFiBoard.

- The **Communication Reference Settings** dialog box will appear.



Modifies the selected communication reference.

- The **Communication Reference Settings** dialog box appears.



## Communications Reference Settings

Communication Parameters	
Comm. Ref. (CR):	<input type="text" value="2"/>
Remote Station Addr.:	<input type="text" value="10"/>
Local SAP:	<input type="text" value="3"/>
Remote SAP:	<input type="text" value="2"/>
Parallel Requests:	<input type="text" value="4"/>
PDU Size:	<input type="text" value="241"/>
Control Interval (CI):	<input type="text" value="500"/>

The settings of the following **Communications Parameters** are partly dependent on the settings in the **Communications Partner** (remote station) and **Communications Type**.

Comm. Ref. (CR):	<input type="text" value="2"/>
------------------	--------------------------------

(2..128)

1. Each communications relation is identified by a unique Communications Reference (CR) (logical address).

Remote Station Addr.:	<input type="text" value="255"/>
-----------------------	----------------------------------

(0..126, 255)

2. This value specifies the physical station address of the communications partner (remote Profibus station).
  - If a value less than 126 is defined for the Highest Station Address (HSA) (see Communications Parameter Settings), the maximum station address is limited by HSA.

---

**Note** Specifications can be made for Broad-and-Multicast connections whether data of a specific transmitter (0..125) or all sending agents (255) is to be received.

---

Local SAP:	<input type="text" value="12"/>
------------	---------------------------------

(0, 2..62, 63, Poll List SAP)

3. This value identifies the local Service Access Point of protocol layer 2.
  - Depending on the selections made for **Communications Partner** and **Communications Type** (described below), the following value ranges are valid for Local SAP:
 

63	For receipt of INFORMATIONREPORT as a broadcast message. This input field (Local SAP) will be disabled.
Poll List SAP	For master/slave connections. The input field will be disabled (see Communications Parameter Settings).
0, 2..62	For master/master connections.

Remote SAP:

(0, 2..62)

4. This value identifies the remote Service Access Point (SAP) of protocol layer 2.
- The Remote SAP is the identification code of the logical channel for the communications partner.
  - When the server is the receiver of a broad- or multicast-communications relation, Remote SAP is irrelevant. The input box will be disabled.
  - The Remote SAP value must agree with the local SAP configured in the communications partner (remote Profibus station) in all other cases.

Parallel Requests:

(1..20)

5. Parallel Requests defines the maximum number of parallel read or write requests.
- When the Informationreport option is selected, Parallel Requests specifies the maximum number of requests the Wonderware Profibus FMS I/O Server can receive without having to send a transmit acknowledgment.
  - If the FMS services READ and WRITE are used, Parallel Requests specifies the maximum number of requests the Wonderware ProfibusS FMS I/O Server may send before receiving a transmit acknowledgment.

PDU Size:

(24..241)

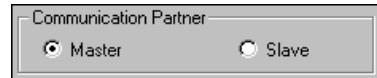
6. This value specifies the maximum length of the receive or send buffer for a PDU (Protocol Data Unit).
- Generally, the receive buffer of a station must be at least as large as the send buffer of the communications partner.

Control Interval (CI):

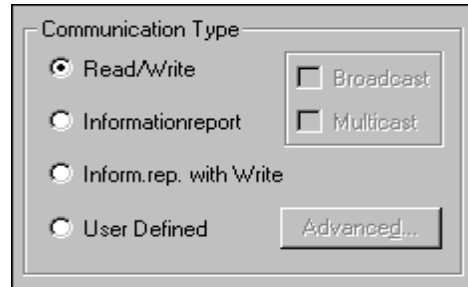
(0.. 4294967295)

7. CI specifies the time interval for communication monitoring.
- |                |                                       |
|----------------|---------------------------------------|
| 0              | No time monitoring                    |
| 1.. 4294967295 | Monitoring interval in units of 10 ms |
- If no useful frames are transmitted on a connection, an idle frame will be sent by both local and remote stations three times per interval (CI).
  - If one of the two stations does not receive a useful or idle frame within an interval (CI), it breaks the connection.

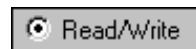
- The interval (CI) must be the same for both stations.
- Comparison of the CI values for the stations is done when a connection is established.



8. Select whether the communications partner (the remote station) is a Profibus master or Profibus slave.

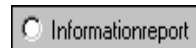


9. The Communications Type settings defines the communications relation of a connection.
- The communications type defines the FMS services and features supported by the communications relation.
  - The communications type must be the same for both communications partners of a connection. This is checked when a connection is established.
  - The option buttons Read/Write, Informationreport and Inform.rep. with Write specify which FMS services are used on the connection.
  - If Use Advanced is selected, manual entry of FMS services is enabled. This should only be done by users who are very familiar with Profibus FMS.



10. With Read/Write, the data is cyclically read (polled).

- Writes occur by means of the FMS service WRITE.

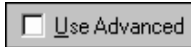


11. With this type of communications, unsolicited (unpolled) data is received from the communications partner via the FMS service INFORMATIONREPORT.

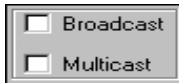
- The data cannot be written.
- Since the data is not polled, bus loading is diminished.
- If the communications partner sends data only when a change of value occurs, further bus loading is eliminated.



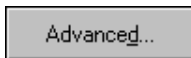
12. The same as Informationreport (described above), except the unsolicited data sent from the communications partner can be written.



13. The **Advanced** button is only available when **User Defined** is selected in the **Communication Reference Settings** dialog box.



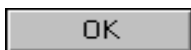
14. The selections Broadcast and Multicast are only enabled when Master and Informationreport are selected.
- Informationreport also influences the effect of the parameters Parallel Requests and PDU Size.



15. Select **Advanced** for advanced configuration possibilities.
- The **Advanced Communication Parameter Settings** dialog box will appear.
  - This should only be done by users that are familiar with Profibus FMS.



16. Select **Access Rights** to define the connections access rights.
- The **Access Rights** dialog box will appear.



17. Select **OK** to accept the changes and exit the dialog box.



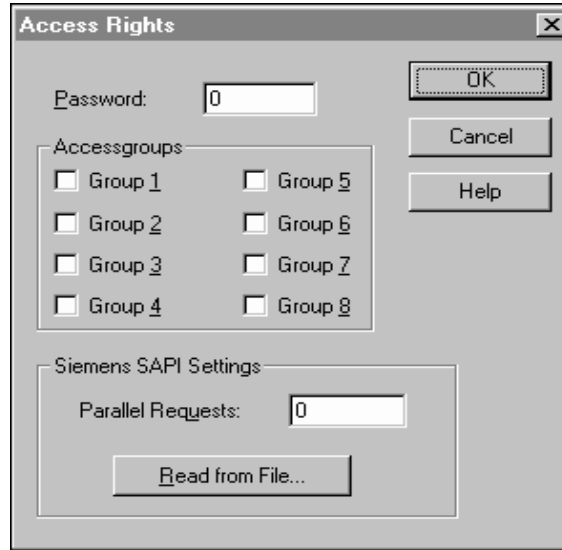
18. Select **Cancel** to exit the dialog box without making changes.



19. Select **HELP** to access the on-line Help.

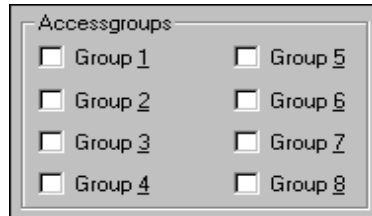
## Access Rights

The **Access Rights** dialog box is used to define the access rights for the connection.



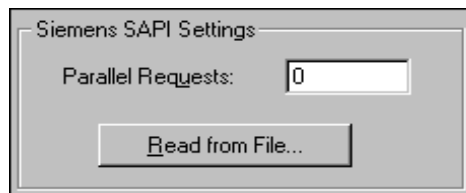
(0..255)

1. Enter a **Password** (other than 0) if desired.



2. An access group can be defined by selecting one or more groups.
  - Each group is represented by one bit in access parameters used to establish features of a connection.
  - When the Profibus I/O Server sets up communications, the access parameters are stored as a communications (connection) feature.
  - This enables access to protected objects residing in the communications partner.

## Special Settings for the Siemens SAPI



This option is available only if you have chosen the Siemens driver in the **Topic Definition** dialog box.

1. Enter the details for the communications via the CP5613/5614 board.



A screenshot of a dialog box with a label 'Parallel Requests:' followed by a text input field containing the number '0'.

2. This edit box is needed to tell the server the number of available parallel requests to this connection for the Siemens driver.
  - Its meaning is the same as in the **Communication Reference Settings** dialog box for the Softing driver.

A screenshot of a button with the text 'Read from File...'.

3. Select **Read from File** to get the value from the current Siemens project file
  - If the current project file is not available, the server will ask you to specify another project file for reading out the required information.

A screenshot of a button with the text 'OK'.

4. Select **OK** to accept the changes and exit the dialog box.

A screenshot of a button with the text 'Cancel'.

5. Select **Cancel** to exit the dialog box without making changes.

A screenshot of a button with the text 'Help'.

6. Select **HELP** to access the on-line Help.

## Advanced Communications Parameter Settings

The **Advanced Communication Parameter Settings** dialog box is used to specify advanced parameters for a communications reference (CR).

**Note** If you are not an experienced user of the Profibus, do not make changes in this dialog box.

- Select **Cancel** to return to exit the dialog box without storing changes.

## Communications Parameter Settings

You can specify the maximum number of pending received/sent confirmed/unconfirmed services.

### 1. Max. SCC: (0...255)

- This value specifies the maximum number of pending responses the PROFIBoard could process as client on this CR.
- This value must be lower than or equal to the RCC of the remote station.
- This value is equal to the Parallel Requests entry in the Communications Reference Settings dialog box if Read/Write is the selected Communications Type.

### 2. Max. RCC: (0...255)

- This value specifies the maximum number of indications of confirmed services the PROFIBoard could accept as a server on this CR without sending a response.

- This value must be greater or equal the SCC of the remote station.
3. Max. SAC: (0...255)
    - This value specifies how many unconfirmed services the PROFIBoard could process as a client on this CR without getting a LLI(lower level interface)-receipt from the server.
    - This value must be lower or equal the RAC of the remote station.
  4. Max. RAC: (0...255)
    - This value specifies how many indications of unconfirmed services the PROFIBoard could accept as a server on this CR without sending an LLI-receipt to the client.
    - This value must be greater than or equal to the SAC of the partner.
    - This value is equal to the Parallel Requests entry in the **Communications Reference Settings** dialog box if Informationreport is the selected Communications Type.

max. PDU Sizes

PDU send high:	0
PDU send low:	241
PDU receive high:	0
PDU receive low:	241

5. Specify the PDU size of send/received high/low priority services in this dialog box.
  - PDU send high: (0..241)  
Maximum FMS-PDU-size for requests with high priority.
  - PDU send low: (0..241)  
Maximum FMS/FMA7-PDU-size for requests with low priority.
  - PDU receive high: (0..241)  
Maximum FMS-PDU-size for indications with high priority.
  - PDU receive low: (0..241)  
Maximum FMS/FMA7-PDU-size for indications with low priority.

Supported FMS features

FMS 0 (hex):	0	FMS 3 (hex):	0
FMS 1 (hex):	30	FMS 4 (hex):	0
FMS 2 (hex):	0	FMS 5 (hex):	0

6. Specify which features the server should supply as client and as server.
  - FMS 0, 1, and 2 are for the client features, whereas FMS 3, 4, and 5 are for the server features.

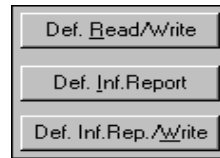
---

**Note** Refer to the DIN 19245 Part 1 and Part 2 to get information of the meaning of these hexadecimal values.

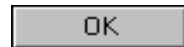
---

- The Profibus FMS server directly supports only a few FMS features.

- If a remote station requires a service not supported by the server, settings in these boxes may solve the incompatibility.



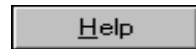
7. Selecting the Read/Write, Inf.Report, or Inf.Rep./Write support buttons will show their defaults settings.



8. Select **OK** to accept the changes and exit the dialog box.



9. Select **Cancel** to exit the dialog box without making changes.



10. Select **HELP** to access the on-line Help.

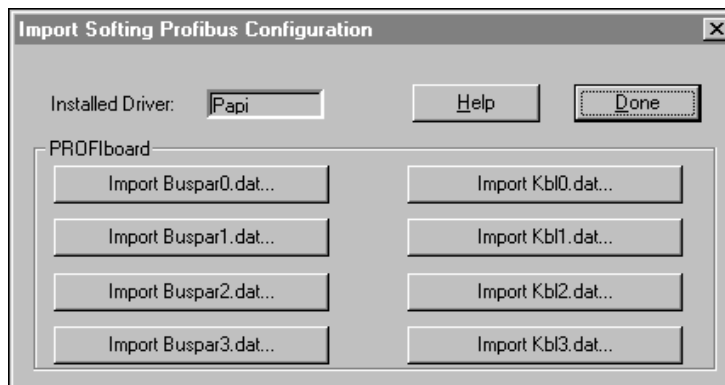
## Importing Softing Datfiles

This menu selection is only of interest if Softing drivers (PAPI50 or PAPI) are used by any of the server's topics and old Softing configuration (.dat) files are available for importing. The Softing drivers need a file containing the Profibus bus parameters (BusparX.dat) and a file containing the projected CRs (KblX.dat).

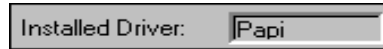
Creating a topic configuration for Profiboard0 creates the files Buspar0.dat and Kbl0.dat to store the Profibus configuration. The basis for the two-parameter files can be either imported files or default settings as defined by the server.

Upgrading from the Softing DDE Server may leave a Kbl.dat and a Buspar.dat in the DDE Servers directory. These files can be imported into the server and new files created (with different names) that are compatible to the server. In the new I/O Server you must have these two files for each board. Profiboard0 (which is the first installed PROFiBoard) needs, for example Buspar0.dat and Kbl0.dat. This means at a minimum the old Softing files must be copied and renamed.

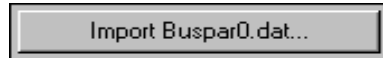
- When the **Import Softing Datfiles** option from the **Configuration** menu is selected, the **Import Softing Profibus Configuration** dialog box will appear:



## Import Softing Profibus Configuration



1. This box shows you which library is loaded into the server.
  - Papi50 shows that you are using the old Softing libraries.
  - Papi is displayed if you are using the new PROFiBoard libraries and None indicates that these libraries were not loaded.
  - If you use a Papi50, only Buspar0.dat and Kbl0.dat are needed.



2. Using this button you can browse for Buspar.dat files and copy them into your configurations directory with the name shown on the button.



3. Clicking this button allows you to browse for Kbl.dat files and copy them into your configurations directory with the name shown on the button.
4. Select **Done** to exit this dialog box and load the imported files into the server's memory.



5. Select **HELP** to access the on-line Help.

---

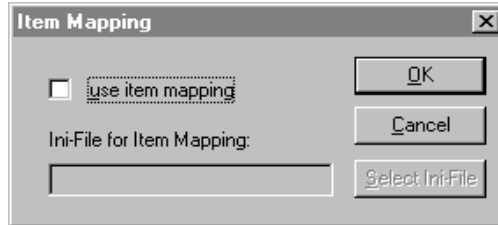
**Note** The BusparX.dat and the KblX.dat must be in the same directory as the configuration file. If they exist in another directory, you can import them to the same directory where the server is. If you finish this dialog box with the **Done** button, the locally copied files are scanned and loaded into the server. If something goes wrong, WWLogger shows you which files were corrupted.

---

## Item Mapping

This feature is supported for upward compatibility to the former Softing Profibus FMS DDE Servers.

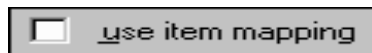
- From the **Configure** menu, select **Item Mapping**.
  - The **Item Mapping** dialog box appears:



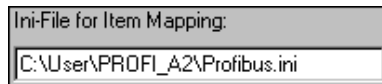
- You will be asked whether you want to use the feature of reading substituted itemnames from a former Profibus.ini file.
  - The server reads from this ini-file the key <itemname> out of the section Items and uses this setting to advise the associated itemname.
  - If this itemname is not configured in the ini-file, the server tries to use this itemname as is to advise a valid item.
  - You can use this replacement in all configured topics at the same time.

For example:

```
[Items]
Temperature=A120B10S1T2
Pressure=O100T3
DB100DW0=O101T5
...
```



- Check this box if you want to use this feature.



- Manually enter the path and filename of an ini-file you want to check for symbolic itemnames.
  - This option is available only if the **Use Item Mapping** check box is selected.



- Browse for an ini-file, which is scanned for symbolic itemnames when you advise an item, by clicking on this button.
  - The chosen ini-filename is placed in the Edit control previously described.

- This button is disabled if the **Use Item Mapping** check box is not selected.

---

**Note** Since the itemnames (see section "Item Names") are very cryptic most times, use this feature to make the items better understandable. This makes it a lot easier to use Profibus FMS items in a FactorySuite client.

---



## Configuring the I/O Server Settings

Use the **Server Settings** option from the **Configure** menu to perform either one of the following activities:

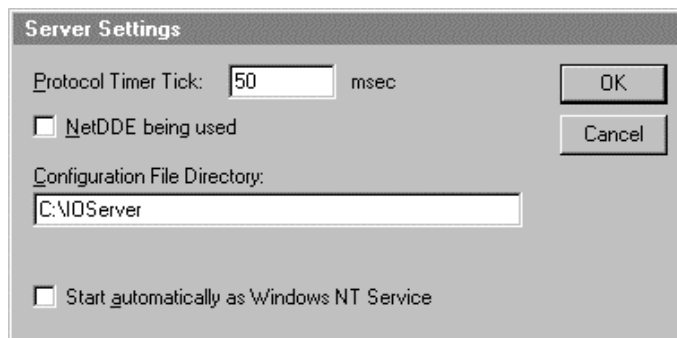
- Change the protocol timer.
- Specify the default configuration file path.
- Enable the server to start automatically as a Windows service.

---

**Note** When configuring the server on Windows 2000, Windows XP, or Windows 2003, you must be logged on with system administrator privileges. This will ensure that updates to the system registry may be performed.

---

- When the **Server Settings** option is selected, the **Server Settings** dialog box will appear:



### Server Settings

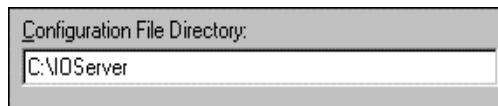


1. Enter the frequency (in milliseconds) that the server is to check for data to process.
  - This should be approximately two to four times faster than the fastest rate desired to update data from the equipment.

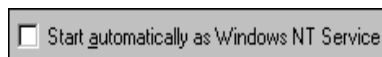
---

**Note** The default protocol timer tick value will vary between servers.

---



2. To create a new default configuration file, enter the complete path for the directory in which the file is to be saved in this box.
  - This new path will automatically be written to the **WIN.INI** file and the server will use this path to load its configuration file the next time it is started.



3. Enable this option for the server to start as a Windows service.
  - Windows2000, Windows XP, and Windows 2003 offer the capability of running applications even when a user is not logged on to the system. This is valuable when systems must operate in an unattended mode.
  - Enabling this option and restarting the system will cause the server to run as a Windows service.

---

**Note** However, to view configuration information or to reconfigure the server, you must log on to the system. Any server-related problems that may arise such as missing adapter cards, licensing failures, or device drivers not loading will not be visible to you until a logon is performed.

---

4. Disable this option and restart the system for the server to run as a Windows 2000, Windows XP, or Windows 2003 application program once again.

---

**Note** It is highly recommended that the server is configured and communicating successfully prior to running it as a Windows service.

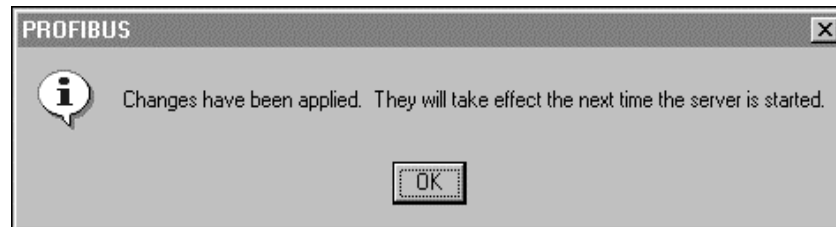
---

---

**Note** To uninstall the server while the server is in Windows Services Enabled mode, deselect the Windows Services check box, restart the computer for the changes to take effect, and only then uninstall or reinstall to the same or different location.

---

5. Click **Cancel** to close the dialog box without saving changes.
6. Click **OK** to accept the server settings.
  - The following message box will appear:



7. Click **OK** to close the dialog box.

---

**Note** You must restart the computer for the changes to take effect.

---

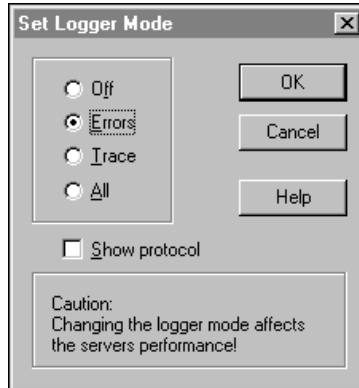
## Configuring the Logger

Use the **Logger** option from the **Configure** menu to set the working logger mode of the server.

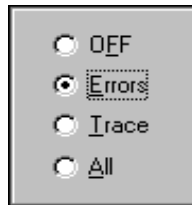
---

**Note** The options controlled by this dialog box are NOT retained in the configuration file.

---



## Setting the Logger Mode




---

**Note** Each time the server starts, the logger mode will default to **Errors**.

---

1. Select **Off** to disable normal server logging.
2. Select **Errors** for normal operation logging to the Wonderware Logger.
3. Select **Trace** to log errors and all activation/deactivation activities including calls to the driver libraries.
4. Select **All** to log all activities including single item value updates.



5. Enable **Show protocol** to add PLC communications message data to the selected logger mode.
6. Click **OK** to use changes and close the dialog box.
7. Click **Cancel** to close the dialog box without changing the current settings.

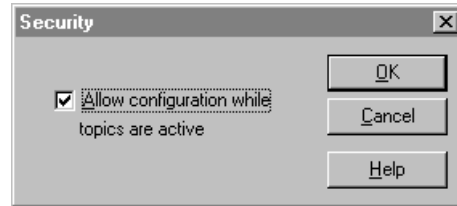
---

**Note** When logging activity increases, the server's performance degrades.

---

## Configuring Security

Use the **Security** option from the configure menu to control server configuration changes.



### Security

When the server is not active (no clients connected), all server configuration options are available for modification.

- The default setting for **Allow configuration while topics are active** is disabled.

---

**Note** When disabled, all topics are viewable but locked against changes while the server is active (a client is connected).

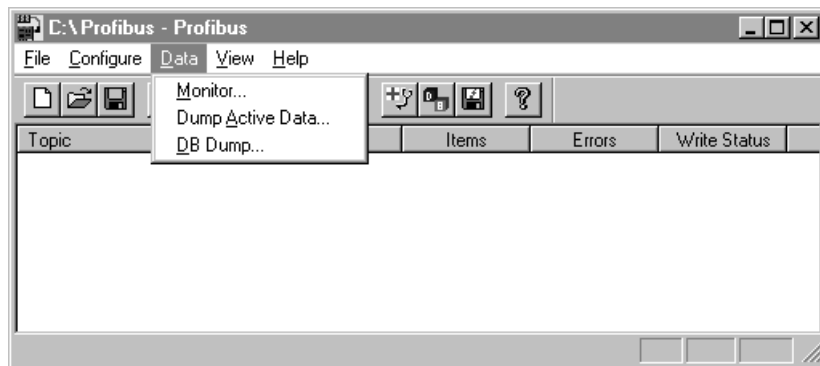
---

1. Enable **Allow configuration while topics are active** to allow write access to some parameters of the topic configuration while the server is active.
  - This server supports write access to **Polling Interval**, **Enable access to update interval**, and **Disable Polling**.
  - You cannot add, delete, rename, or change other parameters of a topic configuration.
2. Click **OK** to save changes and close the dialog box.
3. Click **Cancel** to close the dialog box without saving changes.

## I/O Server Data Menu

The **Data** menu contains the following sub-menus:

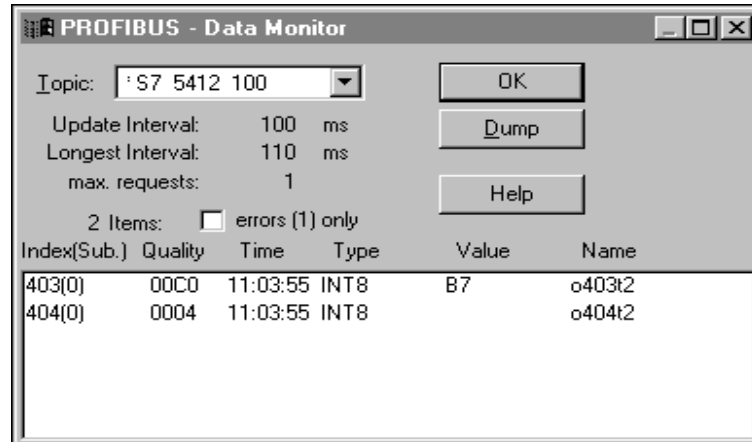
- Two commands that are used for diagnostic purposes during runtime.
  - **Monitor**
  - **Dump Active Data**
- One command for transferring the topic configuration to the FactorySuite visualization client.
  - **DB Dump**



## Data Monitor

This option is used to display current information for an active topic and its corresponding items/points.

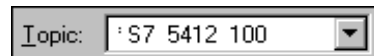
- When this command is selected, the **View Item States** dialog box appears:



## View Item States

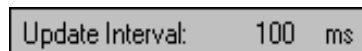
The **Data Monitor** dialog box displays information for any allocated topic and its active items.

- The data is updated as it changes.
- It is a useful tool for tracking down errors, for determining bus performance, and to validate item values.



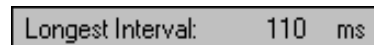
This list box allows the selection of the allocated topics.

- A preceding '\*' indicates that at least one item in this topic has an error, while a preceding '#' indicates bad status (disconnected).



This box displays the current configured update interval of the topic.

- This value changes whenever the value is poked.



This box displays the current update interval of the slowest item of the topic.

- This value is measured for each poll cycle and each received cyclic service indication.
- If this value drastically differs from the desired update interval, the communications media is not fast enough to satisfy the load.

**Note** Both values (update interval and longest interval) are accessible. You can create a Wonderware FactorySuite client performance meter by displaying these values graphically for each topic. If access is enabled, you can even tune the bus performance conveniently from a FactorySuite client by poking new update intervals.

max. requests: 1

This box displays the maximal requests which can be sent parallel on the topics communications reference.

2 Items:  errors (1) only

This box displays the number of active items and the number of items with errors (in parenthesis).

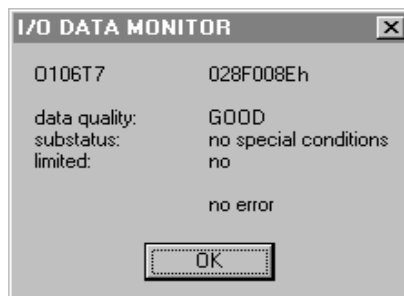
- If you check the box, only the items with errors will be displayed in the **Item Data** list box.

Index(Sub.)	Quality	Time	Type	Value	Name
403(0)	00C0	11:03:55	INT8	B7	o403t2
404(0)	0004	11:03:55	INT8		o404t2

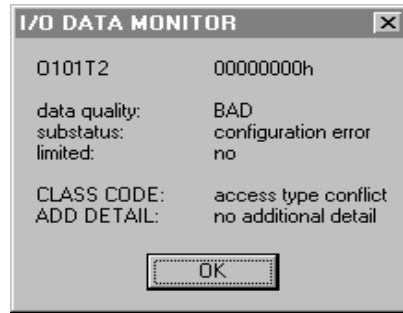
The **Item Data** list box displays information about each item per row. The box is divided into 6 columns:

- **Index(Sub.)** shows the index of the Profibus object which contains the item. (with the subindex of the message in parenthesis).
- **Quality** displays the item's quality.
- **Time** displays the item's timestamp.
- **Type** displays the item's Profibus object data type.
- **Value** displays the item's data in hexadecimal notation. If the data is larger than 4 bytes (as in the case of strings or data blocks), it will be indicated by dots. For example, AB0102FF.. . Strings are displayed as string values and reals are displayed as real values.
- **Name** contains the item name.

Clicking on an item line generates a dialog box showing the item name and a message.



- In the case of an error, a dialog box with an error message describing the error appears.



Choose **Dump** to dump the contents of the monitor window into an ASCII text file.

- You can load this file into Excel or any standard text editor.
- All columns are separated by tabs.
- Set the tabs' width of your editor appropriately.

After the dump is completed the server displays a message box confirming the name of the file the data was dumped to:



The server automatically generates the filenames in the following format:

**<current working directory>\datmon<nr>.txt**

- Where number (0..99) is incremented each time the file is dumped.
- Existing files with the same name are erased.



## Dumping Active Data to a File

Use the **Dump Active Data** option from the **Data** menu to dump information on topics with active items into an ASCII text file.

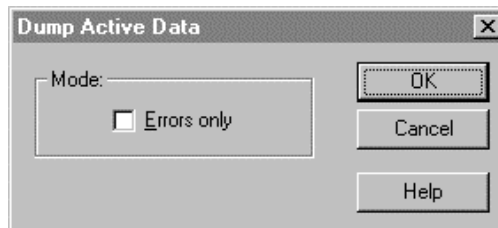
- The resulting file can be loaded into Excel or any standard text editor.
- All columns are separated by tabs.

The server automatically generates the ASCII text file name and sets the files location using the following pattern:

**<current working directory>\datdmpXX.txt**

- Where XX is a two digit number between 00 and 99.
- The server increments XX each time a file is dumped.

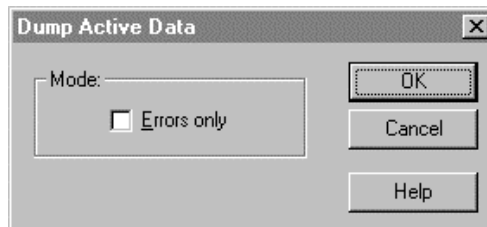
When the **Dump Active Data** option is selected, the **Dump Active Data** dialog box will appear:



## Dumping Active Data

The following steps describe how active data is dumped.

1. Enable **Errors only** option to dump topics with errors.
2. Click **OK** to start the dump.
3. Click **Cancel** to close the dialog box without creating a dump file.
  - After the dump is complete, a message box containing the newly created ASCII text file name is displayed.



---

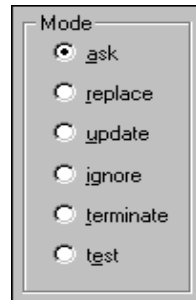
**Note** Existing files with the same name are erased.

---

## DB Dump

This option is used to dump the topic configuration into a .CSV (Comma Separated Variable) file which can be loaded through the **DbLoad** utility into InTouch.

- When this menu command is selected, the **DB Dump** dialog box appears:



1. Select the mode for loading the .CVS file to the FactorySuite client database.

---

**Note** Refer to the FactorySuite documentation for information about the mode specifiers.

---



2. Select this check box if you want to read the remote object dictionary of all configured topics and let the server automatically generate items for this topics.

---

**Note** This feature is only available for topics using the Softing driver.

---

- The generated items have the following structure:  
**<topicname>\_<objectspecifier>**
- Since the object specifier could have a length up to twenty-six characters, it is useful to have topic names with a maximal length of five characters to use this feature without restrictions.

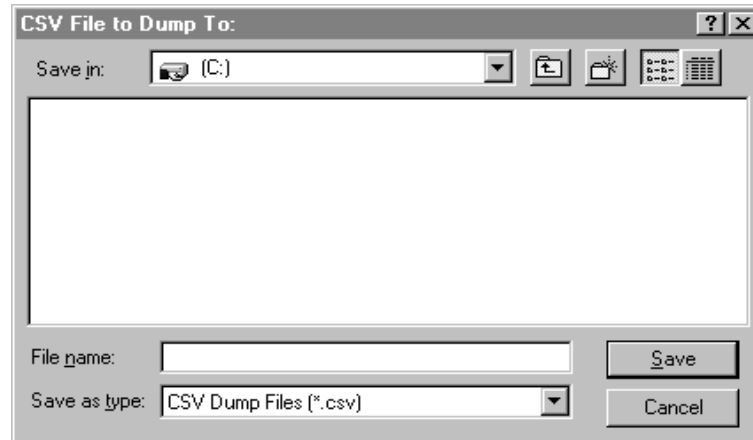
- Multiple objects like bit strings or array objects create only items for the first element so you can easily create more items for this object in MS Excel.
- The array for this object is dumped to the comment field of the first item.

## Dumping Topic Database to a File

Use the **DB Dump** option from the **Data** menu to dump the internal topic database into a CSV format file.

- Wonderware's DbLoad utility can use the resulting file to automatically generate InTouch access names.

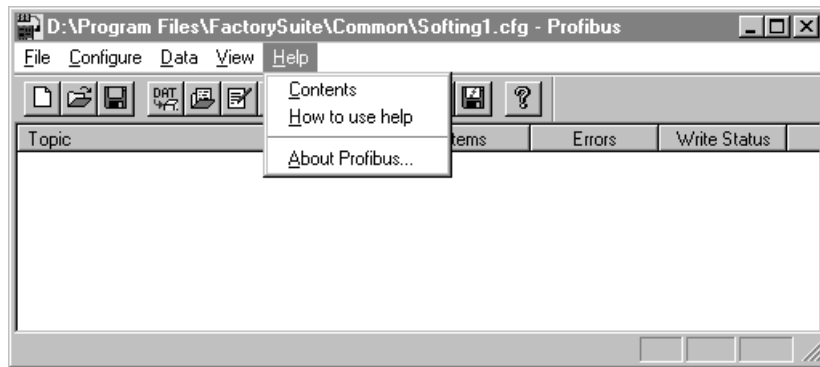
Create the file by selecting a directory and filename using the standard dialog box shown below.



## Accessing I/O Server Help

The **Help** menu contains three options that are used to access help for the server:

- Contents
- How to Use Help
- About Profibus



The following paragraphs briefly describe the **Help** menu options.

### Contents

This option is used to display the table of contents for the Help file.

### How to Use Help

This option is used to access a list of basic instructions for using the Help file.

### About Profibus

This option is used to access miscellaneous information regarding the server, such as the software version, the copyright information, license information, and so on.

Your FactorySuite system license information can be viewed through the license viewing utility that is launched from the **About** dialog box.

For more information on the license viewing utility, see your online *FactorySuite System Administrator's Guide*.

## Item Names

The item name defines the object of the communications partner, which is accessed by the Wonderware Profibus FMS I/O Server.

- Each item accesses exactly one object in case of a simple variable, or parts of an object, if elements of a variable (Profibus-data types Array, Record, or Variable-List) are accessed, for example, one bit of an object of data type Bit-String.
- The object definition (data type, length...) is stated in the object dictionary of the communications partner.

The item name (item syntax) consists of key letters (O, A, R, V, T, L, N, B, S, F) and the corresponding parameters. In the following, both statements are named "parameter" for short.

- The description of the item syntax is divided into items for access to simple variable objects, array variable objects, record variable objects, and variable list objects.

### Simple variable:

**O**<object index> **T**<data type> [**L**<length> [**N**<element index>]]

### Array variable:

**A**<object index> [**B**<block size>] **S**<subindex> **T**<data type>  
[**L**<length> [**N**<element index>]]

### Record:

**R**<object index> [**B**<block size> **F**<offset>] [**S**<subindex>] **T**<data type> [**L**<length> [**N**<element index>]]

### Variable list:

**V**<object index> **B**<block size> **F**<offset> **T**<data type> [**L**<length>  
[**N**<element index>]]

- The parameters can be combined in an arbitrary order.

---

**Note** Parameters in brackets [] are optional.

---

**O**<Index to a simple object>,

**A**<Index to an array object>,

**R**<Index to a record object>,

**V**<Index to a variable list object>:

range: 15..65535

Object index is the logical address of the object, as configured in the object dictionary in the partner station.

**T**<data type>:

range: 1..10, 12..14

Data type describes the Profibus data type of the object as configured in the object dictionary of the communications partner.

- The values for data type correspond to the data-type definition of the Profibus standard.

- The following table displays all valid object data types with their mapping on the I/O data types:

<data type>	ProfibusData Type	I/O Data Types	<length> Definition	<element index> Definition	Range
1	BOOL	IO Discrete	No	No	0 or 1
2	INT8	IO Integer	No	No	-128 – 127
3	INT16	IO Integer	No	No	-32768 – 32767
4	INT32	IO Integer	No	No	-2147483648 – 2147483647
5	USIGN8	IO Integer	No	No	0 – 255
6	USIGN16	IO Integer	No	No	0 – 65535
7	USIGN32	IO Integer	No	No	0 – 2147483647
8	Float	IO Real	No	No	-3.4E+38 – 3.4E+38
9	Vis-String	IO String	Yes	Possible	ASCII-7 character set
10	Octet-String	IO Integer	Yes	Yes	
12	Time-Of-Day	IO String	Possible	No	
13	TimeDifference	IO String	Possible	No	
14	Bit-String	IO Discrete	Yes	Yes	0 or 1

#### L<length>:

range: data-type-dependent, specification: data-type-dependent, unit: byte

The parameter length must be entered for objects of the data type "Vis-Str" (T9), "Octet-Str" (T10), and "Bit-String" (T14).

- Length is defined in "byte".

For objects of the data type Time-Of-Day (T12) and Time-Difference (T13), the length specifier is used to decide between the short form (L4) and the long form (L6).

- If no length is specified, the server uses the short form.

The parameter length must be entered as configured in the object definition in the object dictionary of the communications partner.

- For objects of any other data type, the length is implicitly enclosed in the data type.

- The following table displays the range of the parameter length for the different data types:

<data type>	Range	Length More Than Defined in Object Dictionary	Length Less Than Defined in Object Dictionary
Vis-Str (9)	1..231 bytes	Filled with blanks up to length	Truncated to length
Octet-Str (10)	1..231 bytes	Don't care	Error on receiving the message (buffer too small)
Time-Of-Day (12)	4 or 6 bytes	Error	Error
Time-Difference (13)	4 or 6 bytes	Error	Error
Bit-String (14)	1..231 bytes (8..1848 bits)	Don't care	Error on access to the element > length

**N**<element index>:

range: data-type-dependent (Bit-String: 0..8\*length-1, Octet-String and Vis-Str: 0..length-1), specification: data-type-dependent

This parameter must be entered for data type "Bit-String" (T14) and "Octet-String" (T10) and optionally can be entered for data type "Vis-Str"(T9).

- With element index in an object the requested element (bit, octet, or character) is addressed, the discrete value of this element is mapped to an I/O variable (IO Discrete, IO Integer, IO String).

**B**<block size>:

range: object dependent

With specification of the parameter block size, the access mode is set to 'block mode'.

- In block size the size of the complete object (in bytes) must be entered as in the object dictionary OD of the other Profibus node configured.
- You do not have to use block size for simple variable objects.

**Rule for array and record objects:**

If not specified, the access mode is set to "no block mode," that means access by subindex.

**Rule for record objects:**

The specification of the parameter block size always requires the specification of the parameter offset!

**Rule for variable list objects:**

The parameter block size must always be entered!



**S**<subindex>:

With the parameter subindex a single element of a object can be selected.

- The valid range depends on the data type and the amount of user data which can be transferred in one telegram (maximum 231 bytes); the subindex may not be greater than the maximum number of elements, configured for the record object in the object dictionary of the communications partner.
- The first record element is addressed with subindex 1 (not 0!).

**Rule for array objects:**

	Data Type	Range Subindex
1	Bool	1 to 231
2	Int8	1 to 231
3	Int16	1 to 115
4	Int32	1 to 57
5	Unsign8	1 to 231
6	Unsign16	1 to 115
7	Unsign32	1 to 57
8	Float	1 to 57
9	Vis-Str	Depending on the length of Vis-Str.
10	Octet-Str	Depending on the length of Octet-Str.
12	Time-Of-Day	1 to 38 (long form) resp. 1 to 57 (short form)
13	Time-Difference	1 to 38 (long form) resp. 1 to 57 (short form)
14	Bit-String	Depending on the length of Bit-Str.

**Rule for record objects:**

The parameter subindex may not be entered if block mode is defined!

**F**<offset>:

range: object dependent

The parameter offset defines the start address (zero-based) of the requested element within the object.

- To calculate offset the bytes of all elements, which are configured before the requested element, are accumulated.

**Rule for record objects:**

The parameter offset may only be entered if the parameter block size is specified!

Exemplification: To access a record in block mode it is not sufficient to specify the subindex to address a specific element, since the size of the elements configured at addresses before the selected element are unknown. (The record definition in the object dictionary of the communications partner is unknown in the Wonderware Profibus FMS IO Server).

**Rule for variable list objects:**

The parameter offset must always be entered!

**Additional HEXASCII Items**

HEXASCII items are available for array and record objects.

- You can advise a HEXASCII item for a Profibus array object by adding a dot and a length specifier following the subindex, or by choosing subindex 0 and a block specifier (Bxx).
- The Bxx (maximal byte length of the item) part must be consistent with the subindex, length, and type information in the itemname.

Examples:

A1020T3B40S0: String with 20 INT16 values (subindex 1 to 20) displayed in HEXASCII.

A1500T4B20S2.5: String with 5 INT32 values (subindex 2 to 6) displayed in HEXASCII.

HEXASCII items are also available for Profibus record objects.

- You can advise a HEXASCII item for a record object with a dot and a length specifier following the offset part in the item name.
- The length extension must be a multiple of the specified type's byte length.

Examples:

R1340T8B36F8.8: HEXASCII string of two real values (beginning on byte offset 8).

R1680T2B200F0.200: HEXASCII string of the whole object (assuming the objects length in the PLC is also 200 bytes).

---

## Predefined Item/Point Names

The Wonderware Profibus I/O Server offers additional items for each topic to acquire data about different aspects of the communications and to control communications properties.

### UPDATEINTERVAL Item

The **UPDATEINTERVAL** item is used to access the currently set update interval.

- It is the same value displayed in the monitor window of the server.
- It indicates the current requested update interval in milliseconds.
- If the corresponding topic is configured for **Enable access to update interval**, a client can poke new values to this item.
- In any case the value can always be read through DDE or SuiteLink.
- The range of valid values differs with respect to the topic settings.
- The value of zero indicates that no items on that topic are updated.

Tag Type: INTEGER

ACCESS: READ, WRITE (if configured)

RANGE: 0..2147483647 (0 means polling is disabled and items are updated via information report (if configured in the PLC))

---

**Note** By poking a value of zero to the **UPDATEINTERVAL** item, a client can conveniently stop all update activities on the corresponding topic without having to deactivate the items.

---

### MAXINTERVAL Item

The **MAXINTERVAL** item is used to access the measured maximum update interval in milliseconds of all items for the corresponding topic for the last completed poll cycle.

- It is the same value displayed in the monitor window of the server under "Longest Interval."
- This item is read-only.

Tag Type: INTEGER

ACCESS: READ

RANGE: 0..2147483647

---

**Note** Use the **UPDATEINTERVAL** and **MAXINTERVAL** items to conveniently tune the performance of the communications.

---

## STORESETTINGS Item

The **STORESETTINGS** item is used to make the temporary update interval changes via DDE or SuiteLink permanent.

- If the client pokes a value of 1 to the **STORESETTINGS** item, the current set update interval is written to the server's configuration file.
- If the update interval has been changed via DDE or SuiteLink and **STORESETTINGS** is not poked to 1, the server will use the original update interval for that topic the next time it is started.
- Reading the item will always return 0.

Tag Type: DISCRETE  
ACCESS: READ, WRITE  
RANGE: 0, 1

---

**Note** Use this item to conveniently store your optimized configuration via DDE or SuiteLink.

---

## ITEMCOUNT Item

The **ITEMCOUNT** item is used to access the number of active items in the corresponding topic.

- It is the same value displayed in the monitor window of the server under "Items."
- This item is read-only.

Tag Type: INTEGER  
ACCESS: READ  
RANGE: 0..2147483647

---

**Note** Use the **ITEMCOUNT** item to monitor the number of currently active items.

---

## ERRORCOUNT Item

The **ERRORCOUNT** item is used to access the number of active items with errors in the corresponding topic.

- It is the same value displayed in the monitor window of the server under "errors ( ) only."
- If the communications status of a topic is bad, all items have errors (item count equals error count).
- This item is read-only.

Tag Type: INTEGER  
ACCESS: READ  
RANGE: 0..2147483647

---

**Note** Use the **ERRORCOUNT** item to check for badly configured items or invalid item values. This is the case if the topic status is 1 and **ERRORCOUNT** is not zero.

---

## WRITECOMPLETE Item

The **WRITECOMPLETE** item is used to access the state of pending write activities on the corresponding topic.

- If the topic is opened the value of the **WRITECOMPLETE** item is initially 1 indicating all write activities are complete - no pokes are pending.
- If values are poked into any items of the topic the value of the **WRITECOMPLETE** item changes to 0 indicating write activity is currently in progress.
- If the server has completed all write activities the value of the **WRITECOMPLETE** item changes to 1 if all pokes were successful or to -1 if at least one poke has failed.
- If the value of the **WRITECOMPLETE** item is not zero the client can poke 1 or -1 to it (poke a 1 to clear errors or a -1 to test a client reaction on write errors).

Tag Type: INTEGER  
ACCESS: READ/WRITE  
RANGE: -1,0,1

---

**Note** Use the **WRITECOMPLETE** item to serialize a sequence of poked values to a single item or to monitor success or failure of poking into one or more items.

---

## Monitoring the Status of Communications with a PLC

For each topic name (PLC), there is a built-in discrete item that can be used to monitor the status of communications with the PLC.

- The discrete item, **Status**, is set to **0** when communications with the PLC fails and is set to **1** when communications is successful.

### Using the Status Item in Excel

The status of the PLC communications can be read into Excel by entering the following DDE reference formula in a cell on a spreadsheet:

```
=PROFIBUS|PB1_CR2!Status
```

where:

<b>PROFIBUS</b>	Is the name of the server application.
<b>PB1_CR2</b>	Is the exact topic name defined in the server for the PLC.
<b>Status</b>	Built-in discrete item used to monitor the status of communications with the PLC.

---

## Monitoring the Status of Communications with InTouch

InTouch supports built-in topic names called DDEStatus and IOStatus that are used to monitor the status of communications between the server and InTouch. For more information on the built-in topic names DDEStatus and IOStatus, see your online "InTouch User's Guide".

### Using DDEStatus and IOStatus in Excel

The status of communications between the server and InTouch can be read into Excel by entering the following DDE reference formula in a cell on a spreadsheet:

```
=view|DDEStatus!PB1_CR2
```

or

```
=view|IOStatus!PB1_CR2
```

where:

<b>view</b>	Is the name of the InTouch application.
<b>[DDE][IO]Status</b>	Built-in topic name used to monitor the status of communications between the server and InTouch.
<b>PB1_CR2</b>	The exact topic name defined in the server for the PLC.

## Reading Values from the I/O Server into Excel

Values may be read directly into Excel spreadsheets from the server by entering a DDE formula into a cell using the following format:

**=applicationname|topicname!itemname**

Example formula:

**=PROFIBUS|PB1\_CR2!O100T1**

where:

<b>PROFIBUS</b>	Is the name of the server application.
<b>PB1_CR2</b>	Is the exact topic name defined in the server for the PLC.
<b>O100T1</b>	Is the actual location in the PLC that contains the data value. This is the item name.

In this example, each time the value of **O100T1** changes in the PLC, the server will automatically send the new value to the cell containing the formula in Excel.

---

**Note** Refer to the Microsoft Excel manual for complete details on entering Remote Reference formulas for cells.

---



## Writing Values to the I/O Server from Excel

Values may be written to the server from Microsoft Excel by creating an Excel macro that uses the **POKE** command. The proper command is entered in Excel as follows:

```
channel=INITIATE("applicationname","topicname")
=POKE(channel,"itemname",Data_Reference)
=TERMINATE(channel)
=RETURN()
```

The following describes each of the above **POKE** macro statements:

```
channel=INITIATE("applicationname","topicname")
```

Opens a channel to a specific topic name (defined in the server) in a particular application name (the executable name less the .EXE) and assigns the number of that opened channel to **channel**.

---

**Note** By using the **channel=INITIATE** statement the word **channel** must be used in the **=POKE** statement instead of the actual cell reference. The **"applicationname"** and **"topicname"** portions of the formula must be enclosed in quotation marks.

---

```
=POKE(channel,"itemname",Data_Reference)
```

**POKEs** the value contained in the **Data\_Reference** to the specified item name (actual location in the PLC) via the **channel** number returned by the previously executed **INITIATE** function.

- **Data\_Reference** is the row/column ID of the cell containing the data value.

```
=TERMINATE(channel)
```

Closes the channel at the end of the macro.

- Some applications have a limited number of channels therefore, they should be closed when finished.
- **Channel** is the channel number returned by the previously executed **INITIATE** function.

```
=RETURN()
```

Marks the end of the macro.

---

**Note** Refer to the **.XLM** sample Excel poke macro provided on the server program disk. Also refer to the Microsoft Excel manual for complete details on entering Remote Reference formulas for cells.

---

## Troubleshooting I/O Server Communications Problems

This section provides you with some simple steps that can be taken to ascertain and correct communications problems. The problems described here represent the most probable causes of communications failure.

---

**Note** This is a general troubleshooting guide and for the sake of brevity we cannot cover every possible source of communications problems.

---

### Debugging Communications Between InTouch and an I/O Server

This section explains the most common error situations that can occur when attempting to establish communications between InTouch and a server.

Servers are Windows applications that communicate with I/Os, PLCs, and/or other data sources. If a server supports either the Microsoft Dynamic Data Exchange (DDE) or the Wonderware SuiteLink protocol, it is capable of communicating with the Wonderware InTouch program.

---

**Note** All Wonderware version 7.0 or later servers support both DDE and SuiteLink. However, the SuiteLink protocol is only supported on the Windows 2000, Windows XP, and Windows 2003 operating systems.

---

Servers respond to data requests made by other applications. Requesting applications are called clients. When WindowViewer acts as a client and requires the value of an item, it contacts the server and requests the item's value. The server will report the value and update WindowViewer only if a change occurs.

All WindowViewer data requests provide information relating an item to a register, coil number, or I/O data point understood by the server. The server uses the information to automatically handle all messages to and from I/Os, hardware devices (PLC), and/or other data sources.

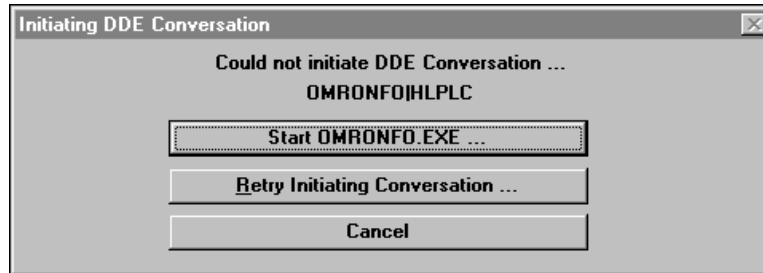
---

**Note** It is highly recommended that you start all the servers required by the InTouch application before starting WindowViewer. InTouch (versions prior to 7.0) will display the **Initiating DDE Conversation** message box for each uninitiated conversation.

---

For example:

If you start up WindowViewer and cannot successfully establish a conversation with a server, the following **Initiating DDE Conversation** dialog box will appear:



- The information in the second line indicates that you have at least one I/O type tagname defined in your Tagname Dictionary that is associated with an Access Name that defines OMRONFO as the Application Name, and HLPLC as the Topic Name.
- Make note of exactly how the application and topic names are spelled.

---

**Note** This example only applies when using a version of InTouch prior to InTouch 7.0.

---

To troubleshoot communications problems between WindowViewer and the server, perform the following steps as listed.

#### **Verify the I/O Server is running.**

1. Start the server program.
2. Verify the server is running by checking to see if it is in the **Windows Task List**.
3. On Windows 2000/Windows XP/Windows 2003, click the right mouse button on the Windows taskbar and select **Task Manager** from the menu.
4. Click the **Applications** tab to view all currently running applications.
5. Or press the CTRL+SHIFT+ESC keys.

**If the I/O Server is running, verify the I/O Server's program name is correct in all WindowMaker Access Name definitions.**

1. Switch to (or start) WindowMaker.
2. Select **Access Names** from the **Special** menu
  - The **Access Name Definitions** dialog box appears listing all Access Names defined in the WindowMaker.
3. In the **Access Names** list, select the Access Name referencing the server and click **Modify**.
  - The **Modify Access Name** dialog box will appear.
4. Verify the server's program name in the **Application Name** box is correct.
5. If it is wrong then correct it and click **OK** , else click **Cancel**.

---

**Note** The server's exact "executable name" **must** be typed in the **Application Name** box in all Access Name definitions. The ".exe" extension is **not** used.

---

**Note** If you are debugging a remote tagname reference, also verify that the node name for the remote computer in the **Node Name** box is correct.

---

6. Repeat steps 3 through 5 and verify the server program name is correct in all Access Names that use it.

**If you still cannot establish a conversation, verify the exact topic name used in the WindowMaker Access Name Definitions dialog box are defined in the I/O Server program.**

1. Close WindowViewer if it is running.

---

**Note** The server cannot be configured if WindowViewer is running.

---

2. Start the server program.
3. From the server's **Configure** menu select **Topic Definition**.
  - The **Topic Definition** dialog box appears listing all topic names defined in the server.
4. Verify that the topic name exists and is spelled exactly the same (including spaces) as the topic name referenced in the WindowMaker **Access Name Definitions** dialog box.
  - Blank spaces cannot follow the topic name in either the server's Topic Definition or the Access Name definition.
5. If the topic name is different, either correct it in the server or switch to WindowMaker and correct it in the **Access Name Definitions** dialog box.
6. Once you performed the above procedure, restart WindowViewer and switch to the server program.
  - Data should now appear in the server's program window to indicate that WindowViewer and the server are communicating.

---

**Note** The data in the server's program window indicates the read and write messages the server is sending to and receiving from the PLC. These are not error messages; only status messages are written to the server's program window.

---

7. If no data appears in the server's program window, switch to the Wonderware Logger to check for error messages.

For example, a common error message is:


"Error for DDE: OMRONFO|HLPLC!<null>("item") Advise failed"

This message appears when the item defined in one or more tagnames is invalid for the server.

---

**Note** InTouch tagnames use specific naming conventions when accessing data from a server. The valid item names for all Wonderware servers are documented in their respective User's Guides. Typically, the item naming conventions used by each server are consistent with the names used by the equipment manufacturer.

---

 For more information on the Wonderware Logger, see your online *FactorySuite System Administrator's Guide*.

**If you are still experiencing problems, continue with the following troubleshooting section.**

## Debugging Communications Between SuiteLink and an I/O Server

If you have successfully applied the debug techniques listed in the previous section and are still experiencing communications problems to a server that is attempting to communicate using the SuiteLink protocol, perform the following steps as listed.

**Verify the I/O Server supports the Wonderware SuiteLink protocol, that is, the I/O Server is version 7.0 or above.**

**Try communicating to the I/O Server using the DDE protocol. If this is not possible, then proceed to the next troubleshooting section; otherwise continue with the following steps:**

1. Verify Microsoft's TCP/IP stack is installed and configured properly.

---

**Note** SuiteLink uses the Microsoft TCP/IP stack for its communications even if the client application and the server reside on the same node.

---

2. If you do not have an Ethernet card to bind to the TCP/IP stack, install the Microsoft Loop Back Adapter.
3. Install the Microsoft TCP/IP stack.

## Debugging Communications Between an I/O Server and a PLC

This section provides you with simple steps to diagnose and correct server-to-PLC communications problems.

- The following debug techniques address both serial and board servers.
- Disregard any information that is not applicable to the server type that you are using.

When attempting to establish communications between a server and a PLC, if no data appears in the server's program window and the data items are not updating in WindowViewer, switch to the Wonderware Logger and check for error messages.

🔗 For more information on the Wonderware Logger, see your online *FactorySuite System Administrator's Guide*.

For example, some of the most common errors that may appear in the Wonderware Logger for serial servers are:

Response Timeout  
WCRET = -2  
WakeUp = -2  
Receive Overrun  
Framing Errors

---

**Note** Unless specified otherwise, most serial-communications-based servers are full duplex. If you require a server for half duplex (one that monitors the CTS and RTS lines) or if you are not sure whether the PLC's protocol is full or half duplex, call your PLC supplier.

Also, during in-house server testing, it has been found that the communications cards that use the National 16450 and 16550 UARTs seem to be less susceptible to level and timing problems. Cards based on other chips may work, but it is recommended that the National cards be used. Some of the highly integrated UART chips (most notably, Winbond and UMC) have a tendency for their transmitters to stop responding, requiring re-initialization of the UART. If this occurs, you may have to restart the server or execute the Reinitialize I/O command from the **Special** menu in WindowViewer.

---

### Check your cabling to the PLC.

- Is it wired correctly?
- Check for shorts, loose wires, broken wires, crossed wires, and so on.

---

**Note** A continuity tester can be helpful here.

---

**Verify the I/O Server's serial configuration settings (Parity, Stop Bits, Baud Rate, Handshaking and so on) against the settings in the hardware device.**

**Verify the communications port is working properly in Windows.**

1. Close the server program.

---

**Note** If you are using a server that requires a TSR, you will not be able to verify that the port is functioning properly while the TSR is running. Stop all TSRs then continue with this procedure. If you confirm that the port functions properly without the TSR running, change your software interrupt (IRQ) to another number. For example, change 60 to 62.

---

**Note** Also, if you are using an A- type computer, two devices cannot share interrupts. Verify that the communications port you are using has a unique interrupt setting.

---

2. On Windows 2000, Windows XP, or Windows 2003, start the HyperTerminal program.
3. Configure the HyperTerminal program to use the same communications port with the same settings (baud rate, parity, stop bits, and so on) as the hardware device.
4. Connect a null modem cable to a second computer's port.
5. On the second computer, start and configure the HyperTerminal program with the same settings as the first computer.
6. Verify that you can send data between the two computers.

---

**Note** If you do not have two computers and the computer you are using has another port, start two instances of the HyperTerminal program with each configured to their own port. Then try communicating between them.

---

**Note** If you have an external modem, connect the modem to the communications port that you are testing to see if you can dial out.

---

7. If the communications port does not appear to be functioning properly, check your environment files (**AUTOEXEC.BAT**, **CONFIG.SYS**, **SYSTEM.INI**, and **WIN.INI**).
  - Look for suspicious programs or drivers that might be taking control of the port or its interrupt before the server is loaded.
  - Always keep your environment files as clean as possible.
  - If you are in doubt about an entry, comment it out.
8. If the previous step was unsuccessful, try another communications port or another computer.

---

**Note** A common misconception of connecting to a PLC with a DOS program and the same communications port will work in Windows is not the case! Windows is an entirely different environment than DOS.

---

**What type of UART is on the COM port?**

If it is not a 16550, then you must lower your baud rate to 9600 or slower.

- Only the 16550 UART can sustain continuous, error-free communications at speeds higher than 9600 baud.
- Other UARTs may work at speeds faster than 9600 baud, but errors may be written to the Wonderware Logger.

For example, "Receive Overruns."

- To determine which UART you have, enter MSD at a DOS prompt, then choose **COM Ports** from the **MSD** menu.

**Verify the parameters for WWCOMTSR.**

- Do **not** specify a receive and/or transmit buffer size of 8!

For example:

Correct:

```
COM1:0 COM2:1,2048,2048  
COM1:0 COM2:1
```

Incorrect:

```
COM1:0 COM2:1,8,8
```

**Does your computer stop responding when trying to communicate through the COM port?**

- If so, verify that each TSR has a unique software interrupt.

---

**Note** A utility, ShowSoft, is available on the Knowledge Base CD that can assist in determining the available software interrupts.

---

**Does your computer lock up?**

- Verify the COM port's IRQs do not conflict with each other or with other communications boards in the computer.

**If the PLC or field device has more than one COM port, verify the connection to the correct port.**

- The COM port on your computer uses the RS-232 hardware communications standard and connects the cable from the COM port to an RS-232-compliant device.

---

**Note** To connect to an RS-422 or RS-485 port on the PLC, you need an RS-232 to RS-422/485 conversion device.

If possible, use an external converter instead of a board-based converter that plugs into a slot in the computer. A board-based converter is difficult to get working for inexperienced users. If a board-based converter is not set up properly, it can conflict with other communications boards in the computer such as, internal modems.

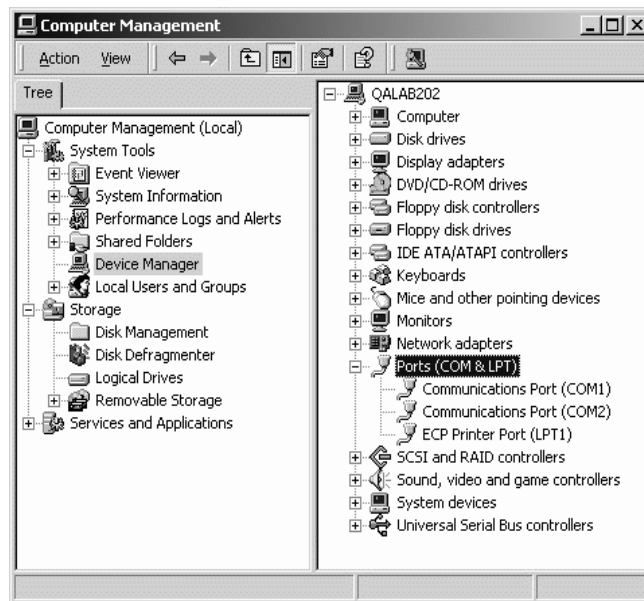
---



If you are using the Windows 2000/Windows XP/Windows 2003 operating system, verify the following:

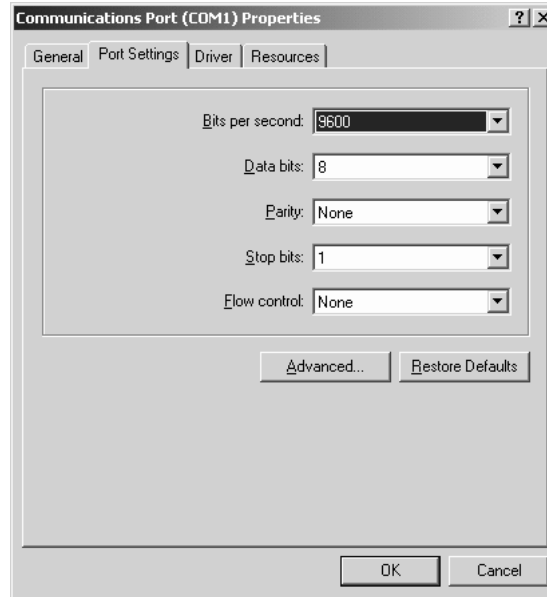
1. Click **Start** on the Windows taskbar.
2. Point to **Settings**, then click **Control Panel** in the menu.
  - The **Control Panel** dialog box will appear.
3. Click on **Administrative Tools**.
4. In the **Administrative Tools** dialog box, double-click the **Computer Management** icon.
  - The **Computer Management** dialog box will be displayed.
5. Click on **Device Manager** and select the COM port you are using for the server.

For example:



6. Click on the selected Communications Port.

- The **Properties** dialog box will appear.



7. Click the **Port Settings** tab.

#### How long is your RS-232 cable?

- Fifteen meters (fifty feet) is the maximum practical length for the RS-232 standard.

#### Try using a different COM port for the I/O Server.

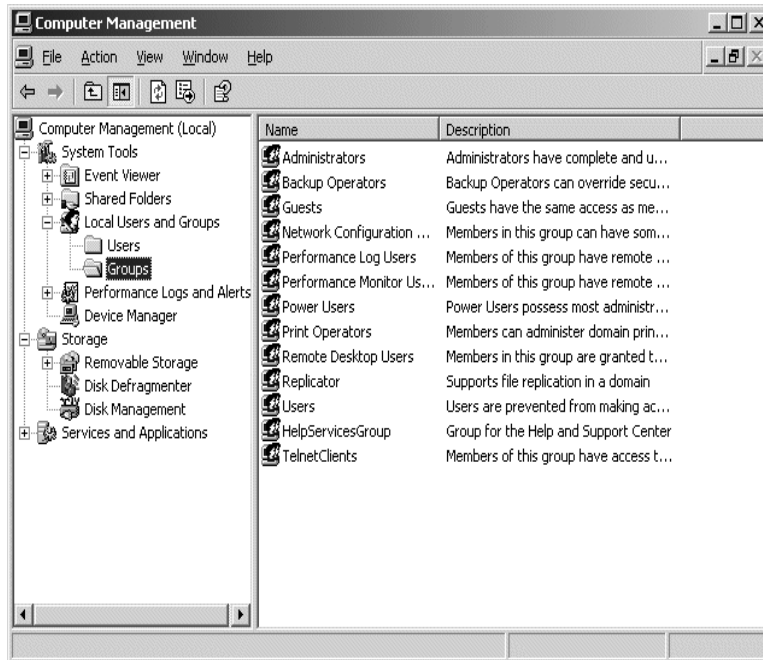
If you are installing an I/O Server or configuring a board-based I/O Server on a computer running on the Windows 2000, Windows XP, or Windows 2003 operating system, log on with Administrator privileges.

---

**Note** Without Administrator privileges, the server and Server Install program **cannot** make the necessary edits to the Windows Registry during installation or board configuration of the server.

---

1. Click **Start** on the Windows taskbar.
2. Point to **Settings**, then **Control Panel**.
3. In the Control Panel, double-click on **Administrative Tools**.
  - The **Administrative Tools** dialog box will be displayed.
4. Double-click on **Computer Management**.
  - The **Computer Management** dialog box will be displayed.



5. Double-click on **Local Users and Groups**.
6. Click on **Groups** and then double-click on **Administrators** to verify Administrative privileges.

**If you experience occasional or random communications errors in the Wonderware Logger, such as "Response Timeouts," check for noise.**

- Do the physical cables run past any known noise sources such as photocopiers, fluorescent lamps, fans, pumps, motors, or generators?
- Are the cables properly shielded from its environment?
- With radio modems and satellite link-ups, occasional communications errors in the Wonderware Logger are normal and to be expected as long as they do not adversely impact the flow of data.

**Increase the Reply Timeout setting in the I/O Server to a value between 5 and 10 seconds.**

- Not allowing the PLC or field device enough time to respond to the server's request for data may result in communications errors.

**Verify the PLC is properly configured and the cable is good by using the programming software for the PLC.**

1. Connect to the PLC with the programming software.
  - The connection must be through the same port and cable.
  - Go into the programming software configuration and write down what the communications parameters are (baud rates, routes, node number, error checking, and so on).
2. Close the programming software.

3. Open the I/O Server and verify the communications settings are the same.
4. Poke data into the PLC with InTouch or WWClient.
5. Shut down the server and use the programming software to verify that the values were correctly poked.

---

**Note** The performance of this test depends upon the type of PLC you are using.

---

**Reinstall the I/O Server and verify that you are using the latest version.**

- Wonderware is continually improving our servers and using the latest version will guarantee the best results.

---

**Note** New versions of the Wonderware I/O Servers are released regularly on the Knowledge Base CD. These are available to Comprehensive Support customers from the Wonderware Web site at: <http://www.wonderware.com>.

---

**Move the I/O Server's configuration file to another location on the computer's hard disk; this will clear all configuration for the I/O Server. Reconfigure the I/O Server.**

---

**Note** Wonderware server configuration files are typically the exact same name as the server's executable name with the .CFG extension. For example, **OMRONFO.CFG**. Refer to the Configuration File section of the specific server User's Guide for the exact name of the configuration file.

---


**If possible, reinstall the Windows operating system.**

- Files installed earlier on your computer or the Windows Registry may have been corrupted or accidentally modified.

**If these troubleshooting suggestions do not solve your problem, there may be a problem with your computer. There are many subtle differences between the various computer hardware brands. Use a computer that is a different brand and meets the following criteria:**

1. Select a different PC manufacturer and if this is not possible, try a different PC model from the same manufacturer.
2. The computer cannot use an OEM (Original Equipment Manufacturer) version of Microsoft Windows. It is highly recommended that only a Microsoft Windows product be used. Contact your vendor to determine if installing an off-the-shelf copy of Microsoft Windows will cause any problems.

**If you feel you have tested all possible situations that may be causing your failed I/O communications, contact your local Wonderware distributor for technical support.**

 For more information on obtaining technical support, see your online *FactorySuite System Administrator's Guide*.

## Configuration File Format

This configuration file is an ASCII file that can be opened with any standard text editor. It complies with the Windows profile format of a section for each topic and a general section for server information.

For example:

```
[GENERAL_SETTINGS]
BusParFile0=C:\User\ProfiFMS\w32\Buspar0.dat
CRLFile0=C:\User\ProfiFMS\w32\Kbl0.dat
[VFD1_CR3]
UPDATEINTERVAL=1000
ENABLE_ACCESS_TO_UPDATE_INTERVAL=1
COMMUNICATION_REFERENCE=3
FORCED_READ_MODIFY_WRITE=1
INITIAL_READ=0
Interface=4
VFD_NAME=VFD <1>
CP_NAME=CP5613(PROFIBUS)
MAX_REQUESTS=1
[PBO_CR2]
UPDATEINTERVAL=1000
ENABLE_ACCESS_TO_UPDATE_INTERVAL=1
COMMUNICATION_REFERENCE=2
FORCED_READ_MODIFY_WRITE=1
INITIAL_READ=0
Interface=5
BOARD_NUMBER=0
Password=0
AccessGroups=0
```

---

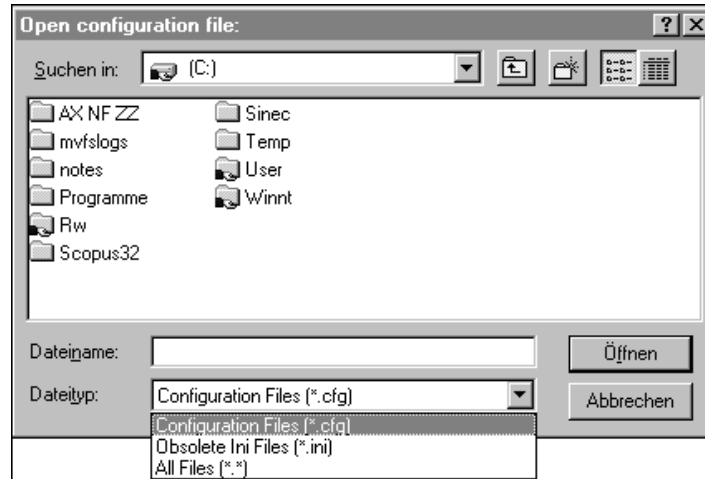
**Note** It is strongly recommended that you do **not** make any direct changes to this file. Changes may result in the Profibus FMS server **not** running properly.

---

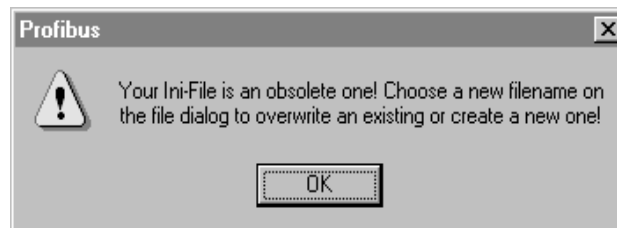
## Opening a Configuration File of Former I/O Servers

If you are updating from a former Profibus FMS DDE Server from Softing, you can use this server's .ini file to be converted into a .cfg file for the Wonderware I/O Server. You can do this by following these steps:

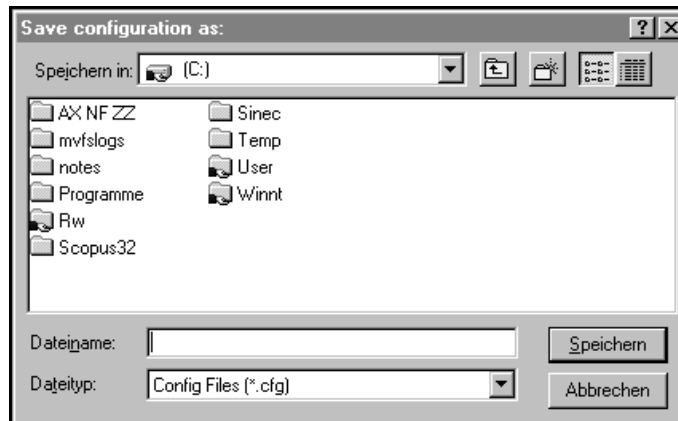
1. From the **File** menu, select **Open**.
  - The **Open configuration file** dialog box appears.



2. Choose **Obsolete Ini Files (\*.ini)** in the **Save as type** selection box.
3. Browse your workspace for an .ini file of the former Softing DDE Server, or enter a filename if you know the path to it.
4. After choosing a filename, click on **Open**.
  - The file is converted in the new configuration format.



5. Specify a name for the new configuration file in the **Save configuration as** dialog box:



- The selected .cfg file is used to store future server configuration changes.
- The selected .ini file remains untouched and can also be used as a basis for different configuration files.
- If you have configured items in the **Items** section of the .ini file, the .ini file is used to replace these items with their equivalent itemnames.
- You are able to select a different .ini file name for item mapping.

---

**Note** Refer to the Item Mapping section in this User Guide for more information.

---

## Special Wonderware Logger Messages

The following messages may appear in the Wonderware Logger. They can be very useful in debugging communications problems.

Logger Message	Explanation
INFO: dynamic link library <dllname> found	This message shows you which dynamic link library was detected and loaded into the server's memory. Supported dlls are fms32.dll (Siemens driver), papi.dll (Softing driver, and papi50.dll (Softing driver). This message will be posted in the logger during the startup of the server and shows you which dynamic link library was detected and loaded.

The following logger messages can occur in error situations if Log Errors (default) is selected in the logger settings.

Logger Message	Explanation
ERROR: poking item: <item name><topic name>	Writing a value to an item failed.
POKE: invalid value, clamp at high limit for item: <item name> on <topic name>	An invalid value has been specified for poking data. Value is clamped and transferred to the PLC.
POKE: invalid value, clamp at low limit for item: <item name> on <topic name>	
POKE ERROR: invalid value, cannot convert for item : <item name> on <topic name>	An invalid value has been specified for poking data. Value cannot be converted and write operation is aborted. After all write operations are completed, the "writecomplete" item will go to -1.
Error invalid topic name: <topic name>	Topic name does not exist. Change topic name or configure the correct topic.
Invalid item name: <item name> (<topic name>)	Item name does not exist. Check for correct item name.
Write complete (ERROR) – item: <item name> on <topic name>	A write operation has failed on item with <item name>.
New status (<topic name>): 0 (ERROR)	Connection to the PLC has gone bad.
ERROR: IEC Error <errorcode>: <errormessage>	This error message shows you the IEC error which was detected by the Siemens protocol driver. Refer to the SIMATIC NET documentation for getting more information about the displayed error number and its description.



Logger Message	Explanation
ERROR: Error <errorcode>: <errormessage>	This error message shows you the detailed error detected by the Siemens protocol driver. Refer to the SIMATIC NET documentation for getting more information about the displayed detailed error number and its description.
ERROR: expired timeout for pending <INITIATE/messages> - > closing <communication reference>	There was no response for a sent request for a long time. The server assumes the PLC is no longer available and tries to reconnect again. Check the state of the remote PLC and the cable to the PLC.
ERROR: <function name> (<returncode>) commref=<communication reference>	The function call <function name> failed with returncode <returncode>. These errors are handled with proper steps by the server. For example, switching to slow poll mode or reconnect to the device.

**The following logger messages can occur in normal operation mode if log trace is selected in the logger settings. These messages show the general activity of the server.**

**Note** This can slow down the server's performance.

Logger Message	Explanation
TRACE: Topic allocated: <topic name>	A topic has been created (client has connected on this topic).
TRACE: Free topic: <topic name>	A topic has been freed (client has disconnected on this topic).
TRACE: Item <item name> created on <topic name>	An item has been created in the server.
Activating item <item name> on <topic name>	An item has been activated in the server. A client has advised/requested data.
Deactivating item <item name> on <topic name>	An item has been deactivated in the server. A client has unadvised data
New value for device - item: <item name> on: <topic name>	A client performed a write operation on an item.
Write complete (OK) - item: <item name> on: <topic name>	The write operation was completed successfully on the protocol. The PLC has confirmed the reception of data.

The following logger messages can occur in normal operation mode if log all is selected in the logger settings. These messages show all of the server's activities.

---

**Note** This can slow down the server's performance.

---

Logger Message	Explanation
New <data type> value: <value> for item: <item name> on <topic name>	An item was updated with a new value from the PLC.
Write complete item: 0	A client has initiated write operation, and the server signals the processing of poke values by setting the "write complete" item to zero.

The following logger messages can occur in normal operation mode if "show protocol" is selected in the logger settings. These messages show the sent and received messages.

---

**Note** This can slow down the server's performance.

---

Logger Message	Explanation
TRACE: <function name> OK value:0x0A24785089FF...	Displays the raw data received from a remote PLC in HEXASCII.