



Slide Show 26:

Using the IGSS OPC Interface

**INSIGHT
AND
OVERVIEW**



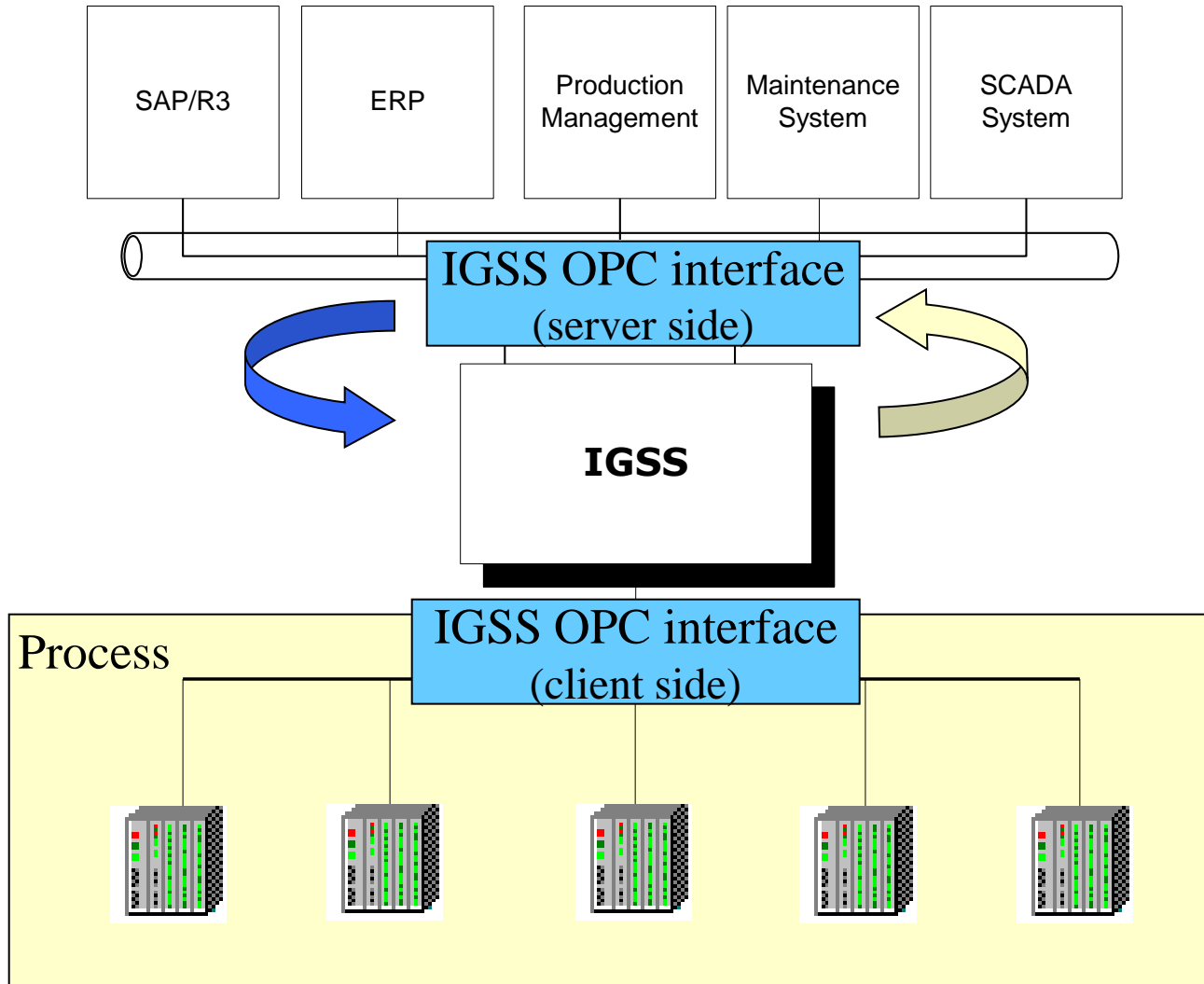
Topics

- What is OPC ?
- IGSS and OPC
- IGSS OPC Client-Side Driver
- IGSS OPC Server
- SCADA to SCADA with OPC
- Configuration of DCOM security

What is OPC ?

- OPC = OLE for Process Control
- OPC is an interface standard developed and maintained by the OPC Foundation
(<http://www.opcfoundation.org/>)
- Winning greater acceptance (becoming industry standard)
- Integrate hardware from different manufacturers in plant (OPC Client-side Driver)
- Interface to different SCADA systems, industrial control and reporting applications (IGSS OPC Server)

IGSS and OPC

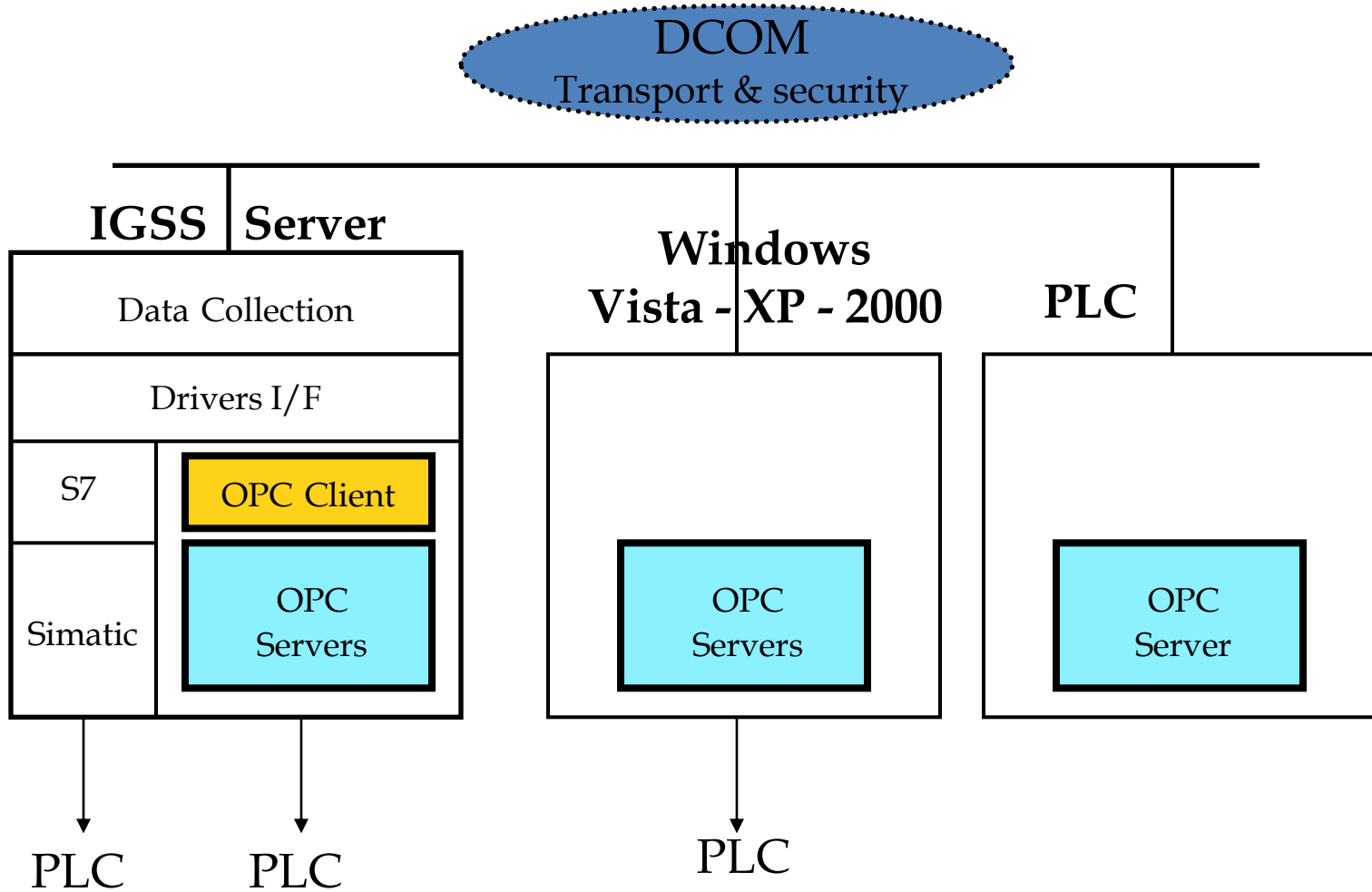


OPC Client-Side Driver

Purpose

- The IGSS OPC client connects to an OPC Server
- The OPC Server acts as the communication channel between IGSS and the PLCs in the process

IGSS OPC Client



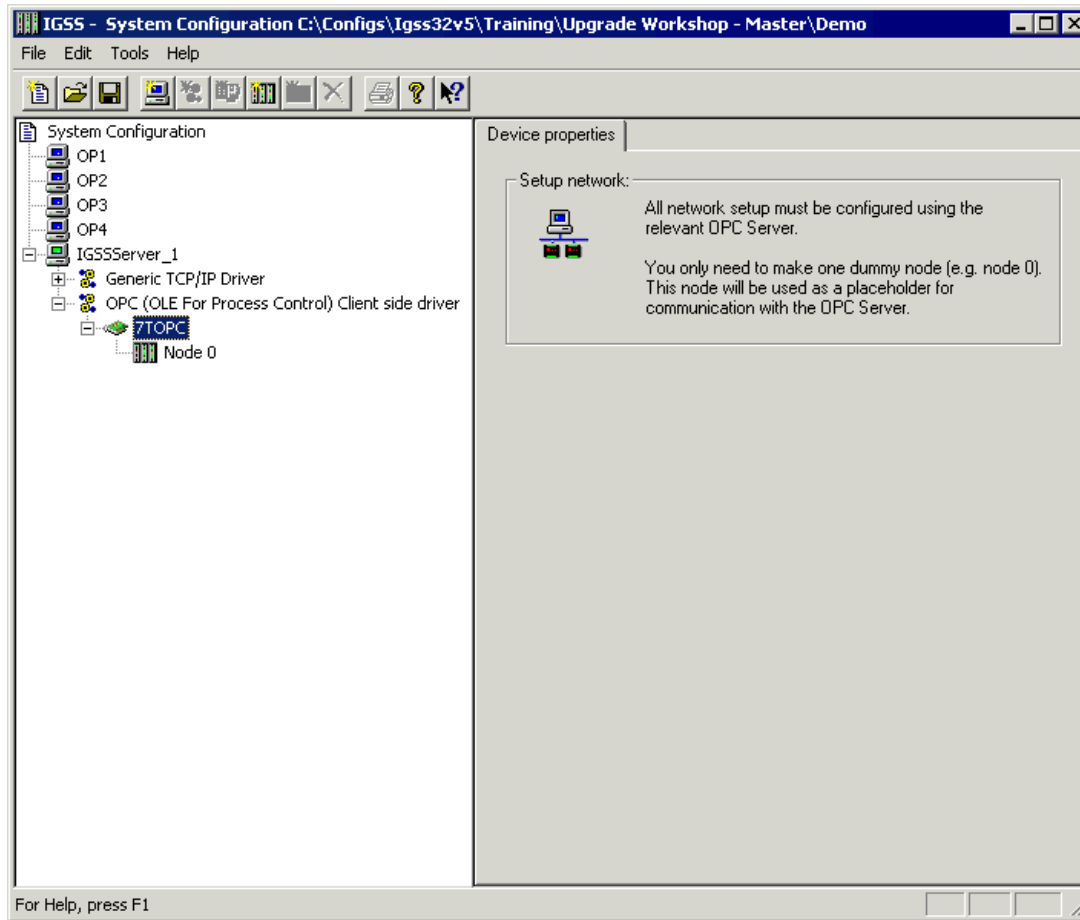
Driver History

- Released with IGSS32 Version 3, January 2001
- PLC drivers still developed by 7T but the number is decreasing due to increase in number of OPC servers commercially available

Activating the OPC driver

- Activate the OPC driver with just a single click in System Configuration.
- Definition of communication channels, nodes, addressing, etc. now found in the OPC Server itself.
- The PLC addressing of an IGSS object is different from what is characteristic for other drivers on the Edit Mapping tab.

Driver in System Configuration



Simple setup

Find driver ID = 42,
OPC (OLE for Process
Control) Client Side
Driver

Click once and the
required settings are
entered in System
Configuration.

All further setup is
done in the
OPC Server.

Choosing the OPC Host

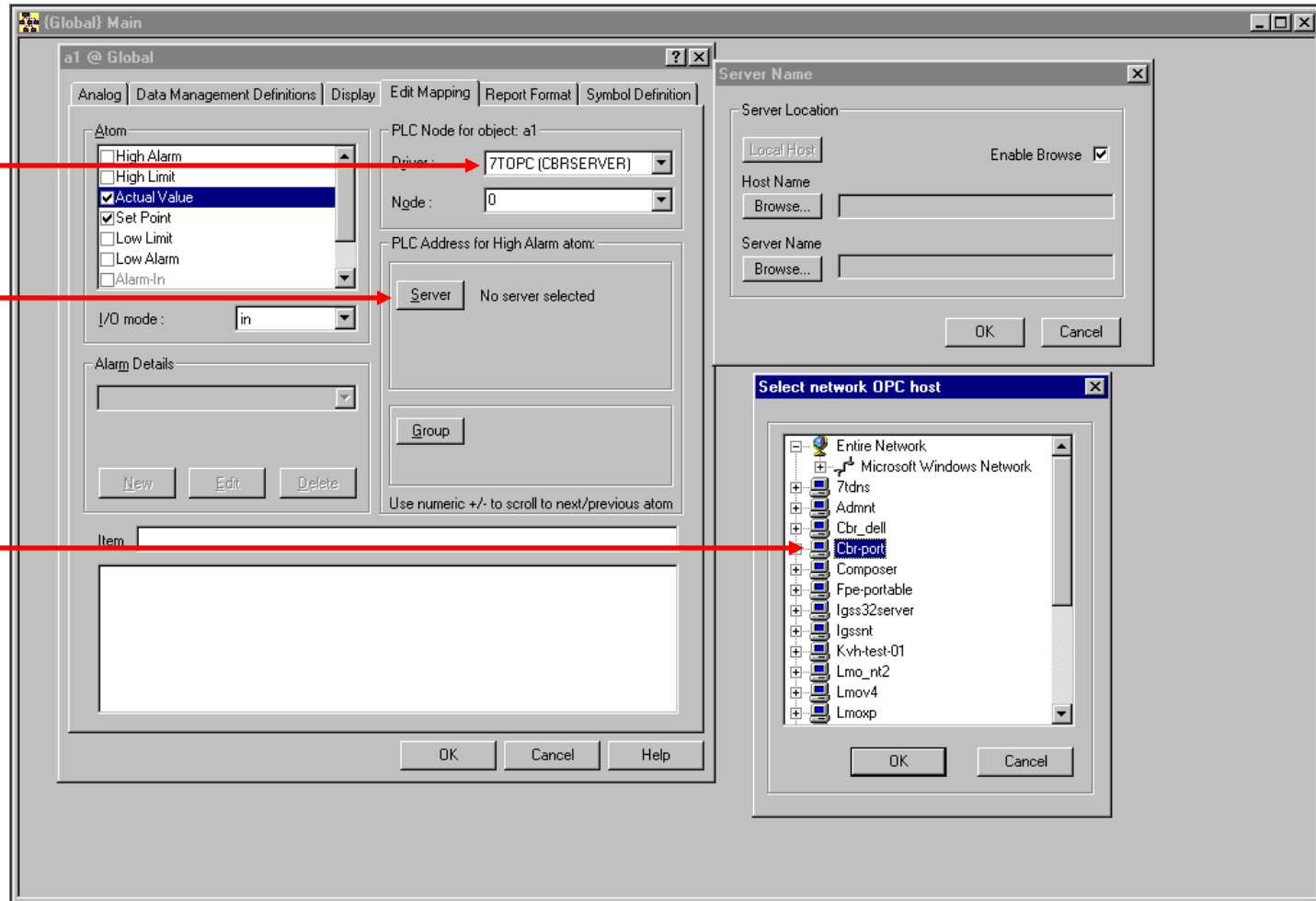
Choose OPC driver



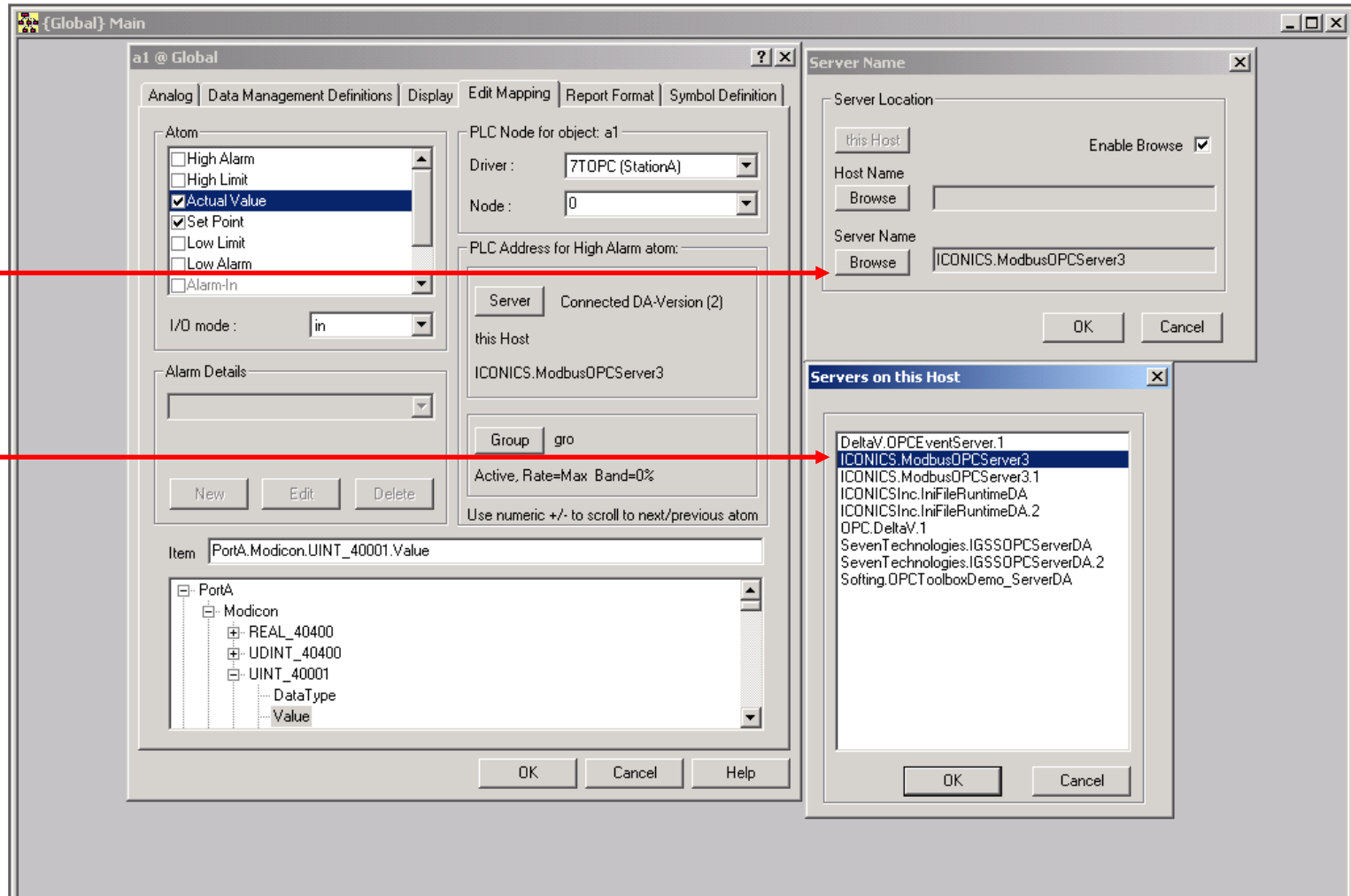
Start OPC choice of server



Choose host for OPC server or use Local Host



Choosing the OPC Server



The screenshot shows the 'a1 @ Global' configuration window with several sub-dialogs open. The 'Atom' list has 'Actual Value' selected. The 'Server Name' dialog is open, showing 'this Host' selected for 'Server Location' and 'ICONICS.ModbusOPCServer3' for 'Server Name'. The 'Servers on this Host' dialog is also open, listing several OPC servers, with 'ICONICS.ModbusOPCServer3' selected. Red arrows point from the text labels on the left to the 'Browse' buttons in the 'Server Name' dialog and the 'Servers on this Host' dialog.

Atom

- High Alarm
- High Limit
- Actual Value
- Set Point
- Low Limit
- Low Alarm
- Alarm-In

I/O mode : in

PLC Node for object: a1

Driver : 7TOPC (StationA)

Node : 0

PLC Address for High Alarm atom:

Server Connected DA-Version (2)

this Host

ICONICS.ModbusOPCServer3

Group gro

Active, Rate=Max Band=0%

Use numeric +/- to scroll to next/previous atom

Item PortA.Modicon.UINT_40001.Value

PortA

- Modicon
 - REAL_40400
 - UDINT_40400
 - UINT_40001
 - DataType
 - Value

Server Name

Server Location

this Host Enable Browse

Host Name

Browse

Server Name

Browse ICONICS.ModbusOPCServer3

OK Cancel

Servers on this Host

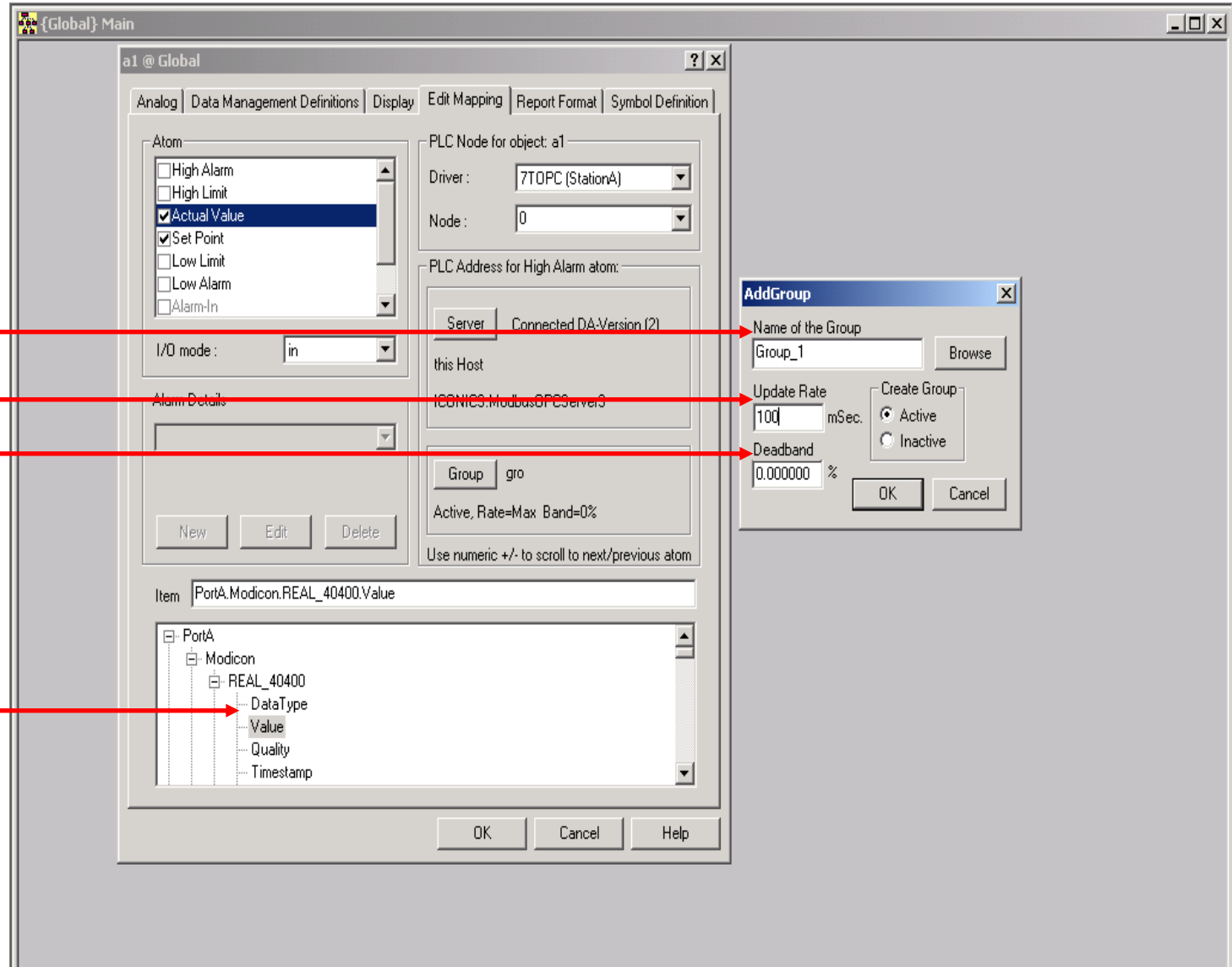
- DeltaV.OPCEventServer.1
- ICONICS.ModbusOPCServer3
- ICONICS.ModbusOPCServer3.1
- ICONICSInc.IniFileRuntimeDA
- ICONICSInc.IniFileRuntimeDA.2
- OPC.DeltaV.1
- SevenTechnologies.IGSSOPCServerDA
- SevenTechnologies.IGSSOPCServerDA.2
- Softing.OPCToolboxDemo_ServerDA

OK Cancel

Browse OPC servers

Choose OPC server

Choosing the OPC Group & Item



Group Name

Update Rate

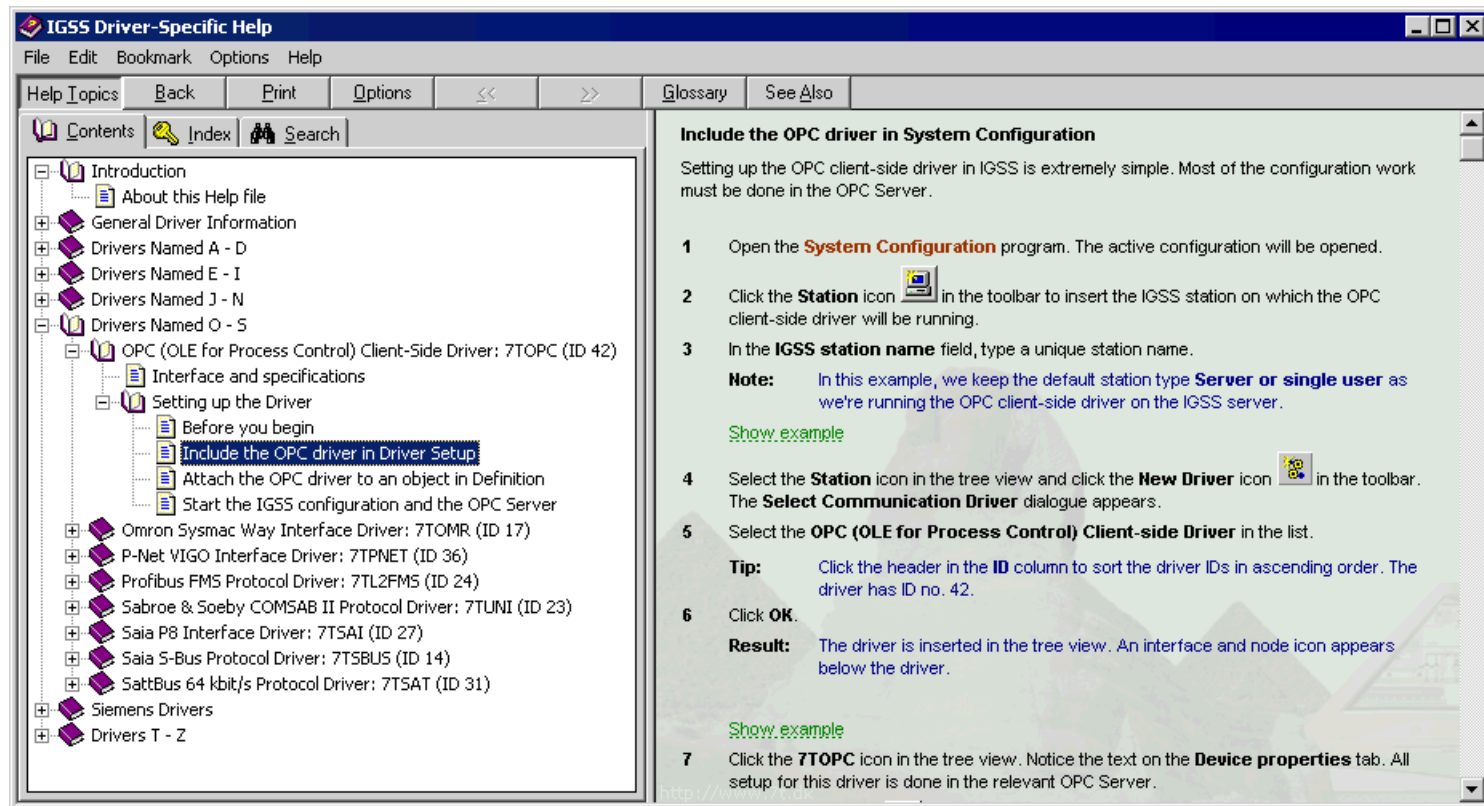
Deadband

Choose OPC Item

Help on OPC Client

Driver-Specific Help



Activate the help file from System Configuration or from the "IGSS Help Files" subfolder of the IGSS program group.



The screenshot shows the 'IGSS Driver-Specific Help' window. The left pane displays a tree view of help topics, with 'Include the OPC driver in Driver Setup' selected. The right pane contains the following text:

Include the OPC driver in System Configuration

Setting up the OPC client-side driver in IGSS is extremely simple. Most of the configuration work must be done in the OPC Server.

- 1 Open the **System Configuration** program. The active configuration will be opened.
- 2 Click the **Station** icon  in the toolbar to insert the IGSS station on which the OPC client-side driver will be running.
- 3 In the **IGSS station name** field, type a unique station name.
Note: In this example, we keep the default station type **Server or single user** as we're running the OPC client-side driver on the IGSS server.
[Show example](#)
- 4 Select the **Station** icon in the tree view and click the **New Driver** icon  in the toolbar. The **Select Communication Driver** dialogue appears.
- 5 Select the **OPC (OLE for Process Control) Client-side Driver** in the list.
Tip: Click the header in the **ID** column to sort the driver IDs in ascending order. The driver has ID no. 42.
- 6 Click **OK**.
Result: The driver is inserted in the tree view. An interface and node icon appears below the driver.
[Show example](#)
- 7 Click the **7TOPC** icon in the tree view. Notice the text on the **Device properties** tab. All setup for this driver is done in the relevant OPC Server.

IGSS OPC Server

Purpose

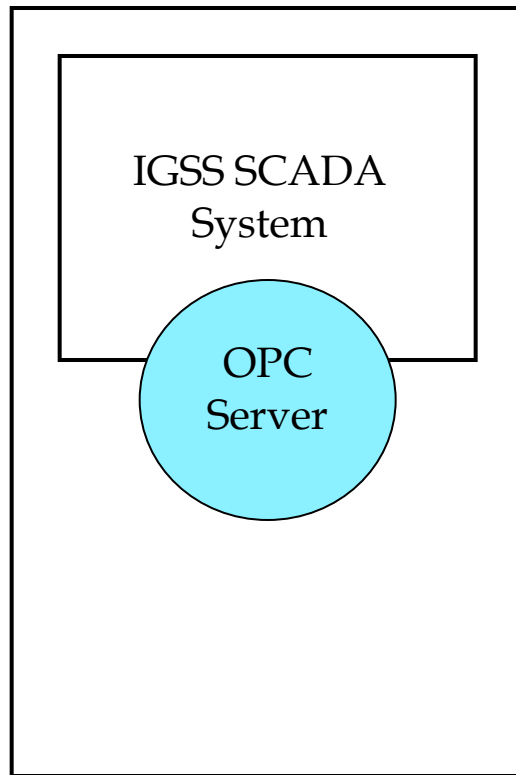
- Allows any OPC client to connect to IGSS with the purpose of reading or writing values to the IGSS configuration
- Typical scenarios:
 - SCADA to SCADA data exchange
 - Use IGSS values for administrative calculations



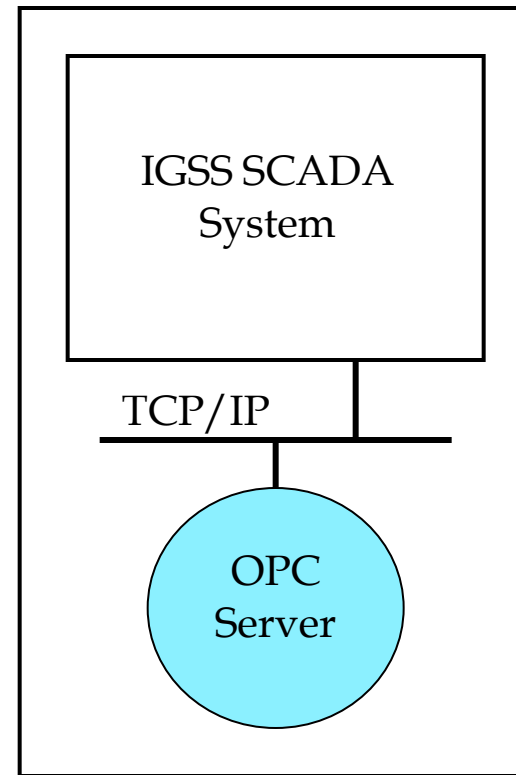
IGSS OPC Server History

- The OPC server is not appended to existing code but connected with a TCP/IP interface.
- Configuration saved in ACCESS too slow.
- Beta test at Arla Foods.
- Release 1 with IGSS32 Version 4 March 2002.

Integration of OPC Server

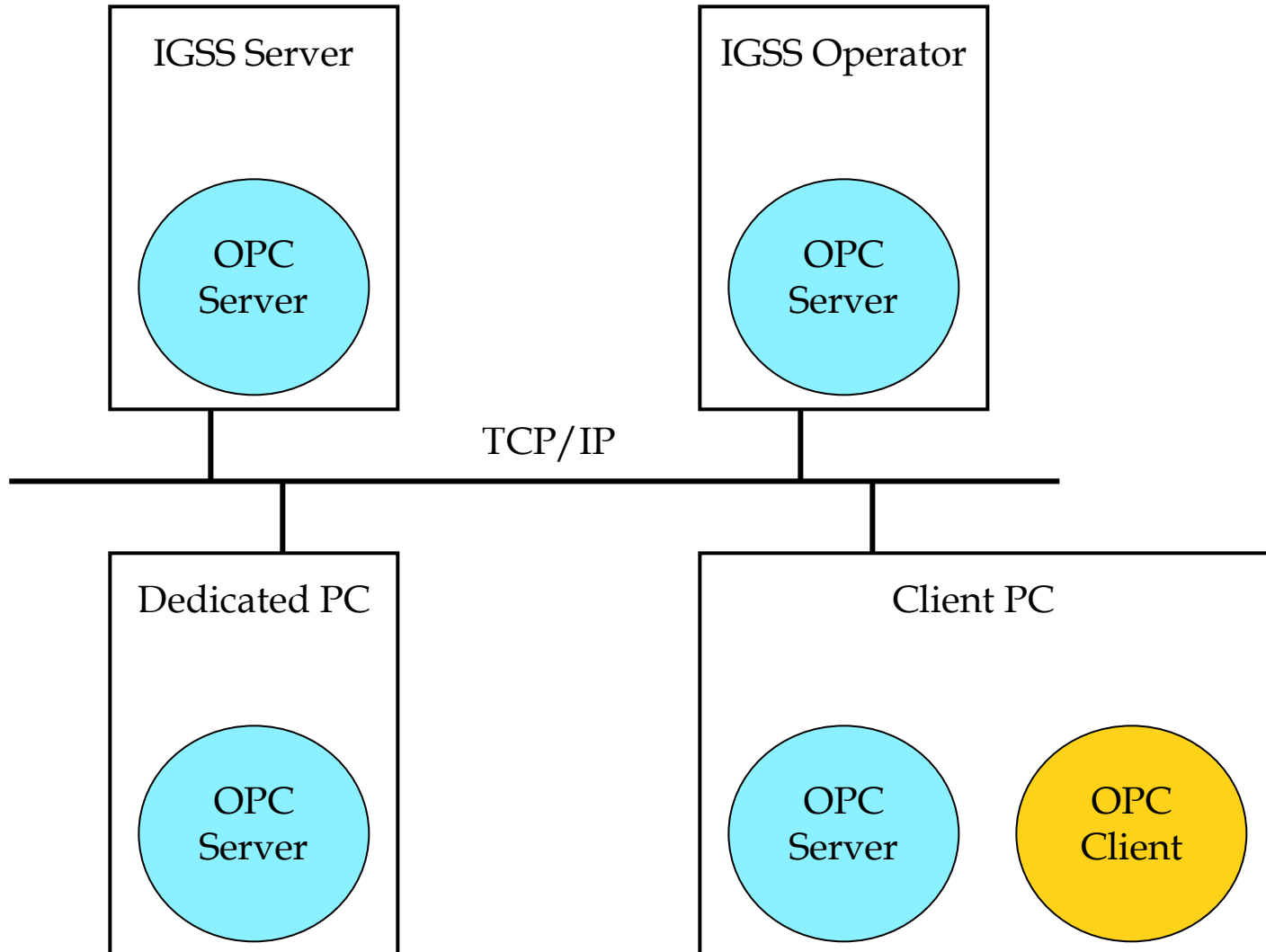


Limited flexibility



The solution chosen

OPC Server Deployment

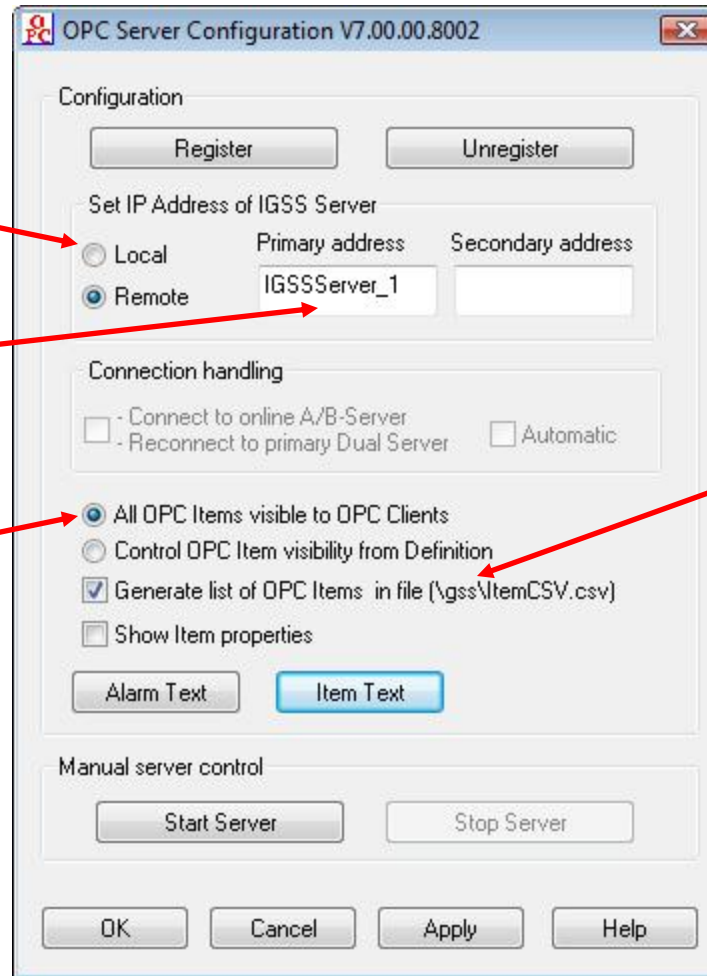


Setup of OPC Server

OPC server and IGSS server on same machine

IP address of primary (and secondary) IGSS server

Should all IGSS objects be visible?

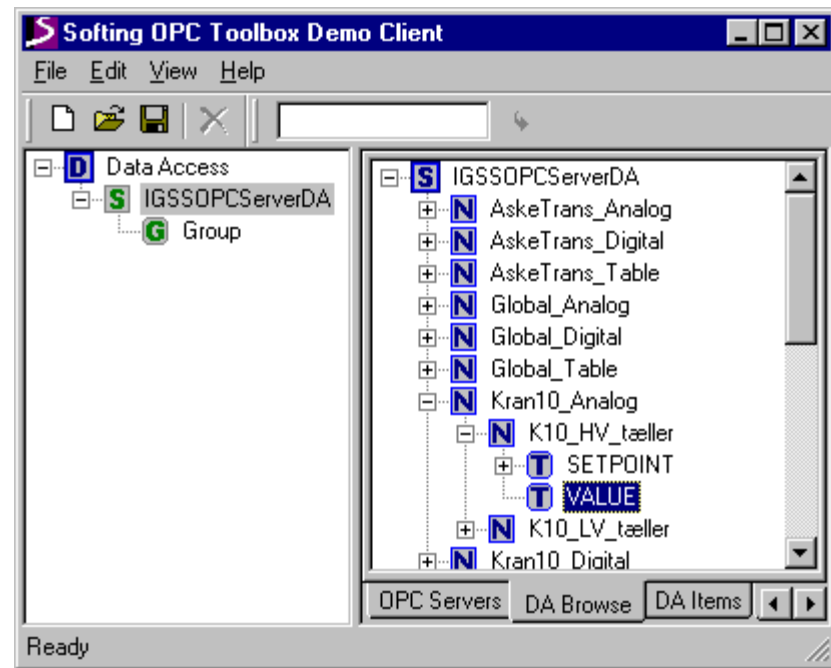
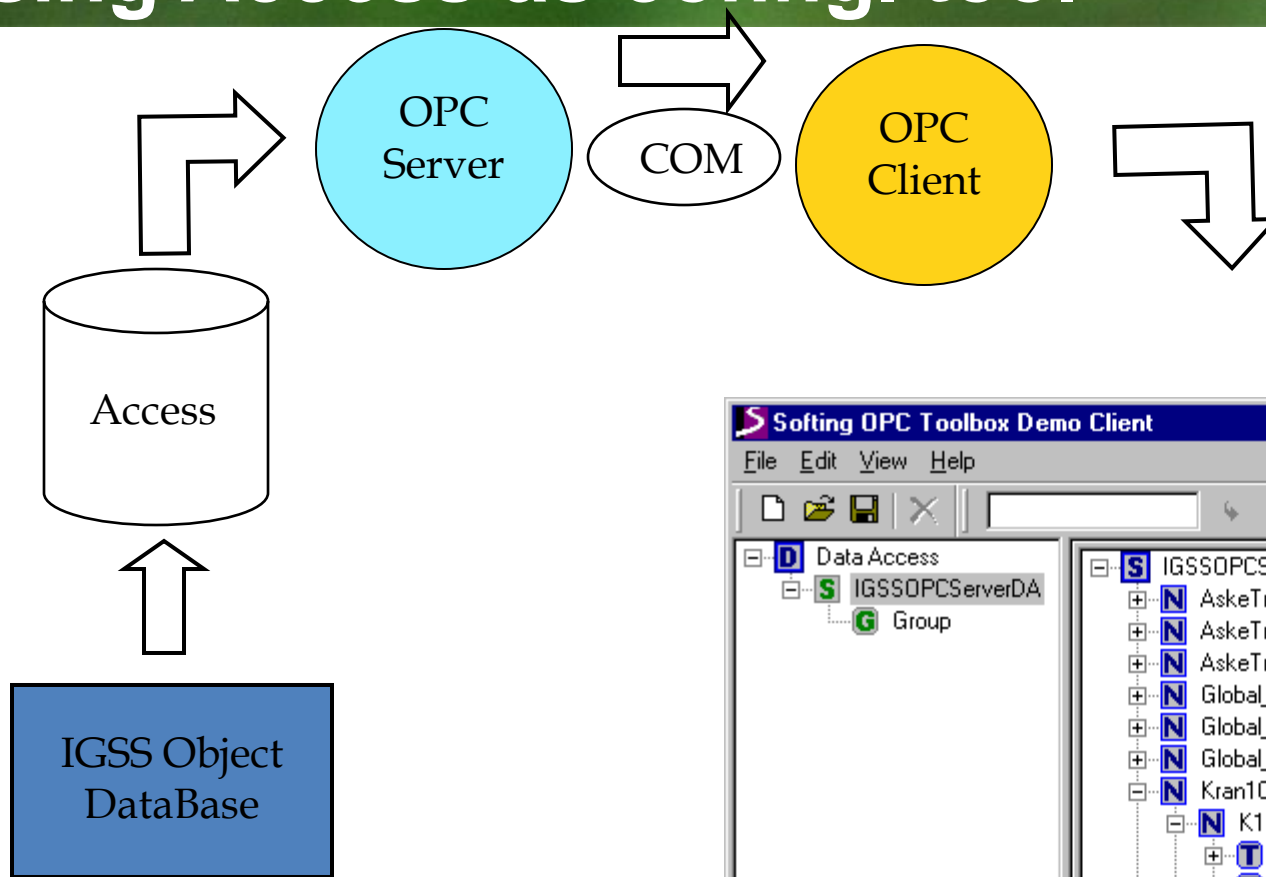


If enabled, a .csv file is generated listing all objects in the configuration.

The list will be generated when the first client connects.

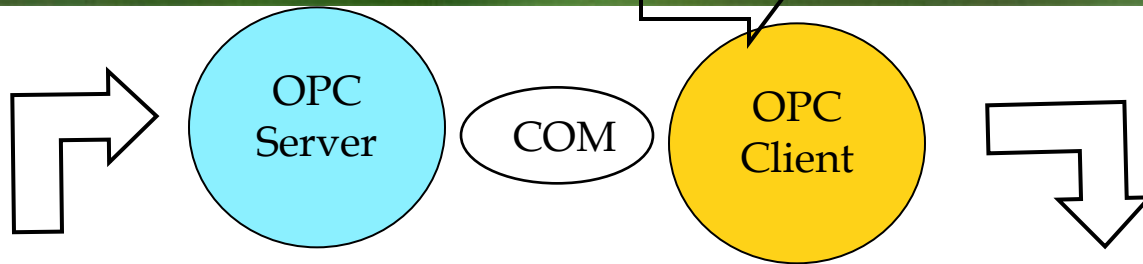
Can be imported into the OPC Client as OPC items.

Using Access as config. tool



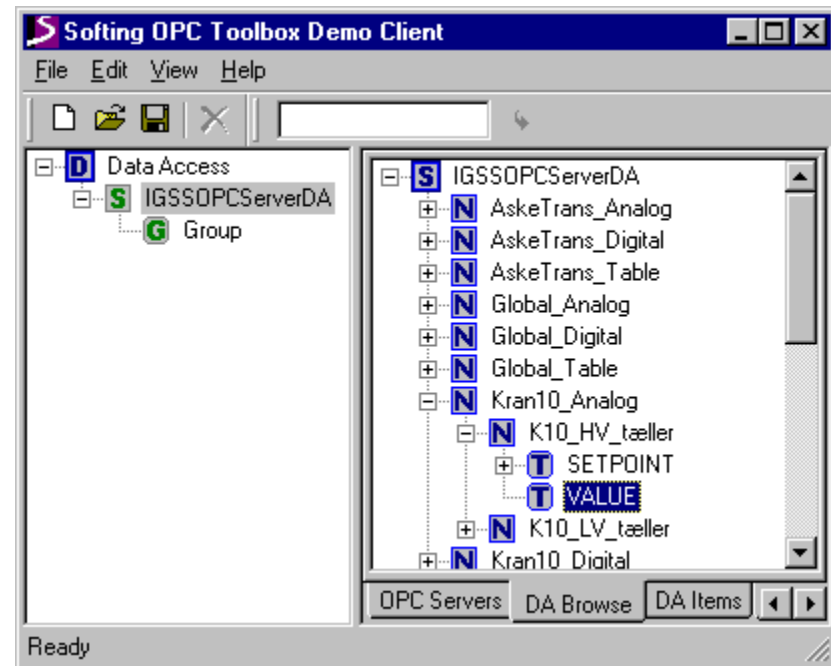
With Access there's a 12 minute lapse before 10,000 elements are visible in the OPC client browse window

Final solution w/o Access



IGSS Object
DataBase

Without Access there's a 12 second lapse before 10,000 elements are visible in the OPC client browse window

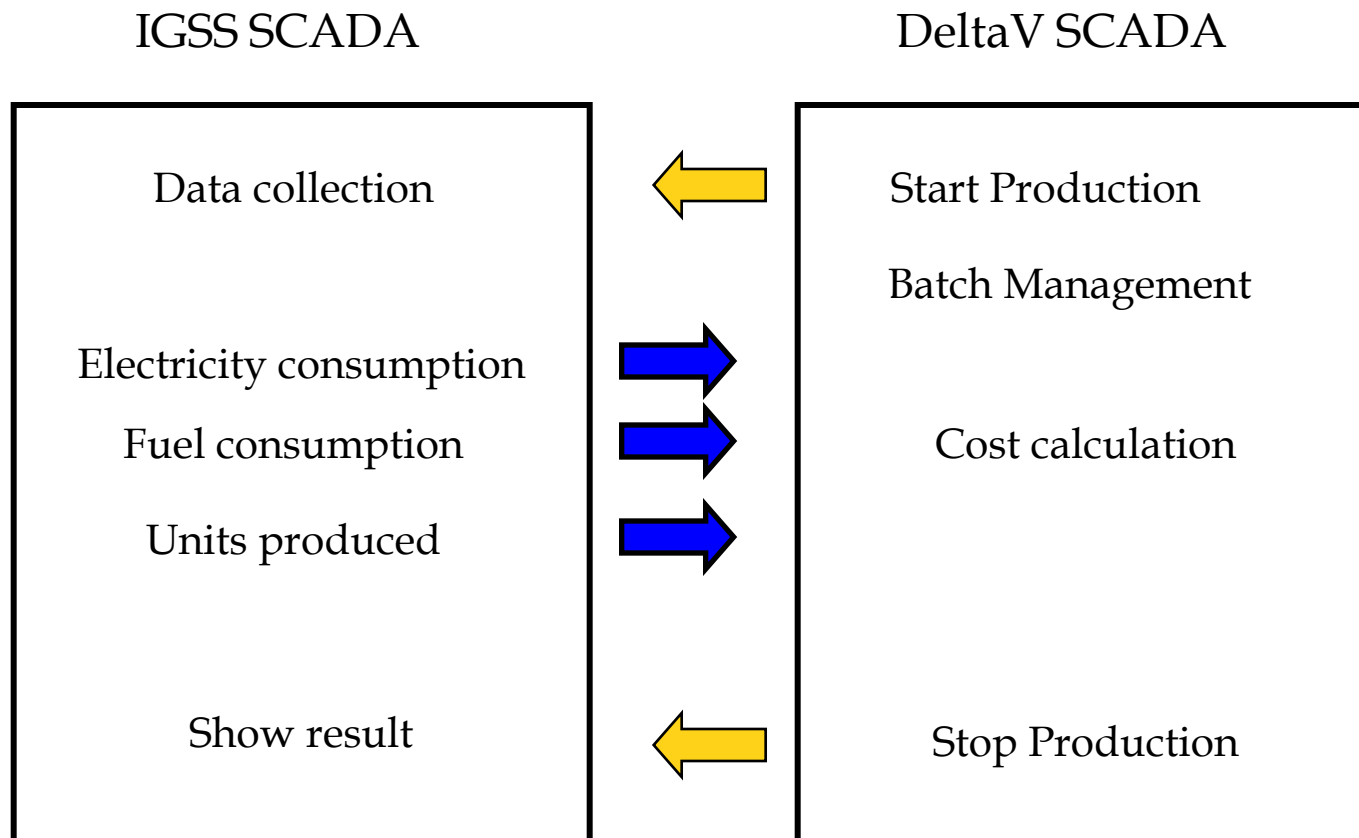




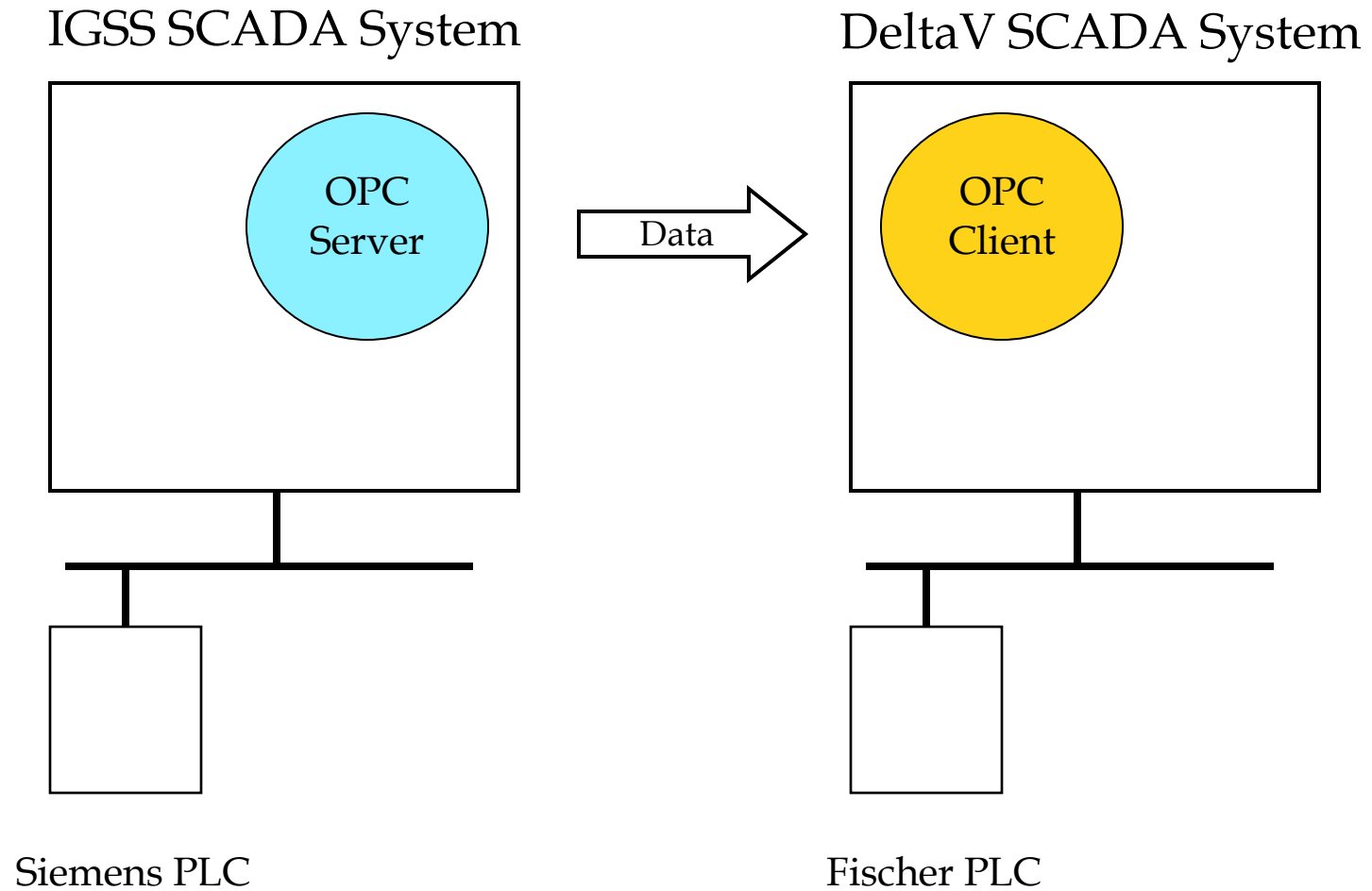
Arla Foods

- Needed data exchange between two SCADA systems: DeltaV and IGSS
- Primary data flow from IGSS to DeltaV.
- Preferred solution: IGSS as OPC Server and DeltaV as OPC Client.
- Valuable experience gained in configuring DCOM security.

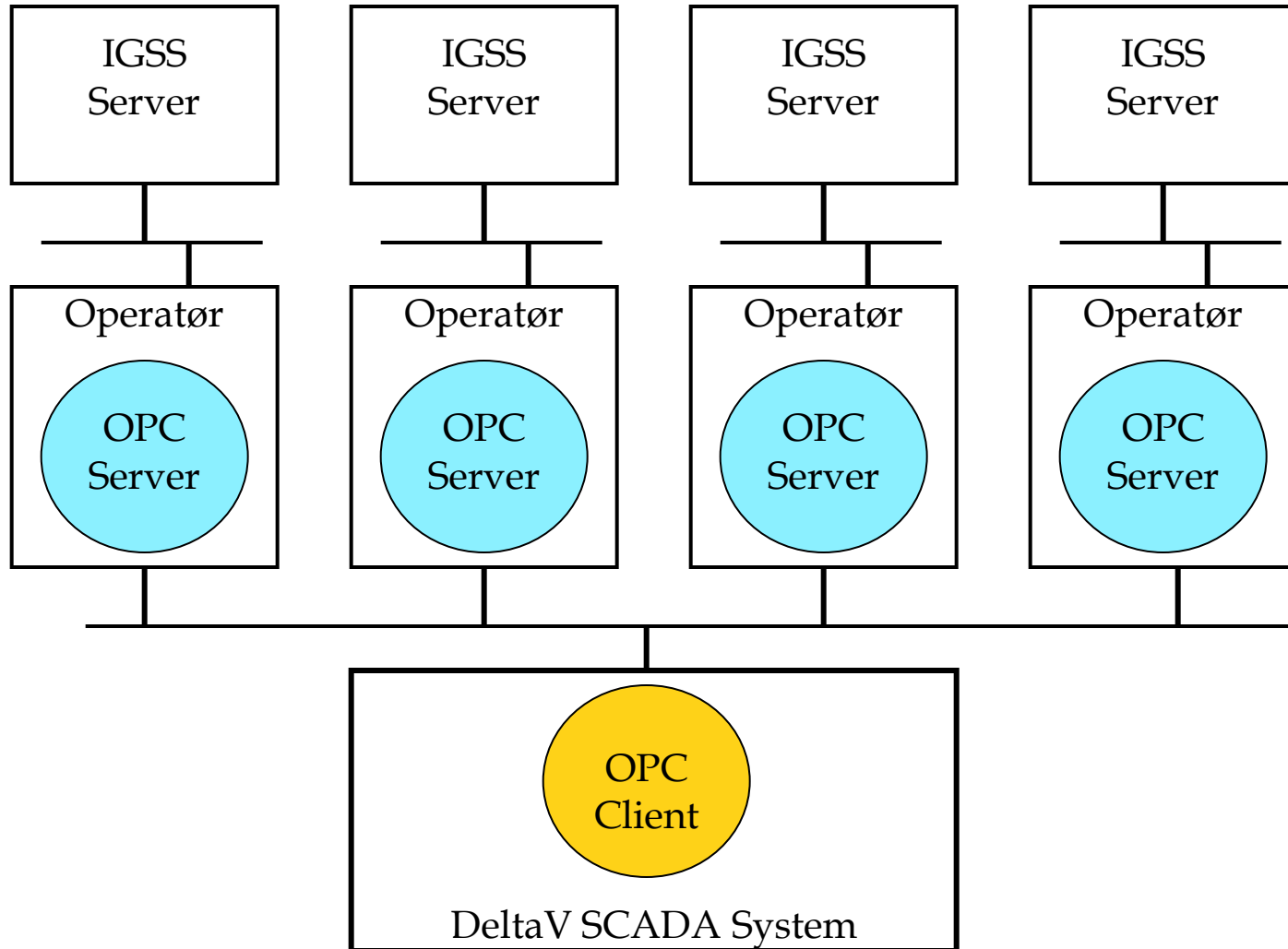
Task allocation



Final solution



Current solution at Arla Foods

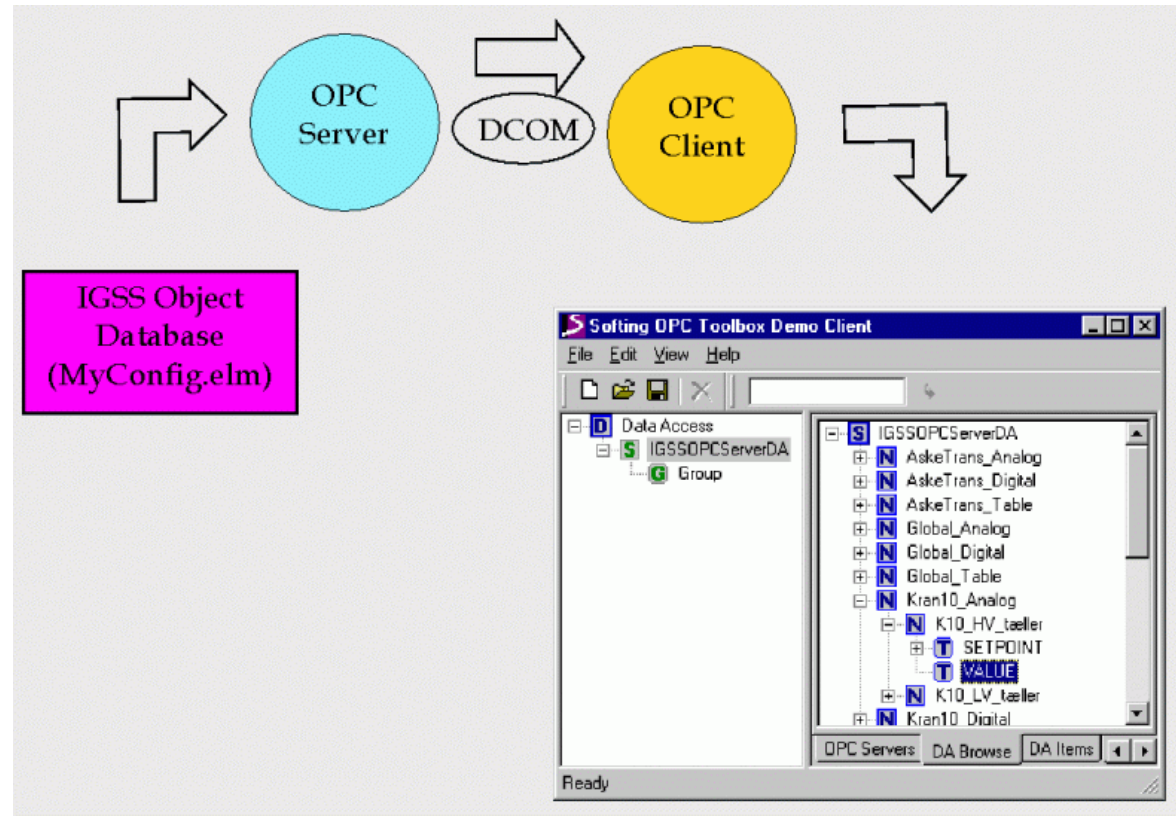


DCOM Security

- DCOM = Distributed Component Object Model
- DCOM (Distributed COM) is an integral security mechanism in Windows
- DCOM is a network extension of the COM technology
- Supports communication between objects on a network
- Enables the use of distributed programs

IGSS OPC Server uses DCOM

- When the client connects to the IGSS OPC Server, DCOM is used as the security layer.



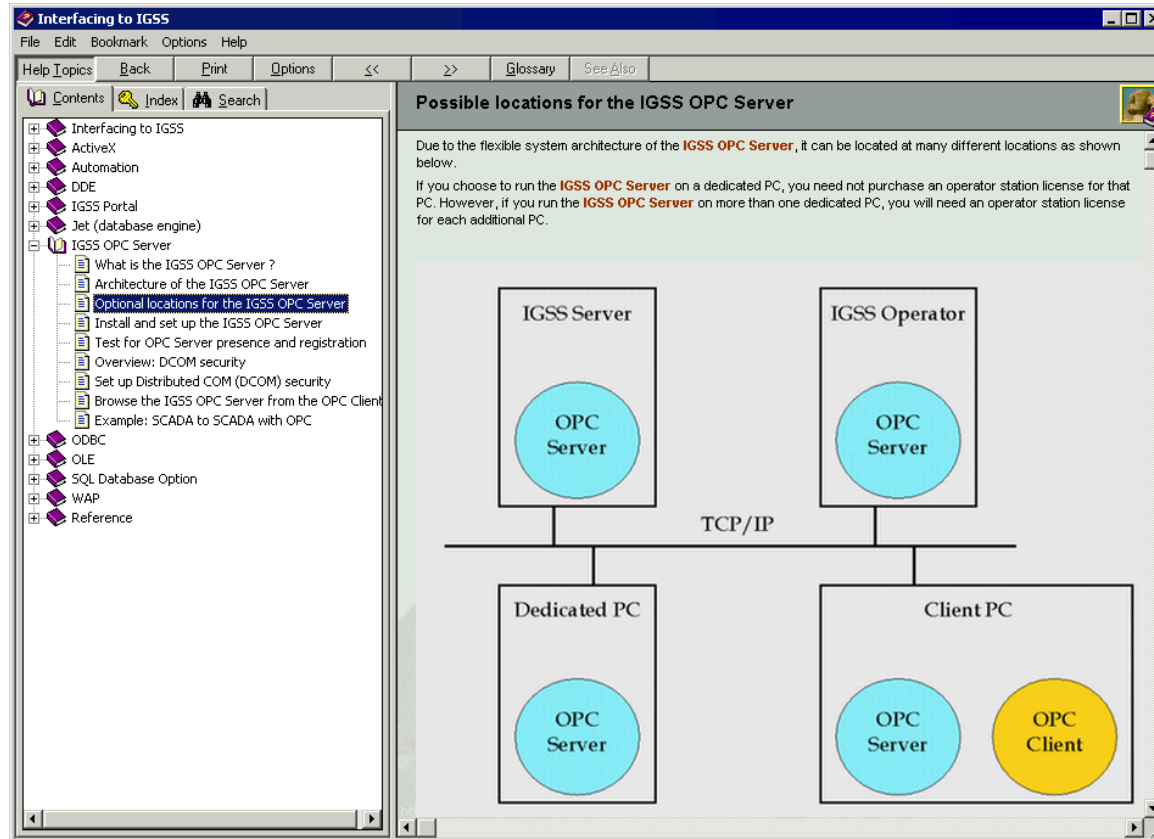
The DCOM Configuration Tool

- DCOM security settings are defined in DCOM Configuration Properties
- Choose Start > Run > Dcomcnfg
- Two sets of security settings:
 - Default settings for all DCOM applications
 - Specific settings for the individual DCOM application
- The IGSS "Interface Help" file describes the latter method

Help on IGSS OPC Server

Interface Help

Opened from the IGSS Start menu.
Go to the book "IGSS OPC Server"



The screenshot shows a help window titled "Interfacing to IGSS". The left pane displays a tree view with the following items:

- Interfacing to IGSS
- ActiveX
- Automation
- DDE
- IGSS Portal
- Jet (database engine)
- IGSS OPC Server
 - What is the IGSS OPC Server ?
 - Architecture of the IGSS OPC Server
 - Optional locations for the IGSS OPC Server**
 - Install and set up the IGSS OPC Server
 - Test for OPC Server presence and registration
 - Overview: DCOM security
 - Set up Distributed COM (DCOM) security
 - Browse the IGSS OPC Server from the OPC Client
 - Example: SCADA to SCADA with OPC
- ODBC
- OLE
- SQL Database Option
- WAP
- Reference

The right pane is titled "Possible locations for the IGSS OPC Server". It contains the following text:

Due to the flexible system architecture of the **IGSS OPC Server**, it can be located at many different locations as shown below.

If you choose to run the **IGSS OPC Server** on a dedicated PC, you need not purchase an operator station license for that PC. However, if you run the **IGSS OPC Server** on more than one dedicated PC, you will need an operator station license for each additional PC.

The diagram below illustrates the architecture:

- IGSS Server**: Contains an **OPC Server** (blue circle).
- IGSS Operator**: Contains an **OPC Server** (blue circle).
- Dedicated PC**: Contains an **OPC Server** (blue circle).
- Client PC**: Contains an **OPC Server** (blue circle) and an **OPC Client** (yellow circle).

All components are connected via a central horizontal line labeled **TCP/IP**.